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¹University of Padua (Italy)
²Italian Center of Clinical and Experimental Hypnosis (Italy)
³EvanLab (Italy)

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¹University of Exeter (United Kingdom)
²University of Southampton (United Kingdom)
³University of Copenhagen (Denmark)
⁴Guru Nanak Dev University (India)

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¹Mississippi State University-Meridian Campus (United States)
²University of Central Missouri (United States)
Applying dual-frameworks of motivation and regulation to theories of ageing and psychological engagement: A review with future research directions

Russell N. Steiner¹, Aaron Pinkhasov², Joshua De Leon², & Allison B. Reiss²
¹University of Akron (United States)
²NYU Long Island School of Medicine (United States)

Correspondence: allison.reiss@nyulangone.org

A number of dual-systems frameworks have emerged over time to inform theory and practice regarding the conceptualisation and assessment of human motivation and regulation. These dual systems are unique in their own ways but share common elements of one system controlling upregulation of and another system controlling downregulation of emotional, cognitive, and behavioural processes. This article reviews these various dual-frameworks and offers future research directions for scholars in using their associated measurements. Specifically, psychology within the domains of work and aging, respectively, are used as exemplar fields that can benefit by better accounting for individual differences within their research utilising these dual-system frameworks of motivation and regulation.

Keywords: dual-systems framework; emotional regulation; job engagement; motivation; neuropsychology
Human motivation is one of the most ubiquitously studied topics within psychology. Motivation has been defined as an unobservable, dynamic force propelling cognitive, emotional, and behavioural experiences (Austin & Vancouver 1996; Cerasoli et al., 2014; Diefendorff & Chandler, 2011). Indeed, the processes by which individuals regulate and achieve goals are determinant of key outcomes like job performance and wellbeing (Vancouver & Kendall, 2006; Deci et al., 2017). However, motivation is a broad and overarching term for an array of dispositional and environmental characteristics that drive effort toward goal attainment, thus there are a variety of lenses for understanding motivational and regulatory processes (Kanfer et al., 2017). Specifically, there are a number of dual-frameworks that account for individual differences in motivational and regulatory functioning underpinned by systems for upregulation and downregulation that orient patterns of cognition, affective experience, and action (Gray, 1981; Kuhl, 1994a; Metcalfe & Mischel, 1999). Research examining such systems has demonstrated that individuals vary in their job search patterns and ability to attain interviews, the extent to which they perform helping behaviors, and reactions to different environmental stressors based on their innate motivational preferences towards generativity and reduction (Sun et al., 2013; Gabriel et al., 2017; Ferris et al., 2016). Indeed, the application of such motivational frameworks is imperative for explaining various psychological effects and phenomena based on universal systems with degrees of variation among people. This paper reviews some of the literature on dual-frameworks surrounding motivation and regulation and offers research applications of said frameworks using theories from industrial-organizational psychology and lifespan development psychology, which include work engagement theory and socioemotional selectivity theory, respectively (Kahn, 1990; Carstensen et al., 2011).

Theories of job engagement have been extremely influential in terms of understanding wellbeing and performance at work within industrial-organizational psychology (Kahn, 1990; Schaufeli et al., 2002; Rich et al., 2010; Christian et al., 2011). Job engagement stipulates that individuals invest their personal self into their work simultaneously using emotional, cognitive, and physical resources, which helps to maximize work outcomes for both the individual and their organization of membership (Kahn, 1990; Schaufeli et al., 2002). Recent research has demonstrated that job engagement is subject to change across tasks, where consecutive experiences of engagement can have both deleterious and positive cognitive and emotional effects between tasks (Newton et al., 2020). Dual-frameworks of motivation are useful for understanding who will most benefit from consecutive experiences of engagement, and who will be most taxed by these experiences. This paper considers potential research questions using dual-frameworks of motivation that may account for individual differences in consecutive task engagement experiences.

The other theory that this paper seeks to apply dual-frameworks of motivation is socioemotional selectivity theory and its well-documented positivity effect (Lang & Carstensen, 2002; Mather & Carstensen, 2003; Carstensen et al., 2011). Socioemotional selectivity theory emphasizes that the way people perceive time throughout their life determines their social goals, such that those who perceive time as abundant will pursue novel experiences and social situations, while those who perceive time as limited will gravitate towards the familiar (Carstensen et al., 1999). Psychological and neurological research propelled by socioemotional selectivity theory has found consistent support for the existence of an age-related positivity effect, where individuals transition from viewing time as a plentiful resource in youth towards viewing time as a limited resource in later adulthood that subsequently facilitates an attentive shift towards increased stimulation and regulation of positive emotion (Cacioppo et al., 2011; Isaacowitz & Blanchard-Fields, 2012; Reed et al., 2014; Kennedy et al., 2019). However, despite the theory and studies supporting the occurrence of a positivity effect, little research has examined the individual difference factors that may augment or reduce its occurrence, thus this review offers future directions for lifespan psychology and cognition researchers by considering how dual-frameworks of motivation can account for emotional regulatory changes over time (Stanley & Isaacowitz, 2011; Isaacowitz & Blanchard-Fields, 2012; Reed et al., 2014).

**The fundamental 'hot-go and cool-know' system**

The dual-frameworks of emotion and motivation regulation exhibit a fundamental structure composed of an upregulating and a downregulating system, which can be measured as resting on the same or separate continuaums (see Table 1). The hot-go and cool-know framework (Metcalfe & Mischel, 1999) is a popular example of such dual-systems exemplified in the marshmallow experiment testing the willpower of young children, where their ability to exercise willpower for greater reward predicted future performance decades later. The experiment demonstrated that children who are offered marshmallows and are able to restrain themselves from eating those marshmallows for a time period in exchange for more marshmallows later are exercising their knowledge-based cooling system. This helps to attenuate the stimulation of their primal-driven hot system's need for self-gratification and positive experience.
Table 1
Summary of dual-motivation frameworks

<table>
<thead>
<tr>
<th>Framework</th>
<th>Description</th>
<th>Generative component</th>
<th>Reductive component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot/Cool</td>
<td>Motivation and regulation are guided by an emotion-based ‘hot-go’ system and a knowledge-based ‘cool-know’ system.</td>
<td>‘Hot-go’ system that is emotionally and impulsively driven. Rooted in the amygdala and hypothalamus. Motivated towards self-gratification, stimulation, and natural hedonic tendencies.</td>
<td>‘Cool-know’ system that is driven by cognition and higher order judgement. Rooted in the frontal lobe and hippocampus. Motivated towards attenuation of stress and reactivity. Behavioral inhibitory system that is reactive to negative stimuli and anxiety-provoking experiences. Reactive to threats and geared towards defensiveness. Driven to reducing activity levels and stimulation.</td>
</tr>
<tr>
<td>Behavioural activation/inhibition</td>
<td>Motivation and regulation are guided by a reward-driven behavioural activation system and a punishment-mitigating behavioural inhibition system.</td>
<td>Behavioural activation system that is reactive toward reward, achievement, and positive emotion. Sensitive towards excitatory states.</td>
<td>Approach-based orientation that emphasises attainment of positive outcomes, events, and resource gain. Motivated towards pleasurable experiences and emotions.</td>
</tr>
<tr>
<td>Approach/avoidance</td>
<td>Motivation and regulation are guided by the exten one is prone towards approaching positive outcomes and simultaneously avoiding negative outcomes.</td>
<td>Action orientation that is geared to reduce deficits between current and desired states. Captures volition, achievement, and goal-directed behaviour.</td>
<td>State orientation that is geared towards allocating cognitive resources and thinking, and reduce goal-striving behaviour. Captures self-preoccupation, thinking, and rumination.</td>
</tr>
<tr>
<td>Action/state</td>
<td>Single system on a polar continuum indication how prone an individual is towards actively striving for achievements on one end versus preoccupation with one’s own train of thought on the other. Both ends of the continuum can vary in dimension of decision towards generating positive affect or failure to reduce negative affect.</td>
<td></td>
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</table>

The parallel of an aroused system driven by impulse and a restrained system driven by thinking is a basic illustration of a number of emotional-motivational regulatory frameworks that capture how individuals differ in their cognitive-affective, goal-achieving processes facilitating behaviour. These systems are endogenous to neuroendocrinology, such that they parallel the sympathetic and parasympathetic nervous systems, and the limbic system’s regulation of the hypothalamus and amygdala in states of arousal and stress by triggering a neurohormonal response and the release of cortisol via the pituitary gland (Reeve & Tseng, 2011; Charles & Luong, 2013). Indeed, it is easy to imagine that these universal systems vary among people in terms of their innate generative and reductive processes.

Neuropsychological systems of behavioural activation and inhibition

The reactive motivation framework (Gray, 1981) describes another dual-system of behavioural activation and behavioural inhibition. An individual’s behavioural activation system (BAS) is primarily sensitive to stimulation, while one’s behavioural inhibition system (BIS) is focused on attenuation and mitigation of stressful states. Individuals with high BAS sensitivity are more likely to be bored and under-stimulated, which may lead them to engage in uninhibited and impulsive behaviours that are gratifying and generate positive emotion (Diefendorff & Mehta, 2007). By contrast, BIS-prone individuals are more likely to experience anxiety and negative emotion as they emotionally regulate and reduce activation elicited by psychological or environmental stressors. This framework parallels the one by Metcalfe and Mischel (Metcalfe & Mischel, 1999) as their hot-go system corresponds to BAS, given that they encompass systems driven by stimulation, such as a child in the marshmallow experiment who wishes instant satiation by
immediately consuming the offered marshmallow, where such activation is rooted in more primitive brain structures, such as the amygdala and cerebellum. In contrast, the cooling knowledge-based system is similar to BIS wherein control of stimulation reduction is made possible by elaborated cognitive and knowledge-based structures, which correspond more towards evolutionarily developed brain structures, such as the hippocampus and frontal lobe that permit for abstract thinking and higher order judgement. However, BIS is still rooted in primitive brain structures given its greater association with fear, anxiety, and the parasympathetic nervous system.

Research has provided support for psychological measures that tap into the BIS and BAS constructs accounting for emotional and motivational differences among individuals. Richard and Diefendorff (Richard & Diefendorff, 2011) conducted a study examining mood-as-information during goal striving episodes, where individuals were to complete tasks over a period of time without external or social feedback using a daily diary methodology. They found that individuals higher in BIS sensitivity were more likely to make goal revisions when they experienced positive emotion during goal striving, given that such feelings are more alien to BIS sensitive individuals and informative to them relative to BAS sensitive ones. Surprisingly, higher BAS sensitive individuals did not end up exhibiting the opposite effect, but instead were also found to revise goals during positive affective time periods as it is a fueling resource for them to achieve outcomes compared to negative experiences. Research has also found that BIS activation triggers anxiety and defensiveness, while BAS activation triggers goal striving (Nash et al., 2011). Furthermore, Ferris and colleagues (Ferris et al., 2019) found that the presence of negative stimuli, such as abuse by one’s supervisor, is more detrimental to highly BIS sensitive people, while the absence of positive stimuli, such as not being included socially, is more detrimental to highly BAS sensitive individuals. These findings help to illustrate one of many dual-frameworks that account for the ways in which people are uniquely reactive in their motivation and emotion regulation.

**The approach-avoidance framework**

Approach-avoidance motivation is a trait-based, dual-framework of motivation that captures the extent to which individuals desire to generate positive outcomes and gain of resources as well as avoid negative outcomes and loss of resources (Elliot, 2006). These two forms of motivation are not exclusive to one another and are generally considered to map onto separate continuaums, where a person may simultaneously be high, low, balanced, or hold other varying combinations of approach and avoidance tendencies (Diefendorff & Mehta, 2007). Byron and colleagues (Byron et al., 2018) describe approach and avoidance orientations, and their distinctions. They depict an individual’s approach orientation as encompassing the extent to which they are motivated by the attainment of resources, which may include physical objects, such as money, less tangential ones, such as time, and situations or events, such as a job promotion. In contrast, avoidance orientations are characterized by a motivation to avoid undesirable outcomes resulting in a loss of resources, such as uncertain situations or experiences of unnecessary strain. This paradigm model of motivation is generally considered to be synonymous with other dual-frameworks, such as regulatory focus theory’s promotion and prevention orientation (Higgins, 1998), along with the aforementioned BIS and BAS orientations of reinforcement sensitivity theory, which is at the theoretical core of the approach-avoidance framework (Gray, 1981; Diefendorff & Mehta, 2007).

Research has demonstrated that measurements of approach and avoidance among individuals show clear differences with regards to emotional and motivational outcomes. A study by Gabriel and colleagues (Gabriel et al., 2017) found that those high in avoidance orientation are more concerned with and sensitive to preventing the loss of resources for the sake of maximizing personal wellbeing, such that highly avoidant employees who engaged in helping behaviours over time transitioned towards being less helpful to prevent fatigue compared to those who are less avoidant. Research by Robinson and colleagues (Robinson et al., 2016) demonstrated the impact of individual differences in approach and avoidance motivation with regards to emotional reactions towards various provocations; their two studies consisted of a computer simulation trial and a daily diary measure assessing reactions to conflict, where approach-based individuals exhibited greater anger reactivity to daily negative events. Yip and colleagues (Yip et al., 2020) conducted a study that found emotional intelligence plays a critical role in interpreting physiological sensation and response, where those higher in emotional intelligence do not misinterpret approach-based physiological signals and are more likely to avoid risk by not engaging their impulsive reactions as readily. Indeed, the extent to which one is geared towards attaining positive outcomes and reducing the occurrence of negative outcomes has implications for both emotional and behavioural experiences.

**Theory of action control**
Kuhl’s (Kuhl, 1994a) theory of action control describes the extent one has an action or a state orientation, which similarly mirrors the framework presented by Metcalfe and Mischell (Metcalfe & Mischell, 1999). Action and state orientation exist on the same continuum but can differ in dimensions of failure and decision. Action orientation encompasses how driven someone is towards pathways that reduce deficits between current and desired states, thus it is characterized as volitional and is similar to the hot-go system, approach motivation, and BAS. Those with an action orientation tend to exhibit more goal-striving behaviour that is efficient and high performing in their attainment of outcomes (Diefendorff et al., 2000).

In contrast, having a state orientation is characterised by cognitive preoccupation with perceptions of oneself, which ultimately attenuate goal striving and instead allocate cognitive resources to thinking and strategizing, thus resembling the cool-know system, avoidant motivation, and BIS. Kuhl (Kuhl, 1981) described state orientation as cognitive processes focused on one’s past, present, or future state of being. This may hinder cognitive activities dedicated towards action and performance as one becomes immersed in pondering why they have not mitigated the discrepancy between current and desired outcomes. The diversion of cognitive resources away from goal-directed behaviour and instead towards preoccupation with one's thoughts and affect reduces the effectiveness of striving for and attaining desired outcomes, thus reducing one's overall volition (Diefendorff et al., 2000). These orientations, which exist on opposite ends of the same continuum, show differences across two dimensions: decision and failure relation.

Decision-related action orientation is the extent that one’s action state is able to generate positive affective experiences when goal-striving, especially in facing challenging tasks or obstacles. Decision-related state orientation is the polar opposite and characterized by impairment in generating positive affect. Research has found support for those high on decision-related action orientation as being better equipped to self-motivate in order to achieve outcomes in the face of stressful demands (Baumann et al., 2005). Failure-related action orientation is the extent one’s action state is able to mitigate negative affective experiences when goal-striving, which ultimately allows one to disengage from impeding or disruptive thought processes, while failure-related state orientation is characterized as being unable to manage one’s preoccupation with negative affect. Research has found support that individuals high in failure-related action orientation are not as disconcerted by negative experiences or stimuli that may otherwise impede their goal pursuit.

Although some of the associations described with these dimensions as they relate to emotion regulation may appear similar to more popular variables, support has been provided for measurements of action orientation as a distinct construct relative to other affective indicators. Specifically, traditional personality variables like extraversion or neuroticism have accounted for the extent one may generate positive affect or negative affect (Brebenner et al., 1995; Diener & Seligman, 2002; Judge & Ilies, 2002). However, research examining the validity of the action-control scale has shown that big-five personality measures account for no more than 28% of the variance in any of the action-control scale subscales (Diefendorff et al., 2000). Clearly, action-state orientation provides an important, unique motivational framework for assessing individual differences in emotion regulation and motivation within goal-driven processes beyond other dispositional characteristics accounting for cognitive, affective, and behavioural regulation like personality.

**Work engagement and motivation research**

Job engagement is considered one of the most popular and powerful constructs among motivation scholars and practitioners within the realm of industrial-organizational psychology. The pervasiveness of job engagement within both theoretical and applied contexts is only matched by its broadness as a definition, where scholars have lamented that it is an umbrella construct for multiple factors studied within applied motivation at work, such as organizational commitment, job involvement, and job satisfaction (Saks, 2008; Schaufeli, 2013). Despite any perceived confabulation with other variables, engagement is generally thought of as a positive motivational state where an individual immerses themselves cognitively, physically, and emotionally in their work (Byrne et al., 2016; Schaufeli, 2013). Indeed, much research has provided support for the importance of job engagement as a distinct, antecedent construct above and beyond traditional predictors of motivation and job performance (Hakanen et al., 2006; Rich et al., 2010; Schaufeli, 2013).

There is nearly universal agreement that job engagement is good for both employees and organizations (Salanova et al., 2011). Specifically, engaged employees tend to exhibit higher positive affect more than disengaged employees. One study sought to examine engagement from a resource-based framework, where support was found for engaged employees expending less cognitive resources than disengaged employees, where less resource expenditure mitigated detrimental impact to positive affect and performance (Kim et al., 2018). Unsurprisingly, measures of job engagement include items that directly tap into experienced positive affect (Rich et al., 2010).
Despite the prevalent literature indicating that engaged employees generally have positive experiences, modern research has found support for costs associated with engagement processes. A recent exploration examined both the beneficial and harmful pathways involved within the spill over of engagement on one task to a subsequent task through separate studies assessing undergraduate students in a laboratory setting and NASA crew members (Newton et al., 2020). Support was found for a positive spill over effect of task engagement on subsequent task engagement via feelings of positive affect, but also a negative toll on subsequent engagement via attention residue, which encompasses the degree one’s cognitive and attentional resources are preoccupied with a previous task (Leroy, 2009). In other words, pleasant emotion that is stimulated when engaged on one task spills over to facilitate engagement on a different subsequent task, but the investment and depletion of attentional resources on the initial task simultaneously mitigates or decreases the positive impact of engagement on subsequent tasks.

**Using dual-frameworks of motivation for future research examining individual differences in work engagement**

Findings such as those of Newton’s group (Newton et al., 2020) are important as they shed contrary insight into potentially universal processes of motivation, such as engagement on one task as it relates to engagement on a subsequent task, where it is not entirely beneficial as predominantly posited (Schaufeli, 2013). However, they did not capture varying individual traits that explain who does or does not benefit from positive affect or attention residue during subsequent task engagement, which incites questioning as to the generalisability of the examined spillover processes. Indeed, dual-frameworks of motivation can help account for who will experience the most and least positive and negative effects of consecutive engagement with work tasks.

In the model of Newton and colleagues (Newton et al., 2020), it was found that positive affect and attention residue predicted by the engagement on an initial task impacted engagement on a subsequent task, thus it is important to elaborate on this model by accounting for individual trait-based differences in emotion and motivation regulation, such as one’s action orientation, and one’s approach and avoidance orientations (Kuhl, 1994a; Diefendorff et al., 2000; Diefendorff & Mehta, 2007). Indeed, scholars have called for integration of theory less explored in job engagement research (Rich et al., 2010; Schaufeli, 2013), such that these dual-frameworks can help to explain differences in the mechanisms of attention residue and positive affect within engagement spill over (Figure 1) (Newton et al., 2020).

**Figure 1**

Conceptualised model accounting for positive and negative pathways between consecutive engagement experience with work tasks.

![Diagram](image-url)
Newton and colleagues (Newton et al., 2020) found that engagement on an initial task elicited both beneficial and costly mechanisms towards engagement on a subsequent task. These mechanisms include positive affect, which has been well studied as a feeling of pleasant activation (Russell & Barrett, 1999), and attention residue, which is the extent to which one is preoccupied with a previous task that mitigates engagement on a subsequent task (Leroy & G Lomb, 2018). The extent to which engagement on an initial task produces positive affect should vary depending on one’s ability to generate positive affective experiences towards subsequent tasks and goals, thus, using Kuhl’s (Kuhl, 1994a) framework, decision-related action orientation should moderate the relationship between engagement with an initial task and subsequent positive affect, where that relationship will be strongest when an individual high on decision-related action orientation would be most predisposed towards generating positive emotion during goal striving processes. In replicating and extending Newton and colleagues’ (Newton et al., 2020) original work, the enhanced positive affect from decision-related action orientation on initial task engagement should help to increase subsequent task engagement, where task one engagement will have a positive indirect effect on task two engagement and performance through positive affect when decision-related action orientation is high (Baumann et al., 2005).

In contrast to positive affect, attention residue is the costly mechanism that hurts subsequent engagement from the diversion of cognitive resources spent ruminating on initial task engagement. Understandably, given that preoccupation with thoughts is associated with negative affective experiences and that attention residue hinders performance, one’s ability to mitigate negative experiences during goal-striving processes and disengage from less relevant tasks should moderate the extent one is cognitively preoccupied with a previous task (Kuppens et al., 2010; Leroy & G Lomb, 2018).

Individual differences in approach orientation should account for variations in positive affect resulting from an initial task engagement on subsequent task engagement, such that those who are driven by high stimulation and positive experiences will be more propelled towards states of engagement (Barclay & Keifer, 2014). In other words, positive emotion from initial task engagement should have a positive effect on task two engagement when one is higher in approach orientation given that highly approach-driven individuals thrive off positive stimulation and sensation (Elliot, 2006). Simultaneously, given avoidance orientation’s emphasis on mitigating negative affective experiences, it is reasonable to posit that those with a high avoidance orientation are primed to experience lesser engagement on a subsequent task as a result of the undesirable attention residue from a prior task that they are actively motivated to mitigate. Ultimately, attention residue is composed of negative affective cognitive processes, such as rumination and preoccupation with thoughts (Kuppens et al., 2010), thus an individual who is primarily concerned with preventing negative experiences will be ineffective at self-immersion in subsequent task engagement as they are motivated to resolve residual negative emotion from engagement with the initial task.

**Socioemotional selectivity theory, time perspectives, and positivity effects**

Socioemotional selectivity theory is a metatheory of social motivation that helps to account for the natural shift in social partner selection throughout the human lifespan. The theory rests on the idea that people are autonomously motivated towards achieving multiple social goals for the sake of adaptation (Carstensen et al., 1999). The social goals emphasized within socioemotional selectivity theory can be considered dichotomous, where social goals can primarily be oriented towards either novelty or familiarity (Fredrickson & Carstensen, 1990). People may be motivated towards novel social experience for the sake of knowledge acquisition, diversity in social interaction, and achievement of more instrumental outcomes. Conversely, people may be motivated towards familiar social experiences that are more meaningful given attachments that have accumulated over time (Carstensen et al., 1999).

Research on socioemotional selectivity theory has demonstrated that throughout life there is a fundamental shift in motivation from the social goals that are more novel and expansive of one’s network towards goals that are more familiar and subsequently reduce one’s network (Fredrickson & Carstensen, 1990; Charles & Carstensen, 2008). Underlying this shift is a key psychological construct regarding perceptions of time, which has come to be known as one’s future time perspective. The future time perspective captures the extent to which an individual perceives themselves as having an abundance of time or a limited amount of time in their life (Grünn et al., 2016). Research has found strong support for the impact having a limited versus non-limited future time perspective has regarding how individuals are socially motivated, which has been experimentally manipulated to have differing results after controlling for age (Barber et al., 2016). Those who perceive themselves as having an abundance of time are going to be more motivated towards new social experiences that are pragmatic, exciting, and informative, where the risk of negative consequence is
not as much of a deterrent, because of the opportunity for development and growth (Lang & Carstensen, 2002). Conversely, experimental manipulations in time perspective have found that those who perceive themselves as having a limited amount of time are not going to prioritize new opportunities and risk their resources on potential negative outcomes, where instead they will be oriented towards the familiar in order to maximize their return on investment in time as a resource towards positive experiences (Fung & Carstensen, 2003; Charles & Carstensen, 2008).

One of the most enduring emotional phenomena that has come to light through studies on socioemotional selectivity and future-time perspectives is the well documented positivity effect (Isaacowitz & Blanchard-Fields, 2012; Spencer et al., 2016). The positivity effect is an emotional regulatory pattern documented among older adults, which describes the transition from experiencing balanced positive and negative affective arousal in young adulthood towards muted occurrences of negative affect with maintained, if not heightened, experiences of positive affect in older adulthood, thus capturing how older adults have emotional experiences that tend to be dominated by cognitive mechanisms enhancing positive emotion. The socioemotional selectivity framework suggests that as younger adults move from an open-future time perspective towards a more limited viewpoint in older adulthood, they become primarily motivated towards familiar social experiences as opposed to novel ones. Positive affect is maximized by mitigating the potential adverse experiences that may come with uncertain or risky social experiences that one is more likely to be motivated towards as a younger adult. Instead, older persons prioritize relationships and events that serve as primary sources of positive experience, such as those with family and loved ones, thus facilitating an overall change in cognitive affective stimulation that is lessened in negative affect (Fredrickson & Carstensen, 1990; Carstensen et al., 1999; Riediger et al., 2011; Ford et al., 2018; Kennedy et al., 2019). Beyond socioemotional conceptualizations of this developmental regulatory trend, there is research rooted in neuroscience that reflects the phenomenon of reduced negative affective experiences creating sharper contrasts of positive affective states over time, which is based on models of the aging-brain that illustrate physiological changes in mechanisms responsible for emotional processing, such as the amygdala (Cacioppo et al., 2011; Smit et al., 2019).

A study conducted by Barber & colleagues (Barber et al., 2916) supports how the induction of a limited future time perspective subsequently impacts functioning in recall of positive and negative stimuli. Older adults’ memory demonstrated a sharply contrasting preference towards recall of positive stimuli as opposed to negative, but this difference between age groups was mitigated with the induction of a limited future time perspective in younger adults. Indeed, as an individual’s mind orients itself towards a limited perspective on time, there seems to be a bias away from negative affective processing, which magnifies attentional experiences towards positive affect. However, there were no trait-based individual differences measured that may account for variability in positive versus negative recall.

Recent meta-analyses have accounted for contextual manifestation of a positivity effect but have not taken the time to consider predictive or moderating effects stemming from trait-based differences. Reed and colleagues (Reed et al., 2014) conducted a meta-analysis examining moderators of the positivity effect, where they found that study designs assessing the positivity effect with constrained cognitive experimental processes had smaller effect sizes to unrestrained ones, especially as the age gap in the tested samples widened, thus exhibiting contextual differences in research design, but they did not account for any individual difference moderators across the 100 studies examined. Hayes and colleagues (Hayes et al., 2020) also conducted a meta-analysis examining 102 studies, where they found how task characteristics of research design impacted the manifestation of a positivity effect, such that emotional expression recognition tasks using photographs revealed a greater positivity bias for older adults as opposed to the use of videos. Despite the importance of these meta-analytic findings that reliably support the existence of a positivity effect with age, it is almost shocking that there was no examination for who is most vulnerable to experiencing a positivity effect based on individual differences, thus illustrating the clear need to further discern factors that impact the manifestation of a positivity effect.

**Using dual-frameworks of motivation for future research examining individual differences in socioemotional development and manifestation of positivity effects**

There is much evidence supporting the age-related positivity effect, which suggests a reduction in arousal to negatively valenced stimuli and experiences as one progresses towards a limited future time perspective in older adulthood. Positivity is attained by focusing on meaningful emotional experiences and those experiences are enhanced by the contrast of reduced negative information processing (Carstensen et al., 1999; Barber et al., 2016). However, the theory and its effects are not without flaws. Researchers and scholars within this domain of aging and development have highlighted the lack of individual differences accounting for the positivity effect, where little is known beyond contextual characteristics of research
design about trait-based psychological factors that impact the manifestation of stronger or weaker experiences of a positivity effect (Isaacowitz & Blanchard-Fields, 2012; Luong & Charles, 2014). Theory and research examining individual differences based on dual-frameworks of motivation and emotion regulation, such as approach and avoidance orientations, provide an intuitive lens for examining different levels of experienced positivity effects across people (Gray, 1981; Higgins, 1998; Diefendorff et al., 2000; Koopman et al., 2016; Gabriel et al., 2017).

There is likely a conditional effect of approach motivation on age predicting partner selection, such that the relationship between age and selection of familiar partners will be weakened with higher approach motivation. This is based on the notion that approach-based or BAS sensitive individuals are thought to be chronically bored and under-stimulated, thus highly approach-driven older adults should be more likely to select novel, exciting social partners as a means of self-stimulation compared to older adults with lower approach motivation (Diefendorff et al., 2000). Furthermore, there is likely a conditional effect of avoidant motivation on age predicting partner selection, such that the relationship between age and selection of familiar partners will be strengthened with higher avoidance motivation. The logic behind this hypothesis is that avoidant individuals are prone to mitigate risk, where less familiar social partners may be perceived as uncertain, anxiety provoking, and risking increased likelihood for negative experiences compared to social partners with whom individuals are more familiar and to whom they are more attached (Carstensen et al., 1999; Nash et al., 2011).

Studies and experiments surrounding socioemotional selectivity theory and positivity effects have been conducted in lab settings through memory recall tasks, where participants of varying ages are asked to recall negative and positive aspects of information from photos or video footage (Fung & Carstensen, 2003; Barber et al., 2016). Accounting for approach and avoidance motivation in such studies can help answer the call-to-action accounting for individual differences in manifestation of a positivity effect. It is likely that age will have an indirect negative effect on the recall of negative information through approach motivation, such that as individuals age and are desensitized to negative stimuli that they are more motivated towards positive aspects or features, where approach motivation orient an individual to such stimuli. Conversely, age likely has an indirect positive effect on the recall of positive information through avoidance motivation, where as adults get older they become more motivated to reduce negative emotional experiences, which is in line with socioemotional selectivity theory, thus avoidance motivation becomes more activated in the presence of negative stimuli for older adults who are motivated to negate such stimuli.

CONCLUSION

Dual-frameworks of motivation are critical to accounting for individual differences among people based on variations in universal systems regulating emotion, thought, and action. Although these different frameworks are unique in their own ways, such as Metcalfe and Mischel’s (Metcalfe & Mischel, 1999) hot-go and cool-know framework embodying a primitive versus a sophisticated neuropsychological motivational system, while the approach-avoidance framework encompassing systems dedicated to achieving positive outcomes versus mitigating negative outcomes, the primary theme among these frameworks are systems of generativity and reduction (Eliot, 2006). Indeed, considering how people are different in the extent to which their motivational systems drive them towards both activation and attenuation, which are not necessarily always on the same continuum and may vary simultaneously, is important for scientists and practitioners alike for understanding and contextualizing antecedents and outcomes surrounding human information processing and behaviour. However, that is not to say that all of the aforementioned frameworks are equally interchangeable with one another, thus it is critical that researchers consider the theory, antecedents, and outcomes associated with each framework in terms of selecting which is most appropriate for answering the questions that their studies are asking.

A major aim of this review is to inspire future researchers in considering the utilization of such frameworks based on the psychological and behavioural effects that they account for. Individuals clearly differ in their sensitivity and ability to cope with stimuli in their environment based on their behavioural inhibition and activation systems, thus researchers studying stress and anxiety reactions may want to consider implementing such measures to greater account for variance in outcomes among people and better contextualizing their findings (Ferris et al., 2019). Research seeking to examine how people differ in their utilization of resources may want to consider approach-avoidance measures given that study results have found more avoidant individuals tend to be more conservative with their energy expenditure over time (Gabriel et al., 2017). Integrating such measures into neuroscientific and psychological research is convenient and inexpensive as they can be assessed using short-form Likert-scale questionnaires and self-report surveys even prior to experimentation.
Finally, this study offers directions for future research using such frameworks of motivation. Researchers should seek to build from the theory and ideas presented here by testing how engagement between job tasks may change depending on dual-motivational tendencies that can account for individual differences in the effect of simultaneously beneficial and costly mechanisms between tasks (Kuhl, 1994a; Baumann et al., 2005; Newton et al., 2020). Furthermore, socioemotional selectivity theory and its documented positivity effect provides a ripe area for incorporating the aforementioned regulatory systems based on the call-to-action by researchers for examination of individual differences, such that older adults with higher avoidance motivation may potentially exhibit a more pronounced positivity effect by their greater disposition towards reducing negative stimuli; the reduction in negative information processing over time is thought to be an underlying mechanism facilitating the effect, thus avoidance motivation may magnify such mechanisms (Reed et al., 2014; Luong & Charles, 2014; Byrne et al., 2016; Kennedy et al., 2019). Readers are encouraged to take the ideas presented here and build upon them in their own research for the purposes of better understanding individual motivation and regulation across disciplines.

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Explaining intra-organisational mobility: Does job embeddedness apply?

Allison M. Traylor¹, Jessica Logan², & Courtney L. Holladay³

¹Rice University, United States
²Houston Methodist, United States
³University of Texas MD Anderson Cancer Center, United States

Correspondence: allison.m.traylor@rice.edu

Our research aims to understand whether job embeddedness theory can explain intra-organisational mobility, given the robust literature linking embeddedness with extra-organisational mobility. The study uses surveys from over 2,700 employees at a large healthcare organisation and structural equation modelling to investigate whether links, fit, and sacrifice can explain decisions to move within and outside an organisation. In addition, we investigate whether these factors influence decisions differently based on gender and generation. We found that fit, links, and sacrifice can explain both intra- and extra-organisational mobility. However, Generation Y employees are more likely to move based on reasons related to fit than Generation X or Baby Boomer employees, and women are more likely to move internally based on reasons of sacrifice than men. This research extends theories about job embeddedness to the domain of intra-organisational mobility, indicating that this theory can explain why employees leave their organisation and their role within an organisation. Given the increasing competition for employees, organisations are interested in understanding what factors can influence employees’ decision to stay in their organisation, transferring internally rather than turning over. This research indicates that employers should consider reasons based on links, fit, and sacrifice; and understand that these factors may matter more or less to employees based on their demographic group. No previous works have investigated how job embeddedness impacts movement within an organisation instead of focusing on turnover or extra-organisational moves.

Keywords: employees; intra-organisational mobility; gender; job; organisational psychology
Despite the increasing value associated with retaining top talent, average employee tenure continues to drop, and organisations struggle to retain top talent (Keller & Meaney, 2017). Survey data indicates that only 7% of Fortune 500 executives believe they can retain high performing employees (Keller & Meaney, 2017), yet 5% of all US employees surveyed in Gallup’s Workforce Panel study indicated they were currently seeking a new job outside of their organisation (Mann & McCarville, 2015). The extra-organisational movement also carries negative consequences for the firm from an economic and financial standpoint (Bidwell, 2011). In the current economic environment, characterised by an all-time low employment rate, a surge of millennials into the workforce, and the ‘Me Too’ movement, the imperative for understanding what impacts employees’ intentions to stay and move within an organisation is at a critical juncture (Bentley et al., 2019). To keep their best and brightest, organisations need to foster career satisfaction and advancement by providing opportunities for employees to grow and enhance their knowledge, skills, and experience.

Organisations looking to retain top talent must incorporate strategies to increase intra-organisational mobility intentions, which describe the extent to which employees are willing to fulfil their current position in another department or to fulfil another (upward or lateral) position within the same organisation (Thijssen et al., 2008). The willingness to facilitate intra-organisational movements can be seen as allowing the employee to remain internally employable and offer development (Hall & Mirvis, 1995; Thijssen et al., 2008). Such movement can be instrumental in employees’ career development (Biemann & Wolf, 2009). Though past research has examined employees’ reasons for leaving their organisation altogether (Firth et al., 2004), less attention has been paid to why employees move within the same organisation.

To address this gap, our study examined the role of job embeddedness theory in predicting inter-and intra-mobility. Job embeddedness has been linked to job satisfaction, leader-member relationships, intent to leave or stay at a current job, and turnover in varying degrees (Harris et al., 2011). However, researchers to date have not tested whether job embeddedness theory applies in the context of internal movement. Thus, a primary goal of this study was to examine employees’ decisions to move within an organisation based on job embeddedness theory (Holton et al., 2006; Mitchell et al., 2001). By analysing survey data from 2,786 employees at a large healthcare organisation, we compared the fit of a model of job embeddedness for employees transferring roles both within and outside of the organisation. Moreover, we examined the role of two other demographic variables, gender and generation, in predicting job embeddedness and subsequent mobility.

**Intra-organisational mobility**

Though research on mobility has primarily focused on external mobility or turnover, some studies have examined the benefits of intra-organisational mobility for employees and organisations. Voluntary internal mobility is related to income growth, and intra-organisational career shifts are promotions at the top management level (Chudzikowski, 2012). In addition to these tangible career benefits, employees at all career stages who experience internal mobility experience an affective boost toward their career, such that these employees experience a boost in career satisfaction (Rigotti et al., 2014). Additional evidence suggests that the benefits of internal mobility extend to the organisations within which these employees work. While external hires are paid more than promoted workers and have higher levels of education, workers internally promoted into jobs have significantly better performance than external hires and demonstrate lower rates of voluntary and involuntary turnover (Bidwell, 2011).

To better understand the antecedents to intra-organisational mobility, Anderson and colleagues (1981) introduced a theoretical framework for understanding intra-organisational mobility that focuses on environmental, organisational, and workforce characteristics influencing perceptions of mobility, satisfaction, and work behaviours. This model emphasised the importance of several independent variables in influencing internal mobility. However, much like earlier theory addressing external mobility, this framework provides little detail regarding the impact of employee relationships within their organisation. In contrast, we posit that the aforementioned relationships and employee forms with their organisation may also play an important role in understanding internal mobility. We draw from job embeddedness theory to capture and conceptualise these relationships (Mitchell et al., 2001).

**Job embeddedness**

Job embeddedness, which captures a broad range of work and community-related influences on employee retention, was originally introduced in the turnover literature to expand our understanding of the factors influencing employees’ decisions to stay or leave their organisations (Mitchell et al., 2001). The construct is comprised of three sub facets: links, fit, and sacrifice. While links describe the social, psychological, and
financial connections that an employee forms with institutions or other people, fit describes an employee's perceived compatibility with their organisation or environment, and sacrifice describes the perceived social or material cost of leaving one's organisation (Mitchell et al., 2001). Embeddedness is particularly valuable as a predictor of voluntary turnover as it provides incremental variance beyond job attitudes, satisfaction, organisational commitment, job alternatives, and job search (Crossley et al., 2007; Mitchell et al., 2001).

While the effects of job embeddedness on employees' decisions to leave or stay at their organisation are relatively clear (Firth et al., 2004), less is known about how this theory may apply to employees interested in staying within their organisation leaving their position. Building from their initial theory and findings related to job embeddedness, Lee and colleagues' later work more explicitly bifurcated job embeddedness into organisational dimensions, which describe an employee's embeddedness while on the job, and community dimensions, which describe embeddedness while off the job (Lee et al., 2004). Presumably, community dimensions of job embeddedness would not explain intra-organisational mobility as one's community does not typically change when transferring to another role within their organisation; however, organisational dimensions of job embeddedness would. Thus, we hypothesise:

*Hypothesis 1: On-the-job embeddedness theory will apply to intra- and extra-organisational mobility in the same fashion, such that internal transfer employees will draw upon organisational links, fit, and sacrifice in their decisions to move.*

**Antecedents to internal mobility choices and embeddedness**

One way to increase the understanding of job embeddedness in employees' internal mobility decisions is to examine the possible antecedents involved more closely. Previous research has identified both motivational and social antecedents to job embeddedness and internal mobility (Kiazad et al., 2015). Cultural and social variables can also relate to an employee's relationship with their environment (Allen & Shanock, 2013). In addition to the motivational and social variables predicting embeddedness, we posit that demographic variables may predict the extent to which employees experience embeddedness and, subsequently, how embeddedness relates to internal mobility choices. To better understand the role of demographically-tied antecedents to internal mobility choices, we examine the role of gender and generation (see Figure 1).

Figure 1
Hypothesised Model of Antecedents Influencing Reasons for Internal Mobility by Three factors of Job Embeddedness

A number of studies provide evidence that gender has a salient impact on work experiences for women and men. For example, women receive lower wages for the same type of work, fewer opportunities for
development and promotion, and less job security (International Labour Organization, 2010). While women experience more turnover overall, men experience more intra-organisational mobility; moreover, having more children positively influences men’s intra-organisational mobility and increases women’s turnover (Valcour & Tolbert, 2003).

Within the embeddedness construct, we expect that women and men may not differ in the extent to which they rely on fit and links to make internal mobility decisions, but rather gender differences will be most salient in regard to sacrifice. We expect these patterns of results to persist in our sample of internal transfer employees. That is, we expect men to be more likely to transfer due to on-the-job fit, as this construct includes factors like how challenged one feels within their position. We expect that women will be more likely to transfer internally due to on-the-job sacrifice concerns, as this construct focuses on work-family conflict. Thus, we hypothesise:

**Hypothesis 2: On-the-job embeddedness will differentially impact women’s and men’s mobility decisions, such that (a) women will be more likely to transfer for reasons of sacrifice than men, and (b) men will be more likely to transfer for reasons of fit than women.**

Organisations employ workers that cross generations and hence have to adapt organisational policies to meet the diverse set of individuals’ needs (Sok et al., 2013). It is therefore not surprising that age has become an important factor in organisational research. Research has reported that older employees are less willing to change their occupation than are their younger counterparts (Blau, 2000) but are more willing to accept a lateral occupational change without promotion (Ostroff & Clark, 2001). Generation Y employees are less likely to remain content with their environment and more likely to engage in a series of job changes to find what best fits them (Tulgan, 2009).

In contrast to their elders, younger workers are much less likely to commit an entire career to the first organisation they work with (Dobrev & Merluzzi, 2018). While a number of factors have contributed to this shift, generational differences in values and expectations may play important roles in predicting job embeddedness. In particular, some evidence suggests that younger workers may place more emphasis on their fit with an organisation or workgroup than older workers (Tulgan, 2009). We expect similar patterns to emerge in our sample of employees. Because fit is more closely aligned with seeking career opportunities, we expect that younger generations of employees will be more likely to transfer internally due to fit than older employees. Thus, we hypothesise:

**Hypothesis 3: Generation X and Y employees will be more likely than Baby Boomers to transfer for reasons of fit.**

**METHODS**

**Participants**

Because job embeddedness has been established to explain turnover, we wanted to initially establish the same pattern with our survey tool before investigating our central hypothesis as it applies to internal mobility. We have two samples: one with employees exiting the organisation and one with employees moving within the organisation. Participants were 2,786 employees (2221 women, 565 men) from a large healthcare organisation in the Southwest who completed a survey within one month of leaving the organisation (N = 1871; 1460 women; 411 men) or moving to another department within the same organisation (N = 915; 761 Women; 154 Men). Of the participants who transferred within the organisation, 30.2% were Black, 27.2% were White, 20.8% Asian, and 20.7% Hispanic (remaining employees falling in Other races). Transfer employees were primarily Generation X (born 1965-1980) (45.2%) followed by Generation Y (born 1981-2000, although there were no individuals in the sample born past 1994) (36.3%) and Baby Boomer (born 1946-1964) (18.5%) with an average age of 39.7 years (SD = 10.18). Of the participants who left the organisation, 38.4% were White, 27.2% were Black, 18.4% Asian, and 14.3% Hispanic (remaining employees falling in Other races). Employees were primarily Generation X (born 1965-1980) (42.4%) followed by Generation Y (born 1981-2000, although there were no individuals in the sample born past 1994) (41.7%) and Baby Boomer (born 1946-1964) (15.8%) with an average age of 54.9 years (SD = 5.04).

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1 Though the focus of our manuscript was on gender and generation, given the demographic diversity present in our sample, we also ran our analyses by race and found no statistically significant differences between models.
Measurement

**Job embeddedness.** The survey comprised 12 items (provided in Table 1) tapping into employees' reasons for leaving the institution or moving to another department. Items were rated from 'strongly disagree' (1) to 'strongly agree' (5) falling into three categories of reasons: four reasons that were related to fit ($\alpha = .83$), five reasons related to links ($\alpha = .96$), and three reasons related to sacrifice ($\alpha = .76$). To establish construct validity of our job embeddedness measure, we used abbreviated measures of existing scales with a subsample of our internal transfer employees ($n = 111$). Specifically, we examined the relationship between the global measure of job embeddedness ($\alpha = .91$), example item 'It was difficult for me to leave... '; Crossley et al., 2007) with our measure of fit ($r = .31$), links ($r = .38$) and sacrifice ($r = .35$), demonstrating initial evidence of convergent validity. We also examined the relationships between our scales with the respective scales of fit ($r = .46$), links ($r = .20$) and sacrifice ($r = .23$) of Mitchell et al. (2001), demonstrating additional evidence of convergent validity.

RESULTS

**Confirmatory factor analysis**

**Exit survey data.** A CFA was conducted with the Exit Survey data using MPlus 7.4 to test the fit of a 3 factor model (Fit, Sacrifice, and Links) with 12 indicators loading on the factors. The full data set was randomly split into two samples for cross-validation purposes: first sample ($N = 935$) and second sample ($N = 936$). The FIML technique for handling missing data was used (Newman, 2003). Multiple indicators of fit indicated that the model was good: $\chi^2 (51) = 151.32$, RMSEA = .05, CFI = .99, TLI = .98, SRMR = .04. Not surprisingly with a sample of this size, the chi-square test of model fit was significant (e.g., Kline, 1998), but all other fit indices were good. Cross-validation of this final three-factor model with the second sample ($N = 936$) also showed good fit: $\chi^2 (51) = 187.12$, RMSEA = .05, CFI = .98, TLI = .97, SRMR = .04. Table 1 shows all loadings associated with indicators of fit, sacrifice, and links were significant.

**Internal transfer survey data.** The CFA provided a good fit for a model of how job embeddedness might influence people to leave an organisation. Our central hypothesis assessed how well the job embeddedness model fit for individuals moving within a company, rather than moving out of an organisation. We applied the same factor model to a sample of internal transfer survey data: responses from individuals who had transferred positions within the organisation ($N = 915$). All loadings associated with indicators of fit, sacrifice, and links were significant (Table 1). Multiple indicators of fit indicated that the model was good: $\chi^2 (51) = 189.25$, RMSEA = .05, CFI = .97, TLI = .96, SRMR = .04.

**Structural equation model**

Next, we performed SEM analysis to evaluate the relations between individual antecedents to the 3 factors related to job embeddedness. We examined the role of gender and generation on fit, links, and sacrifice reasons for leaving an organisation (exit data; see Figure 2) and for moving within an organisation (internal transfer; see Figure 3).
<table>
<thead>
<tr>
<th>Item</th>
<th>Label</th>
<th>Unstandardised</th>
<th>Standardised</th>
<th>Unstandardised</th>
<th>Standardised</th>
<th>Unstandardised</th>
<th>Standardised</th>
</tr>
</thead>
<tbody>
<tr>
<td>The jobs was realistically presented to me when I was hired into</td>
<td>F1</td>
<td>1.00(-)</td>
<td>1.00(-)</td>
<td>0.74</td>
<td>0.56</td>
<td></td>
<td></td>
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<td>this department.</td>
<td></td>
<td></td>
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<tr>
<td>My skills and abilities were a good match with the challenges in</td>
<td>F2</td>
<td>0.73(.03)</td>
<td>0.74(.08)</td>
<td>0.59</td>
<td>0.44</td>
<td></td>
<td></td>
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<tr>
<td>my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I was given real opportunity to improve my skills through</td>
<td>F3</td>
<td>1.01(.03)</td>
<td>1.22(.10)</td>
<td>0.73</td>
<td>0.64</td>
<td></td>
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<td>education and training programmes.</td>
<td></td>
<td></td>
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<tr>
<td>For the most part, my job met my expectations.</td>
<td>F4</td>
<td>1.13(.03)</td>
<td>1.35(.09)</td>
<td>0.85</td>
<td>0.75</td>
<td></td>
<td></td>
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<tr>
<td>My manager handled performance reviews fairly and effectively.</td>
<td>L1</td>
<td>1.00(-)</td>
<td>1.00(-)</td>
<td>0.90</td>
<td>0.85</td>
<td></td>
<td></td>
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<tr>
<td>My manager supported new ideas and new ways of doing things.</td>
<td>L2</td>
<td>1.03(.01)</td>
<td>1.02(.03)</td>
<td>0.92</td>
<td>0.87</td>
<td></td>
<td></td>
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<tr>
<td>My manager understood what motivated me in my job.</td>
<td>L3</td>
<td>1.06(.01)</td>
<td>1.05(.03)</td>
<td>0.92</td>
<td>0.89</td>
<td></td>
<td></td>
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<tr>
<td>My manager treated employees with fairness and respect.</td>
<td>L4</td>
<td>1.10(.01)</td>
<td>1.08(.03)</td>
<td>0.93</td>
<td>0.89</td>
<td></td>
<td></td>
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<tr>
<td>There was effective communication with my previous supervisor.</td>
<td>L5</td>
<td>1.08(.02)</td>
<td>.98(.03)</td>
<td>0.91</td>
<td>0.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I rarely felt emotionally drained from my work.</td>
<td>S1</td>
<td>1.00(-)</td>
<td>1.00(-)</td>
<td>0.54</td>
<td>0.48</td>
<td></td>
<td></td>
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<tr>
<td>Options were available to help me balance my work and personal</td>
<td>S2</td>
<td></td>
<td></td>
<td>1.43(.07)</td>
<td>1.75(.12)</td>
<td>0.88</td>
<td>0.90</td>
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<td>responsibilities.</td>
<td></td>
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<tr>
<td>I was generally able to balance job requirements and personal/family</td>
<td>S3</td>
<td></td>
<td></td>
<td>1.29(.06)</td>
<td>1.31(.10)</td>
<td>0.80</td>
<td>0.72</td>
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<tr>
<td>life.</td>
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</table>
Exit survey data. First, we examined the relative contributions of gender and generation to influencing employees ($N = 1871$) towards Fit, Sacrifice, or Links in external job mobility. Fit of the model was good: $\chi^2(69) = 364.346$, $RMSEA = .05$, $CFI = .98$, $TLI = .97$, $SRMR = .04$. As shown in Figure 2, there was a significant path from Gender to Links ($-.05$) and to Sacrifice ($-.10$). There was a significant path from Generation to Links ($-.05$) and a trend toward a path from Generation to Fit ($-.05$; $p = .07$).

Internal transfer data. Next, we examined the relative contributions of these antecedents towards Fit, Sacrifice, or Links in internal job mobility ($N = 915$; see Figure 3). Fit of the model was good: $\chi^2(69) = 240.19$, $RMSEA = .05$, $CFI = .97$, $TLI = .96$, $SRMR = .04$. As shown in Figure 3, there was a significant path from Generation to Fit (.10). There was a path from Gender to Sacrifice that was marginally significant ($-.06$; $p = .09$). These relationships were explored in more depth in multi-group analyses below.

Figure 2. Structural model of individual antecedents predicting reasons for leaving an organisation. Significant paths are indicated with a * for $p < .05$.  

Figure 3. Structural model of individual antecedents predicting reasons for internal mobility. Significant paths are indicated with a * for $p < .05$. 
Supplemental analysis: Generational and gender differences for internal mobility

A multi-group CFA was conducted to examine how Generation is related to reasons for internal mobility. To establish strong measurement invariance of our three-factor model of Job Embeddedness, we assessed models for configural variance, metric invariance, and scalar invariance. First, CFA’s were conducted separately for each age group: Generation Y ($\chi^2 (51) = 104.54$, $CFI = .96$, $TLI = .94$, $RMSEA = .06$), Generation X ($\chi^2 (51) = 95.75$, $CFI = .98$, $TLI = .97$, $RMSEA = .05$), and Baby Boomers ($\chi^2 (51) = 84.97$, $CFI = .96$, $TLI = .94$, $RMSEA = .06$). Second, the model was tested in all groups allowing all parameters to be free, ($\chi^2 (153) = 286.17$, $CFI = .97$, $TLI = .96$, $RMSEA = .05$). Next, we tested for metric invariance, holding factor loadings equal. The metric invariance model fit well ($\chi^2 (171) = 302.26$, $CFI = .97$, $TLI = .96$, $RMSEA = .05$) and did not result in a significant decrease in fit relative to the configural model ($\Delta \chi^2 (18) = 12.25, p > .83$). Finally, we assessed a model that indicated scalar invariance with good fit ($\chi^2 (189) = 324.96$, $CFI = .96$, $TLI = .96$, $RMSEA = .05$) and no significant decrease in fit relative to the metric invariance model ($\Delta \chi^2 (18) = 24.57, p > .14$). The presence of “strong invariance” allowed us to test group differences in factors means for Fit, Links, and Sacrifice.

Generation Y had a significantly lower mean factor score for Fit compared to Generation X ($\Delta M = -.11; p = .05$) and especially compared to Baby Boomers ($\Delta M = -.28; p = .01$). These differences indicate that Generation Y was significantly more likely than the other two generations to transfer for reasons of fit in support of Hypothesis 3, whereas Links and Sacrifice reasons are equally likely to be a source of transfer across generations. Thus, we find partial support for hypothesis 3.

We also examined how Gender is related to reasons for internal mobility. First, CFA’s were conducted separately for each gender group: Male ($\chi^2 (51) = 64.50$, $CFI = .97$, $TLI = .96$, $RMSEA = .04$) and Female ($\chi^2 (51) = 167.96$, $CFI = .97$, $TLI = .96$, $RMSEA = .06$). Second, the model was tested for configural invariance, ($\chi^2 (132) = 217.26$, $CFI = .97$, $TLI = .96$, $RMSEA = .05$). Next, we tested for metric invariance, which fit well ($\chi^2 (111) = 227.28$, $CFI = .97$, $TLI = .96$, $RMSEA = .05$) and did not result in a significant decrease in fit relative to the configural model ($\Delta \chi^2 (9) = 8.86, p > .45$). Finally, we assessed a model that indicated scalar invariance with good fit ($\chi^2 (120) = 237.20$, $CFI = .97$, $TLI = .96$, $RMSEA = .05$) and no significant decrease in fit relative to the metric invariance model ($\Delta \chi^2 (9) = 11.08, p > .27$). The presence of “strong invariance” allowed us to test group differences in factor means for Fit, Links, and Sacrifice.

Females had a marginally significantly lower mean factor score for sacrifice compared to Males ($\Delta M = -.11; p = .08$), indicating that women are more likely than men to transfer within an organisation for reasons of sacrifice, whereas Fit and Links reasons are equally likely to be a source of transfer across men and women. Thus, our findings provide some support for Hypothesis 2a but no support for Hypothesis 2b.

DISCUSSION

The primary aim of this study was to identify whether job embeddedness theory could explain the reasons for employees’ internal mobility within an organisation. Secondly, the study explored the role of individual demographics as antecedents on an employee’s mobility decision. A confirmatory factor analysis revealed strong support for job embeddedness’ application to internal mobility to address the first aim. Specifically, the responses to an employee survey on reasons for internal transfer were robustly explained by the three facets of job embeddedness (Caleb & Relojio-Howell, 2019; Mitchell et al., 2001). Thus, our findings indicate that the job embeddedness theory captures reasons for internal mobility in the same way it captures reasons for external mobility.

To address the second aim, we used a structural equation model to examine the contributions of the individual antecedents to predicting reasons for internal mobility. We examined the role of gender and generation on outcomes for internal mobility. We found that gender and generation significantly impacted employee reasons for internal mobility. Specifically, generation significantly predicted internal mobility. A multi-group model of generation revealed that fit, links, and sacrifice reasons are a source of internal mobility for all three generations. However, Generation Y was significantly more likely to transfer internally for Fit reasons than Generation X and Baby Boomers. Additional analyses of gender revealed that women were significantly more likely to transfer internally for sacrifice than men.

Limitations and future directions
Though our study provides a number of important theoretical and practical implications, future research might address some of the limitations of our research. For example, this study is limited in that our data were cross-sectional, and thus, we are unable to draw causal inferences from our findings. In addition, the study was limited in that it used self-report measures of fit, links, and sacrifice and was limited in the number of items used to measure each. However, both generation and gender are individual difference constructs measured by objective data (i.e., are not psychological constructs measured by self-report), and thus our study design should alleviate some concerns regarding common method variance. Still, future research might measure embeddedness and turnover longitudinally, focusing on how links, fit, and sacrifice differentially impact employees’ decisions to stay in their positions or organisations or leave altogether.

CONCLUSIONS

Best class organisations can offer internal mobility for employees upward of 50% (DDI Development International, 2015). We found that employees move within organisations due to fit, links and sacrifice, but generation and gender play an important part in understanding what may be driving these reasons. Our findings indicate that job embeddedness predicts external and internal mobility decisions similarly. Organisations may consider offering additional opportunities for an internal transfer to employees likely to turn over for reasons related to job embeddedness. Moreover, organisations should consider gender- and generation-related reasons for internal mobility and consider the needs of different employees when designing job embeddedness interventions. Understanding how demographic traits influence movement can ensure the health of an organisation, maximise job embeddedness, and ensure precursors to potential turnover is not being overlooked.

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REFERENCES


Blue hair and the blues: Dying your hair unnatural colours is associated with depression

Edward Dutton1 & Emil Kirkegaard2
1Ashiro University (Poland)
2Ulster Institute for Social Research (United Kingdom)

Correspondence: ecdutton@hotmail.com

A number of lines of evidence, such as studies of religious converts and members of conspicuous subcultures, have found a relationship between holding and expressing a strong counter-cultural identity and mental instability. Here we test whether dying your hair an unnatural colour – something which conspicuously expresses non-conformity – is related to mental instability, using a large dataset of online daters (OKCupid dataset, about n=14k used in this study). We find the expected pattern, which was moderate in size (β = -0.33 to -0.23, depending on controls). This pattern persisted even when controls for age, race, sex, sexual orientation, body type, intelligence, polyamory, vegetarianism, and political beliefs were included.

Keywords: culture; identity; mental instability; political beliefs; religious converts
A number of studies have explored the relationship between pronounced expressions of identity or non-conformity and mental instability. It has been found that extreme and pronounced religiosity is associated with periods of depression and anxiety, as it appears to act to alleviate these symptoms by providing the sufferer with a clear structure and sense of identity (Hills et al., 2004; Koenig, 2012). Borderline Personality Disorder is underpinned by intense anxiety and is often marked by extreme expressions of strong identity, though unstable and dramatically changing (see Fox, 2020). Related to this, it has been found that “Geek Culture”, a clear counter-culture marked by unconventional appearance, is associated with borderline personality, specifically with narcissism, and also with depression (McCain et al., 2015). Many other subcultures involving a conspicuous identity, as expressed in unusual and individualistic appearance, are also associated with suffering from depression (e.g. O’Connor & Portzsky, 2015). One means of expressing a strong and counter-cultural identity is by dying your hair an unnatural colour, especially green, blue, red, or purple. As such, we would predict that this would be associated with mental instability. The purpose of the present study was to examine whether such a relationship exists.

METHODS

We used archival data from the OKCupid dataset (Kirkegaard & Bjerrekaer, 2016). This is a public dataset of about 68,000 dating site profiles scraped (downloaded with a script) in 2014-2015. The data are very rich, spanning 2,620 variables. Users on the website created and sometimes filled out over 1000 questions to be better matched with other users (the mean number was 568). Each question had between 2 and 4 answer options.

There was essentially no quality control of the questions, except that a small fraction of the questions were initially made by site staff. Thus, the questions are very diverse and quite different from the questions normally asked by academic psychologists. This has both advantages and disadvantages. Among the advantages is that they cover topics that academics would not necessarily think to explore. Given that the website’s purpose is dating, there is an abundance of questions of relevance to this issue, at least as perceived by the users asking them. The main disadvantage is that the results may be hard to compare to other studies using standard scales since the questions used here are essentially unique and have not been asked in any academic study. Since users were filling out questions at their will and leisure, many questions have missing data. This is because the users did not fill out so many questions to reach that question in the default queue or because the user specifically skipped that question. Users may skip items for different reasons, perhaps because they perceived them as ambiguous, irrelevant to dating purposes, may force the user to lie to avoid a negative self-presentation or some other reason.

In terms of sampling representativeness, the mean age is 31.7 with a standard deviation (SD) of 7.8 (range 18-100), 60.6% of users were male, 39.1% female, and 0.3% “Other”. In terms of country, 66.3% were from the United States, 12.7% United Kingdom, 2.9% from Canada, 2.5% from Australia, 1.5% from Germany, 1.4% from the Netherlands, 1.3% from Denmark, and the remaining countries less than 1%. 87% were from the Anglophone world, and 94% were from the Western world. The average age for the United States is about 37, and considering the dataset does not have anyone below 18 (per self-report), the dataset is substantially younger than the general population, though older than typical student samples (Henrich et al., 2010).

Since users fill out these questions, and the answers are mostly visible to other users, one might wonder whether the self-presentation biases are so strong as to make the data useless for analysis. It should be noted here, though, that the usernames were pseudonyms and not generally traceable to a real person. A number of prior studies have thus looked at well-known findings using the dataset and found that the usual findings can be confirmed and with fairly typical effect sizes. This holds for the association between intelligence (measured using a set of 14 items) and political participation (Kirkegaard & Bjerrekaer, 2016), with self-reported criminal and antisocial behaviour (Kirkegaard, 2018) and with (lack of) religious beliefs (Kirkegaard & Lasker, 2020). Consequently, these data seem normal in terms of their patterns and are suitable for novel analyses.

RESULTS

We searched the question bank for modifiable self-presentation and other mental health indicators, such as non-traditional dating style and vegetarianism, as these have previously been shown to correlate with poor mental health in Western samples (e.g. Baines et al., 2007). For mental health, we searched for items that indicated mental health issues using search terms such as “mental”, “illness”, “depress”, “therapy”, and “disorder”. We furthermore included a question about self-described political ideology, another known
correlate of mental health (left-wing views relating to worse mental health) (Kirkegaard, 2020; Bernadi, 2020). Table 1 gives the summaries of the included questions.

<table>
<thead>
<tr>
<th>Item</th>
<th>Text</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
<th>N</th>
<th>Indicator of</th>
</tr>
</thead>
<tbody>
<tr>
<td>q50</td>
<td>Have you ever seen a therapist?</td>
<td>Yes (59.8%)</td>
<td>No (40.2%)</td>
<td></td>
<td></td>
<td>9507</td>
<td>Mental health</td>
</tr>
<tr>
<td>q1552</td>
<td>Do you get depressed much?</td>
<td>Almost never, I'm happy! (32.7%)</td>
<td>Sometimes, when it's a bad day (63.2%)</td>
<td>Yeah, despair is my life (4.0%)</td>
<td></td>
<td>9958</td>
<td>Mental health</td>
</tr>
<tr>
<td>q6021</td>
<td>How would you describe your emotional diversity?</td>
<td>I get extremely happy but rarely depressed (32.7%)</td>
<td>I get extremely depressed and I'm rarely happy (4.6%)</td>
<td>I don't feel much of either (16.7%)</td>
<td>I feel both often (45.9%)</td>
<td>4367</td>
<td>Mental health</td>
</tr>
<tr>
<td>q4018</td>
<td>Are you happy with your life?</td>
<td>Yes (92.5%)</td>
<td>No (7.5%)</td>
<td></td>
<td></td>
<td>53625</td>
<td>Mental health</td>
</tr>
<tr>
<td>q1287</td>
<td>Have you experienced mental illness?</td>
<td>Yes - severely (5.9%)</td>
<td>Yes - low grade (21.4%)</td>
<td>No (58.5%)</td>
<td>I'm not sure (14.2%)</td>
<td>17945</td>
<td>Mental health</td>
</tr>
<tr>
<td>q48278</td>
<td>Would you consider dating someone who is already involved in an open or polyamorous relationship?</td>
<td>Yes. (42.0%)</td>
<td>No. (58.0%)</td>
<td></td>
<td></td>
<td>15242</td>
<td>Polyamory</td>
</tr>
<tr>
<td>q33107</td>
<td>Would you consider being part of a committed polyamorous relationship (i.e., three or more people but no sex outside the group)?</td>
<td>Yes, I like that type of polygamy. (6.2%)</td>
<td>I could be convinced by the right people (41.5%)</td>
<td>I am committed to total monogamy (48.3%)</td>
<td>I have open relationships only (4.1%)</td>
<td>12788</td>
<td>Polyamory</td>
</tr>
<tr>
<td>q37772</td>
<td>If you had to choose one for the rest of your life, which would you pick?</td>
<td>Monogamy (75.2%)</td>
<td>An open relationship (12.6%)</td>
<td>Polyamory (9.4%)</td>
<td>Playing the field (2.8%)</td>
<td>12646</td>
<td>Polyamory</td>
</tr>
</tbody>
</table>
Furthermore, we included as covariates some demographic variables given in the profiles themselves. These include sex, sexual orientation, polyamory (multiple simultaneous love interests), age, and race. There are well-known associations for most of these. Polyamory is a relative newcomer. There are informal reports of high rates of mental illness for this group (Mahler, 2015), though one very small existing study found mental health to be superior to the monogamous control group (Bali, 2020). The five mental health questions had a lot of missing data, and individually, they were not strong indicators. To improve our outcome variable, we factor analysed the five variables using item response theory analysis, as implemented in the mirt package for R (Chalmers et al., 2020). Three items were modelled as nominal variables and two as binary (using the logistic function). The results showed a general factor as expected, which accounted for 37% of the variance. Factors loadings were: seen therapist (.48), much depression (.88), emotional diversity (.51), happy with life (.63), and experienced mental illness (.43). We saved the scores from this analysis and standardised them. This score is intended to measure the general factor of psychopathology, called the P factor (Caspi et al., 2014). For the three polyamory items, we proceeded in the same way. The general factor was not surprisingly stronger here, 82%, and the scores were likewise saved and standardised. Finally, we included a measure of intelligence based on 14 items (not given above, see Kirkegaard & Laker, 2020, for the questions). Intelligence has been consistently reported to be a small to moderate (around r = .20) correlate of mental health (Caspi et al., 2014; Martel et al., 2017) and this is also true for the brain volume, a conceptually related variable (Durham et al., 2021).

In terms of reliability, our measures were mediocre. The estimated empirical reliability scores for the main analytic sample were: .64 (mental health), .64 (intelligence), and .67 (polyamorousness). The main analytical sample consists of every subject who answered at least 2 of the five mental health items. The reliabilities were computed using the `empirical_rxx()` function from the mirt package.

Our main analysis concerns the prediction of this mental health variable coded such that higher values indicate greater mental health, and lower values indicate mental illness—our main list of models used ordinary least squares (OLS) linear models. Table 2 shows our modelling results for our main data subset (at least two mental health items answered), while Figure 1 provides a visual summary.

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Count</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>q513</td>
<td>Have you ever dyed your hair a real crazy, unnatural colour?</td>
<td>Yes (41.0%)</td>
<td>No (59.0%)</td>
<td>18045</td>
<td>Self-presentation</td>
</tr>
<tr>
<td>q128</td>
<td>Do you have any tattoos?</td>
<td>I have 1 or more BIG tattoos (15.5%)</td>
<td>I have 1 or more LITTLE tattoos (20.7%)</td>
<td>I have no tattoos (63.8%)</td>
<td>40450</td>
</tr>
<tr>
<td>q179268</td>
<td>Are you either vegetarian or vegan?</td>
<td>Yes (8.7%)</td>
<td>No (91.3%)</td>
<td>54202</td>
<td>Covariate</td>
</tr>
<tr>
<td>q212813</td>
<td>Which best describes your political beliefs?</td>
<td>Liberal / Left-wing (44.4%)</td>
<td>Centrist (17.4%)</td>
<td>Conservative / Right-wing (6.9%)</td>
<td>Other (31.3%)</td>
</tr>
<tr>
<td>Predictor/Model</td>
<td>Simple</td>
<td>Add basic</td>
<td>Add race</td>
<td>Add body</td>
<td>Final</td>
</tr>
<tr>
<td>----------------</td>
<td>--------</td>
<td>-----------</td>
<td>----------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.10 (0.017***)</td>
<td>-1.09 (0.270***)</td>
<td>-1.21 (0.276***)</td>
<td>-1.19 (0.277***)</td>
<td>-1.43 (0.357***)</td>
</tr>
<tr>
<td>unnatural hair color = Yes</td>
<td>-0.33 (0.026***)</td>
<td>-0.27 (0.026***)</td>
<td>-0.26 (0.027***)</td>
<td>-0.25 (0.027***)</td>
<td>-0.23 (0.033***)</td>
</tr>
<tr>
<td>vegetarian = Yes</td>
<td>-0.31 (0.047***)</td>
<td>-0.19 (0.047***)</td>
<td>-0.17 (0.050***)</td>
<td>-0.23 (0.050***)</td>
<td>-0.19 (0.060**)</td>
</tr>
<tr>
<td>have tattoos = I have no tattoos</td>
<td>(0, base)</td>
<td>(0, base)</td>
<td>(0, base)</td>
<td>(0, base)</td>
<td>(0, base)</td>
</tr>
<tr>
<td>have tattoos = I have 1 or more LITTLE tattoos</td>
<td>-0.10 (0.031**)</td>
<td>-0.07 (0.032)</td>
<td>-0.08 (0.032)</td>
<td>-0.07 (0.032)</td>
<td>-0.05 (0.040)</td>
</tr>
<tr>
<td>have tattoos = I have 1 or more BIG tattoos</td>
<td>-0.07 (0.035)</td>
<td>-0.05 (0.035)</td>
<td>-0.05 (0.036)</td>
<td>-0.05 (0.036)</td>
<td>-0.01 (0.044)</td>
</tr>
<tr>
<td>Age</td>
<td>(nonlinear)</td>
<td>(nonlinear)</td>
<td>(nonlinear)</td>
<td>(nonlinear)</td>
<td>(nonlinear)</td>
</tr>
<tr>
<td>sexual orientation = Hetero male</td>
<td>(0, base)</td>
<td>(0, base)</td>
<td>(0, base)</td>
<td>(0, base)</td>
<td>(0, base)</td>
</tr>
<tr>
<td>sexual orientation = Bisexual male</td>
<td>-0.76 (0.085***)</td>
<td>-0.75 (0.088***)</td>
<td>-0.68 (0.088***)</td>
<td>-0.47 (0.102**)</td>
<td></td>
</tr>
<tr>
<td>sexual orientation = Gay male</td>
<td>-0.15 (0.058*)</td>
<td>-0.19 (0.058*)</td>
<td>-0.14 (0.058)</td>
<td>-0.12 (0.071)</td>
<td></td>
</tr>
<tr>
<td>sexual orientation = Gay female</td>
<td>-0.52 (0.104***)</td>
<td>-0.54 (0.108***)</td>
<td>-0.47 (0.109***)</td>
<td>-0.41 (0.133**)</td>
<td></td>
</tr>
<tr>
<td>sexual orientation = Bisexual female</td>
<td>-0.58 (0.058***)</td>
<td>-0.57 (0.060***)</td>
<td>-0.41 (0.062***)</td>
<td>-0.23 (0.075**)</td>
<td></td>
</tr>
<tr>
<td>sexual orientation = Hetero female</td>
<td>0.10 (0.030**)</td>
<td>0.09 (0.031*)</td>
<td>0.18 (0.036**)</td>
<td>0.17 (0.045***)</td>
<td></td>
</tr>
<tr>
<td>race = White</td>
<td>(0, base)</td>
<td>0.13 (0.042**)</td>
<td>0.11 (0.042*)</td>
<td>0.15 (0.051**)</td>
<td></td>
</tr>
<tr>
<td>race = Mixed</td>
<td>0.41 (0.066***)</td>
<td>0.34 (0.067***)</td>
<td>0.24 (0.085*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>race = Hispanic / Latin</td>
<td>0.46 (0.064***)</td>
<td>0.47 (0.064***)</td>
<td>0.52 (0.083***)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>race = Black</td>
<td>0.34 (0.067***)</td>
<td>0.27 (0.067***)</td>
<td>0.31 (0.082***)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>race = Other</td>
<td>0.09 (0.080)</td>
<td>0.08 (0.080)</td>
<td>0.11 (0.095)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>race = Indian</td>
<td>0.35 (0.137)</td>
<td>0.35 (0.139)</td>
<td>0.51 (0.163***)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>race = Middle Eastern</td>
<td>0.01 (0.215)</td>
<td>0.01 (0.214)</td>
<td>-0.14 (0.252)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>race = Native American</td>
<td>0.21 (0.250)</td>
<td>0.26 (0.250)</td>
<td>0.17 (0.350)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>race = Pacific Islander</td>
<td>0.35 (0.273)</td>
<td>0.35 (0.280)</td>
<td>0.43 (0.340)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>body type = Average</td>
<td>(0, base)</td>
<td>(0, base)</td>
<td>(0, base)</td>
<td>(0, base)</td>
<td>(0, base)</td>
</tr>
<tr>
<td>body type = A little extra</td>
<td>-0.23 (0.040***)</td>
<td>-0.26 (0.048***)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>body type = Athletic</td>
<td>0.47 (0.044***)</td>
<td>0.47 (0.055***)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>body type = Curvy</td>
<td>-0.15 (0.054*)</td>
<td>-0.18 (0.065*)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>body type = Fit</td>
<td>0.30 (0.040***)</td>
<td>0.32 (0.050***)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>body type = Full figured</td>
<td>-0.28 (0.062***)</td>
<td>-0.32 (0.075***)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>body type = Jacked</td>
<td>-0.06 (0.179)</td>
<td>-0.07 (0.212)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>body type = Overweight</td>
<td>-0.63 (0.056***)</td>
<td>-0.59 (0.067***)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>body type = Rather not say</td>
<td>-0.41 (0.243)</td>
<td>-0.34 (0.281)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
body type = Skinny  -0.36 (0.085***)
body type = Thin  -0.10 (0.053)  -0.12 (0.064)
body type = Used up  -0.66 (0.149***)  -0.52 (0.172**)
intelligence  0.05 (0.015**)
polyamory  -0.14 (0.016***)
political beliefs = Liberal / Left-wing (0, base)
political beliefs = Centrist  0.22 (0.042***)
political beliefs = Conservative / Right-wing  0.54 (0.066***)
political beliefs = Other  0.12 (0.036**)
R2 adj.  0.019  0.057  0.064  0.099  0.116
N  13905  13439  12753  12306  8710

* p < .01, ** = p < .005, *** = p < .001. Results based on the subset of data with answers to at least 2 of the 5 mental health items. Values in parentheses are analytic standard errors. For categorical predictors, set the most common factor level as the baseline. Age was modelled using a natural spline to account for any nonlinear effects.

Figure 1
Visual summary of model coefficients

NB: Error bars show 95% confidence intervals.

Results show many points of interest. First, in the simplest models that include only our key variables of self-presentation, we see that unnatural hair colour predicts mental illness with a moderately large effect size, $\beta = -0.33$, and there is also a notable effect size for vegetarianism, $\beta = -0.31$. This relationship may exist due to...
vegetarianism being an expression of a need for a strong identity or perhaps because a high level of anxiety extends to anxiety about harm to animals. Having tattoos is comparatively a much weaker signal, with effect sizes estimated around -0.10. Across the models, we add progressively more potential confounders, such as age, sex and sexual orientation, political ideology and so on. However, we see that despite the inclusion of so many controls, unnatural hair colour remains a fairly potent predictor of mental illness, with an effect size in the final model of $\beta = -0.23$. Vegetarianism also retains most of its validity, ending in the final model with $-0.19$. For the covariates, we see familiar findings, with negative effects for non-heterosexuals compared with the reference group of heterosexual females. Somewhat strangely, we find that heterosexual men are higher in mental illness in this sample, perhaps reflecting self-selection of men who resort to dating sites as opposed to finding dates in physical settings such as bars. For race, we see that most non-whites have better mental health, at least insofar as self-report is concerned (see Rushton, 1995). This is in line with much evidence on European-descended people’s relatively poor mental health in Western countries.

For body type, we see that deviation from the baseline category of “average” is associated with expected effects: better mental health for people who are relatively fit (e.g., athletic, $\beta = 0.47$), and worse for those who are unhealthy (e.g., full-figured, $\beta = -0.32$). Intelligence shows a weak positive effect ($\beta = 0.05$), in line with research on the general factor of psychopathology (Caspi et al., 2014), though weaker than expected. The non-traditional dating pattern of polyamory shows a moderate negative effect of $-0.14$, contrary to a very small study (Bali, 2020). Finally, political ideology shows negative effects of non-conservative views, especially left-wing/liberal ($\beta = -0.54$, opposite that of the conservative reference), also in line with recent work (Bernardi, 2020; Kirkegaard, 2020). Essentially all the covariates had some detectable effect given our large sample size (most $p$ values were $p < .001$).

One notable weakness of this study is that our outcome variable is not measured well. This would have the effect of weakening the patterns we see since all betas would be biased towards 0 (Hunter and Schmidt, 2015). Thus, it is a strength of the study that we see clear evidence of association despite the weakness of the measures. The results in Table 2 above are based on the subset of data ($n = 22.2k$) where subjects answered at least 2 of the five mental health items. If we desire higher quality measurement in the outcome measure, we can subset subjects with at least three items answered ($n = 10.8k$). How does this change the results? Per the above statistical considerations, the associations should become stronger across the board, and they do. For our primary interest in unnatural hair colour, the initial and final betas change to $-0.38$ and $-0.24$, from $-0.33$ and $-0.23$, respectively. Reversely, if we use the full dataset, i.e., including users who answered at least one mental health item, the betas become somewhat weaker: $-0.28$ and $-0.20$, respectively. In the same vein, the model $R^2$ becomes weaker as the quality of the outcome variable decreases: from 10.8% to 11.6% and ending with 12.8%, for models based on data with at least 1, 2, or 3 mental health items answered.

One problem with the models presented in Table 2 is that the causality we hypothesise is the reverse of that we model, i.e., we hypothesise that mental illness causes people to change their self-presentation, while our model uses self-presentation as a predictor of mental health. We used this specification since this allowed us to use simpler linear models instead of logistic regressions needed to model unnatural hair colour's binary outcome. A reviewer suggested that we also run the forward-causation models. We did this, and the results show that mental health is a consistent negative predictor of reporting having unnaturally coloured hair. The beta for mental health is fairly consistent models: $-0.16$ (self-presentation variables only), $-0.14$ (basic controls), $-0.13$ (race), $-0.13$ (body type), and $-0.12$ (final). Thus, reversing the models did not change our conclusions. Figure 2 shows the model predictions across models.

Finally, potentially, our mental health indicators have different relationships to unnatural hair colour. To examine this question, we ran a logistic regression for each separately (without controls). This can be seen in Table 3.
Table 3
Individual mental health indicators predicted by unnatural hair coloration.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Coefficient</th>
<th>R²</th>
<th>AUC</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>seen therapist</td>
<td>0.60</td>
<td>0.03</td>
<td>0.57</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>much depression</td>
<td>0.55</td>
<td>0.01</td>
<td>0.53</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>emotional diversity</td>
<td>0.40</td>
<td>0.02</td>
<td>0.56</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>happy with life</td>
<td>0.03</td>
<td>0.00</td>
<td>0.50</td>
<td>0.52</td>
</tr>
<tr>
<td>exp mental illness</td>
<td>1.05</td>
<td>0.04</td>
<td>0.59</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>mental health score</td>
<td>-0.17</td>
<td>0.02</td>
<td>0.57</td>
<td>&lt; .01</td>
</tr>
</tbody>
</table>

Results show that the composite score and 4 of the five indicators show a relationship with reporting having had an unnatural hair colour, though each is quite a week (AUCs all < .60, R²s below 5%). Only the life happiness indicator did not show this pattern. This suggests that it is primarily or exclusively variation in the psychopathological range of mental health-related to hair colouration, not variation in happiness among non-pathological persons. Additionally, we fit a model using each mental health indicator jointly in a model. This starkly reduced our sample size to 2,000 subjects. While each indicator retained its direction of effect, we lacked the power to detect their effects. Only the item about having experienced mental illness had p < .01. We do not put much weight on this analysis, as including different measures of the same latent construct in a regression model separately causes high multicollinearity and thus statistical imprecision.

**DISCUSSION**

It can be seen that even adjusting for multiple covariates, people who have at some point had, or still have, unnatural coloured hair score 0.20 to 0.30 of an SD higher than those who do not. This is congruous with other lines of evidence that indicate that those who have a pronounced, counter-cultural and conspicuously expressed identity are high in mental instability.

We would submit that the simplest explanation for this relationship can be garnered from the known relationship between borderline personality disorder and extreme, though changeable, expressions of identity. A large study found that the P factor, which we attempted to approximate here, seemed to perfectly correlate with a latent borderline personality disorder factor (Gluschkoff et al., 2021.). Those who score high in neuroticism are plagued by worry and doubt, including about themselves and even about who they are. Bing high in neuroticism strongly correlates with suffering from depression and anxiety (see Nettle, 2007). The world appears to them as a frightening place, beyond their control, meaning that even their sense of “self” can be unclear. In periods of extreme concern, they deal with this by creating – and expressing – a clear and strong identity (Fox, 2020). This ameliorates their negative feelings, at least for a period of time, meaning, as this has been found with religion, that their identity may even become less extreme and conspicuous as they enter a period of relatively mental stability (see Hills et al., 2004). Thus, unnatural coloured hair can be regarded as an expression of, and way of negotiating, high levels of neuroticism.

It might be argued that it has further benefits, potentially even in terms of fitness. It would be a conspicuous means of attracting people like oneself, with people tending to be attracted to sexual partners and even friends who are optimally genetically similar to themselves as means of indirectly elevating their fitness (Rushton, 2005; Salter, 2007). In this regard, for example, it has been found that a sociosexual orientation is weakly associated both with certain physical characteristics and with being attracted to these same physical characteristics of the opposite sex. Thus, it can be suggested that they permit people who are genetically similar or who follow the same sexual strategy to find each other (Steiner, 1980). In addition, such hair, to the extent that it evokes dysphoria or disgust, could be regarded as an honesty signal of genetic quality: a handicap, like a peacock’s tail, where one draws attention to have attractive one is by asserting that one is still attractive even with such handicap (see Miller, 2000). For a person high in neuroticism, for whom the world appears frightening and unpredictable, such hair might be a means of scaring or at least confusing potential threats, thus persuading them to “stay away.” In this sense, it can be compared to using bright colours or strikingly contrasting patterns displayed by poisonous insects or amphibians. These so-called “aposematic signals” have evolved as honesty indicators that the prey is toxic and dangerous and should be avoided (Poulton, 1890). In this sense, unnatural hair colour will be an attractive and even empowering option for those high in neuroticism. But these are highly speculative. We would submit that the need for a strong identity and structure for a person with identity difficulties due to neuroticism would be the most obvious explanation for the relationship we have found.
LIMITATIONS

The study had a number of limitations. First, our outcome variable was not measured well. In our robustness tests, we examined to which degree this affected our results. Generally speaking, higher random measurement in the outcome variable weakens the associations with all the predictors, though it does not bias their relative effect sizes. When we varied the quality of the outcome by sub-setting to subjects who filled out more relevant questions, we find that this improved the associations of interest, as would be expected. It would be preferable if a future study used stronger outcome data. We used the available data such as they are.

Second, our measure of unnatural hair colour was likewise suboptimal. It does not measure how unnatural the fissure was in general (green spikes more unusual than slightly unnatural red hair) or how long this hairstyle was kept. Presumably, persons who have such hairstyles for longer periods, especially in adulthood, are higher in their non-conformity than persons who merely had an unnatural hair colour once in their teenage years. This is also seen in the high rate of affirming this question, 41%. Future studies should ask more in-depth questions about hairstyles or rely on photographic data, e.g. scraped from Twitter.

Third, the data were gathered from dating profiles linked to the persons’ real names. Insofar as people fill out such questions with less honesty than in a typical anonymous psychology questionnaire, this may impact the results. However, prior research using the same dataset has not found such biases to be large (Kirkegaard, 2018).

Fourth, the present dataset used mostly data from Western countries, where presumably artificial, the unnatural colouration of hair is the most common. Indeed, natural hair colour variation is also the highest in this region of the world, probably related to the higher average individualism. This worldwide variation may induce differential associations between hairstyle non-conformity and mental illness. We could not investigate associations outside the Western world, so this should be investigated in future work.

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'Do not look in your job description, you won’t find them’ I tell the manager I’m coaching. They came to see me, like so many others, because they do not understand why they were hired for expert skills when they find themselves babysitting teams and managing, most of the time, behavioural issues: ego conflicts, poor information flow, forgetting to copy emails. It is these ‘behavioural skills’ that are almost never mentioned in the job description, and yet are key to a detailed understanding of the manager’s tasks, which are the subject of these three initials: KBI (key behavioural indicators), which are causing the business to tremble today. Studies even suggest that relationship quality, defined as a higher-order construct of cooperation, adaptation, and atmosphere, has a positive impact on service quality (Woo & Ennew, 2004). Managers need to clearly define relationship development strategies, service provision policies and develop homogeneous service provision. Towards this direction, it is essential that firms communicate the service and product quality standards to partners so that differences in service provision can be avoided (Caceres & Paparoidamis, 2007).

**Scaling the intangible**

We have realised, especially in times of pandemic, that a manager is not necessarily efficient because they know many things. This is what we criticise the ‘elites’ of the old days for being pure brains locked up in their famous ‘ivory tower’ without any idea of the realities on the ground. Today, we try to make leaders not only capable of developing the intellectual part of the neocortex brain (rote learning, general culture), but also capable of developing the emotional part of the limbic brain (i.e., learning through the heart) linked to the action of the body, part of the reptilian brain (i.e., behavioural science). Changes may force the need for reconsideration of most frequently used leadership theories in an effort to understand important boundary conditions and how leadership research must evolve to keep pace with a changing workforce (Anderson et al., 2017).

First of all, because every manager must ‘lead by example’. They must not only know and show that they know. They must do what they say and do what they say they believe in. It is therefore in their knowledge of the field that a leader is expected to interact with others, not in a pyramidal management style (i.e., ‘I know/you do’) but in a horizontal management style (i.e., ‘we do’), which aims to help the other person to become more competent by accepting to listen and to be benevolent. However, an elite that has already undergone many years of study, most of the time at the Grandes Ecoles, or even very competitive exams, is not behaviourally armed to deal with the management of human relations, which have a huge impact on workers’ productivity (Prince-George, 2021). Indeed, general culture does not mean business culture, and it is not the few ‘internships in immersion’ that could give a knowledge of how to be not only competitive on paper but also human to make a machine move forward, which supposes an aggregate of human forces to interact like a clockwork in the right and especially the true sense in connection with cultural codes that are often silent because implied. We then touch on these soft skills (and not ‘soft’ as soft skills are often translated) which are very difficult to quantify. Utilising negotiation enhances critical thinking about real-world, business decision-making scenarios (England & Nagel, 2021).
It has been known that KPIs (key performance indicators) set clear objectives for performance forecasts. Benchmarking KPIs with KPIs from similar equipment and plants is one method of identifying poor performing areas and estimating improvement potential. Actions for performance improvements can then be developed, prioritized and implemented based on the KPIs and the benchmarking results (Lindberg et al., 2015). KFIs (key financial indicators), which focus on forecasted expectations in terms of financial objectives. KBIs (key behavioural indicators) have the same ambition of behavioural scaling. That is to say, to succeed in rationalising the precise traits of a behavioural ethic that will make it possible to link to performance an intangible dimension linked to the human aspect of the company. It is important mention the work of Professor Ernie Ross at the University of Peace set up by the United Nations in Costa Rica, which created an entire program on the issue to show how this non-quantifiable dimension makes the difference in terms of competition when it comes to business performance (Intangience, n.d.).

The three behavioural levels

'After so many years of study, I finally have a position of responsibility and I find myself being paid to know how to listen!' confided the manager I was coaching, his eyes wide with surprise. Listening is indeed one of the fundamental KBIs as proposed by Kristensen & Jonsson (2018) who recommended behavioural cues for the supply chain. In this study, they define KBIs as specific complements to KPIs referring to company-specific behavioural reflecting the values of the entity's culture. The quantification is done on three behavioural levels:

1. an individual level where expected behaviours are more factual than conceptual in decision making with a better follow-up in the field;
2. a dyadic level, between two people, where the expected behaviours imply respect for both parties, taking into account the priorities and personality of each; and
3. a collective team level where the expected behaviours refer to punctuality during meetings, to the adequacy of processes according to what has been validated, to finding the right tone to solve a problem rather than to encourage escalation towards conflict.

It should be noted that these behavioural measures essentially concern communication skills within the company, and it is not surprising that research to quantify these indexes has been linked to the complexity of the supply chain actors. Indeed, it is a question of making actors work together who, most of the time, work in silos with different cultures and must find a common language to create together a unique product in order to be marketed (Relajo et al., 2015). In the turmoil of this COVID-19 pandemic, we realise that what seemed to be valid only for a chain of actors such as the supply chain, on the contrary, deeply echoes what we are now experiencing in business and that KBI's are not only an industrial matter. A greater share of firms report significant or severe disruptions to sales activity than to supply chains (Meyer et al., 2022).

Strengthening the humanitarian system of the company

We often hear the slogan 'putting a little humanity back into the heart of the company '. But we need to know how. KBIs are a measurable way to do this, if they aim to make life easier for the manager and the team by establishing rules of life that are the same for everyone. It is not a question of issuing a simple ethical charter from human resources imposed on the entire company by an external service provider, but rather of a reflection that implies a desire to define a behaviour linked to the very meaning of the company and its raison d'être. Despite global commitments to improving gender equality, the issue of women leaders in conflict and humanitarian health has been given little or no attention. The aim of this paper focuses on three domains: importance, barriers and opportunities for women leaders in conflict and humanitarian health (Patel et al., 2020).

Let's take the example of this list of KBIs that I drew up for a client as part of a request from the Harvard Affiliated Institute of Coaching, separating the behaviours internal to the company from those external. These behaviours were proposed following a survey within the company itself to gather trends from actors at all levels about this desire for behavioural scaling: These different KBIs, once listed (in the form of a Likert scale from 1 to 5, allowed each person to position themselves and thus obtain an overall average. Each actor (employees, managers, leaders, etc.) will therefore “score” from 1 (lowest score) to 5 (highest score) for each of the internal (I to IV) and external (A to D) KBIs. Of course, the approach will be subjective, but the challenge will be to improve the average over the months through collective action.

For example, among the best grades (between 3.68 and 4 on average) were the factors of internal communication (III, 1) 'the right tone according to the media'; internal (I, 1) and external (A, 1) meetings 'being prepared and mentally present'; and internal (IV, 1) and external (D, 1) posture 'managerial horizontality'. Lower scores were present for behavioural issues at the level of internal communication (III, 3) 'bypassing obstructive behaviours' or at the level of internal meetings (I, 3) 'interactivity and distribution of
speaking time'. These KBI's allow us to identify areas where training or coaching is needed to achieve greater behavioural agility. Methods such as those advocated by William Ury in the Harvard Program on Negotiation or the workshops of the 'liberating structure' collective to allow meetings to become real fields of investigation for collaboration and not the monopoly of the knower are effective responses to these shortcomings in what should have been emphasised at the time of taking up a position as learning that is as important as the theoretical knowledge of expertise. These KBI's can be modified according to the needs of the company and the evolution of the culture. They reflect the life of the company and its difficulties in adapting and do not, of course, imply 'disciplinary councils' if a mark is low, but rather support to continue to help each person 'grow in competence'.

The company's humanistic system will only be strengthened when it is accepted that, in addition to the system, there is a human factor whose basis is behavioural. Now, for the manager to be able to carry and support others, he or she must already know how to behave their KBI's, since they predict good future performance, are indicators of a compass that will allow them to better situate themselves in the professional matrix and to better draw the roadmap of their vision of the team.

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The relationship between positive emotions, meaning in life, and life satisfaction: A study in adult Greek-speaking population during the COVID-19 pandemic

Katerina Flora¹, Nikoleta Kolotourou² & Eleni Liourdi²
¹University of Western Macedonia (Greece)
²University of Athens (Greece)

Correspondence katerinaflora@hotmail.com

This study examines the relationship between positive emotions, life satisfaction, and the meaning of life in a Greek-speaking adult population during a pandemic. The aim is to capture the positive characteristics of individuals in a difficult time. The participants were 919 adults (75% women) and most (81%) under 25 years of age, mostly students. Participants completed the Differential Emotions Scale (Modified Differential Emotions Scale; Fredrickson, et al., 2003), Life Meaning Questionnaire (Meaning in Life Questionnaire; Steger et al., 2006), Satisfaction With Life Scale (SWLS; Diener et al. (1985). The results showed that negative emotions are significantly negatively correlated with positive emotions, the existence of meaning, and life satisfaction. Positive emotions are significantly positively correlated with the search for and existence of meaning in life and life satisfaction while the existence of meaning in life has a significant positive correlation with the search for meaning in life and life satisfaction. Gender differences were also important, as men have more positive emotions and more meaning. Older people have more positive emotions and are more satisfied with their lives. The higher the educational level, the greater the meaning of life is recognised. The results are discussed on the basis of the pandemic conditions and the differences observed in terms of demographics.

Keywords: life meaning; life satisfaction; pandemic; negative emotion; positive emotion
Psychology, as a discipline – in the first half of the 20th century, due to important historical, practical and economic factors – focused its interest on the evaluation and treatment of mental illness, faithfully following the medical model. Gradually, the orientation of psychology shifted from the diagnosis and treatment of mental illness and their harmful effects to the study of the positive characteristics of individuals and societies (Seligman & Csikszentmihalyi, 2000). Specifically, around the 1960s, theoretical approaches and practices were developed that addressed human well-being and emphasised human resources in response to psychological disorders, which became part of the human psychology movement, also known as the Third Wave. The shift of the research interest of psychology to the study of positive emotions and the introduction of questions about finding the meaning of life, the development of individuals, and the achievement of psychological well-being was the basis for the emergence of the new field of positive psychology (Seligman & Csikszentmihalyi, 2014). Seligman has been the originator and key representative of positive psychology, who as President of the American Psychological Association (APA) in 1998 organised and brought together researchers and mental health professionals to work on building the well-being movement, now withdrawn from the traditional direction of reducing the disease (Seligman, 2019).

Although the primary and most well-known definition of positive psychology focused on the study of well-being and happiness, later this discipline has inspired research on virtue, meaning in life, gratitude, positive emotions, resilience, positive relationships, positive youth development, among others. In its short history, then, positive psychology has inspired research in most subfields of psychology, and has penetrated beyond psychology into the neurosciences, health, psychiatry, theology, and the humanities (Kim et al., 2018; Seligman, 2019).

One of the most important theories in the field of positive psychology has been the Theory of Broadening and structure of positive emotions according to which positive emotions push people to seek new ways of thinking and acting while eliminating time-established and automated behaviours. The theory is that specific positive emotions, including joy, interest, satisfaction, pride, and love; although seemingly different, have the potential to broaden thinking and action repertoire, helping to build long-term personal resources (Fredrickson, 1998).

**Definitions**

The general experience of meaning in life is universal and is based on an assumption that one's life is important, has orientation, coherence, and a sense of belonging (Schnell, 2009). Some definitions of meaning in life have been developed in the international literature, which share some common features. Among them, a model has been identified that highlights three distinct dimensions of meaning in life, such as meaning, deeper purpose, and coherence in life (Heintzelman & King, 2014b; Martela & Steger, 2016). Regarding the research findings of King et al. (2006), there are several ways to experience life as meaningful. In particular, it has been suggested that can be experienced as important when their value significance is recognised beyond the triviality or transience of moments, when a particular purpose emerges and when there is cohesion that transcends 'chaos'. More specifically, the importance concerns a person's feeling that his life has value and importance, the purpose refers to the existence of goals and direction in life and coherence is related to predictability and routine, which gives meaning to the person's life (King et al., 2016). According to Steger et al. (2006) the meaning of life is divided into two basic dimensions, the existence of meaning in life and the search for meaning in life (Steger et al., 2006).

Equally important in the context of positive psychology are positive emotions, which according to Seligman (2004) are classified based on their relationship to the past, present, and future. Thus, optimism, hope and confidence describe positive emotions for the future, satisfaction, joy, and peace refer to the past, while physical pleasures such as pleasure, comfort, happiness, and excitement refer to the present (as reported in Kardas et al., 2019). According to Fredrickson's (2001) theory of broadening and constructing positive emotions, it has been argued that experiencing instantaneous positive emotions serves to build personal and long-term resources, such as physical, mental, and psychosocial. The experience of positive emotions, therefore, initiates processes towards individual development and social connection, while it can also contribute to the creation of future moments of joy and good prospects (Fredrickson, 2001; Fredrickson & Joiner, 2018).

Life satisfaction has been considered as a personal process of cognitive evaluation of the individual about their life as a whole based on specific criteria (Shin & Johnson, 1978; Diener, 2000; Diener et al., 1985). In fact, life satisfaction has been judged as a key component of subjective well-being and positive functioning among young people, along with positive and negative emotions (Kardas et al., 2019; Suldo et al., 2006). In particular, both satisfaction in different areas of life, such as job satisfaction, and universal judgements about
the level of life satisfaction combined with positive and negative personal emotional manifestations are part of experiencing subjective well-being (Diener et al., 1999).

**Purpose of positive psychology**

Positive psychology is the field that studies the way in which people are able to achieve their personal well-being in the face of the adversities of everyday life (Seligman & Csikszentmihalyi, 2000). With its emergence there has been a growing interest in scientifically studying both the meaning and purpose of life and their effects on the health and in various areas of individuals’ lives (Peterson, 2006). Its goals are to highlight and enhance the human strengths and virtues that make life worthwhile and enable people and communities to prosper (Froh, 2004). Positive psychology has brought about a change in the way we view the world, such as focusing on opportunities for growth instead of sinking into problems. In fact, in contrast to the prevailing psychological research that has preoccupied the various forms of mental illness, the new field of positive psychology is aimed at highlighting the sources of human well-being, focusing on happiness and not pathology. In addition, the creation of positive qualities / concepts has been important, such as resilience as a balancing factor in limiting discrete negative effects (Kim et al., 201; Sheldon & King, 2001).

**Connection of the study variables**

In a study by Cohn et al. (2009), it was found that people who experienced more positive emotions were more satisfied with their lives, as not only were they happier with themselves, but they could also create supportive resources to manage its challenges. of life (Cohn et al., 2009). In addition, a survey conducted in Greece during the economic crisis found a positive correlation between experiencing positive emotions and meaning in life, and a negative correlation with experiencing negative emotions, stress, depression, and consequences. of the economic crisis and the fear of impending life changes (Pezirktani et al., 2016). In fact, in the international literature, the existence of a more important correlation between experiencing positive emotions and life satisfaction has been recognised, compared to the absence of negative emotions (Kuppens et al., 2008).

In terms of having meaning in life, it seems to be a situation in which people feel connected to something higher than them (Peterson et al., 2005). In particular, international research on the existence and search for meaning in life has shown that the search for meaning in life in people who give meaning to life is positively associated with well-being, which is described as greater satisfaction with life, to a greater degree. happiness and lower rates of depression. In contrast, the absence of meaning in life seems to make the search for meaning difficult, making it a difficult process, as it requires a broader perspective on life (Park et al., 2010; Yek et al., 2017).

Still, lower levels of emotional distress have been associated with higher levels of life satisfaction and joy (Seo et al., 2018). High life satisfaction, finally, has been positively associated with the search for meaning, provided there is a high sense of mental resilience in individuals. Thus, the protective role of mental resilience in reducing the negative effects of the search for meaning in life becomes apparent (Lau et al., 2018).

**The field of positive psychology in the period of the COVID-19 pandemic**

The COVID-19 pandemic has been an unusual and unpredictable condition worldwide, leading to a series of dangerous, often uncontrollable and dynamic events. The world community has been confronted with feelings of fear, uncertainty and anxiety, having to deal with issues such as health, death, unemployment, financial insecurity and the wider economic crisis. At the same time, however, in the midst of the pandemic, more extreme forms of human response to the challenges of COVID-19 may occur and panic reactions, destructive thoughts and predictions, and irrational actions may develop. Thus, a series of studies have been conducted that have studied the role of positive psychology in promoting and preventing mental well-being during the pandemic. In fact, research in the field of positive psychology has taken on the role of exploring the ways in which people maintain and enhance their mental health (Waters et al., 2021).

An online study at the onset of the rising pandemic attempted to examine the relationship between variables of basic hope, meaning of life, life satisfaction, and beliefs about the order and positivity of the social world with the emotional and cognitive responses of individuals to the COVID-19 pandemic. It turned out, therefore, that the relationship of the above variables functions as a regulatory factor against stress and the development of dysfunctional thoughts and decision-making methods, in the context of an unpredictable threat (Trzebinski et al., 2020). In addition, a recent study by Israelashvili (2021) found that during a
pandemic, people who experience high levels of positive emotions also report a higher level of resilience, while people who experience high levels of negative emotions do not show high resilience. Still, life satisfaction in the pandemic period seemed to be significantly predicted by meaning in life and hope (Karataş et al., 2021).

In conclusion, the integration of the main components of positive psychology, such as meaning, self-compassion, courage, gratitude, positive emotions, interpersonal relationships, and the creation of high-quality connections, has been shown to help maintain mental health, reduce of psychological disorders and the enhancement of psychological resources and skills in the midst of the COVID-19 pandemic (Waters et al., 2021).

**Research hypotheses**

(a) Experiencing positive emotions, having meaning in life and life satisfaction will be positively related.

(b) Experiencing negative emotions, having meaning in life and life satisfaction will be negatively related.

(c) The existence of meaning in life will be negatively related to the search for meaning in life.

(d) Gender will differentiate the experience of negative and positive emotions of the participants.

(e) Age and level of education will differentiate the existence of meaning in the life of the participants and their satisfaction with life.

(f) Experiencing positive, the absence of negative emotions, the existence of meaning in life will predict life satisfaction.

**METHODOLOGY**

**Participants**

A total of 919 adults participated in this research, of which 74.7% (N = 687) were women and 24% (N = 221) were men. More specifically, 81.1% (N = 745) of the participants were between 18 and 25 years of age, 6.8% (N = 63) were between 26 and 35 years old, participants between 36 and 45 years were 5.3% (N = 49), while 6.2% (N = 57) were over 46 years old.

Regarding the educational level, most of the participants with a percentage of 71.4% (N = 654) were students of higher education institutions (universities), 10.7% (N = 98) of the participants were university graduates, 7.7% (N = 71) had completed primary and secondary education and 5.2% (N = 48) were students in post-secondary education institutes. Finally, 4.9% (N = 45) held a postgraduate or doctoral degree.

Regarding their place of residence, 76.8% of the total sample (N = 707) lived in a city with more than 10,000 inhabitants, 10.4% (N = 96) in a town and 12.1% (N = 111) lived in a village.

**Measures**

Initially, participants were asked to complete a questionnaire with their demographics, such as gender, age, place of residence and educational level.

The Differential Emotions Scale (Differential Emotions Scale-Modified; Fredrickson et al., 2003) was also given. The scale assesses the degree of emotion in adults. It is a five-point Likert scale, consisting of two factors: positive and negative emotions. The scale indicates the degree of experience of emotions in the last two weeks. The Cronbach was $\alpha = 0.894$ (MO = 39.46; TA = 9.1) for positive emotions and $\alpha = 0.774$ for negative emotions (MO = 18.11; TA = 5.54). All reliability indicators are acceptable.

In addition, the Life Meaning Questionnaire (Meaning in Life Questionnaire; Steger et al., 2006) was given. It is a seven-point Likert scale, consisting of 10 sentences, which are distinguished in the factor of presence and the search for meaning. The reliability indices of the individual scales were $\alpha = 0.836$ (MO = 23.61; TA = 6.27) for the existence of meaning and $\alpha = 0.835$ (MO = 25.25; TA = 6.43) for the search for meaning, proving that reliability is good.

Finally, the Satisfaction With Life Scale (SWLS; Diener et al., 1985; Pavot & Diener, 2008) was administered to measure life satisfaction. The scale consists of five questions, which are graded on a seven-point Likert scale and evaluate the overall life satisfaction in the present. The reliability index was found to be equal to $\alpha = 0.824$ (MO = 22.62 TA = 6.02), which indicates that the reliability of the scale is good.

**Data collection**
The questionnaires were delivered over a period of two months, from November to December 2020. The questionnaires were completed through the Google Forms. The participation of the individuals was voluntary and there was the assurance of the participants for the preservation of their anonymity.

**Statistical analysis**

Descriptive statistics were used for the descriptive analysis of the data, while preliminary checks were made for the statistical conditions of the parametric statistical controls. Then, using inductive statistics, an attempt was made to determine the relationships of the variables. The correlations of the variables were also checked using the Pearson r index and the differences from the t-test analyses of independent samples and the one-way analysis (one-way ANOVA) were sought, while for the predictive relationships the multiple regression analysis was used. SPSS 20 program was used for statistical analyses.

**RESULTS**

**Correlations**

From the pairwise correlations of the variables studied (Table 1), we observe that negative emotions are significantly negatively correlated with positive emotions, the presence of meaning in life and life satisfaction. In addition, the statistically significant positive relationship between positive emotions and the search for and presence of meaning, as well as with life satisfaction, emerged. The presence of meaning in life was found to have a significantly positive correlation with the search for meaning in life, but also a significantly strong positive relationship with life satisfaction.

Table 1
Correlation of variables

<table>
<thead>
<tr>
<th></th>
<th>Negative emotions (r)</th>
<th>Positive emotions (r)</th>
<th>Search for meaning of life (r)</th>
<th>Presence of meaning of life (r)</th>
<th>Life satisfaction (r)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative emotions</td>
<td>1</td>
<td>-1.155**</td>
<td>.064</td>
<td>-1.224**</td>
<td>-1.272**</td>
</tr>
<tr>
<td>Positive emotions</td>
<td></td>
<td>1</td>
<td>.133**</td>
<td>.417**</td>
<td>.519**</td>
</tr>
<tr>
<td>Search for meaning</td>
<td></td>
<td></td>
<td>1</td>
<td>.147**</td>
<td>.044</td>
</tr>
<tr>
<td>of life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of meaning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life satisfaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p < .001**

**Differences in gender, age, and educational level of the participants**

A t-test of independent samples was performed to investigate the differences in gender with the variables under study. The results showed significant differences between men and women in terms of positive emotions (t (890) = 2.453, p < 0.05). Men seemed to experience more positive emotions than women (M = 40.77 and M = 39.03). Regarding negative emotions, there were also significant differences between the two categories (t (324.05) = −2.241, p < 0.05). Men seemed to experience fewer negative emotions than women (M = 17.31 and M = 18.35). Finally, statistically significant differences between the two sexes were found regarding the presence of meaning in life (t (893) = 2.232; p < 0.05). Men seemed to recognize to a greater extent the presence of meaning in their lives in comparison to women (M = 24.46 and M = 23.37).

Table 2
Mean values and standard deviations between genders

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Positive emotions</td>
<td>40.77</td>
<td>9.61</td>
</tr>
<tr>
<td>Negative emotions</td>
<td>17.31</td>
<td>6.01</td>
</tr>
</tbody>
</table>
Presence of meaning of life  24.46  6.59  23.37  6.17  893 (2.232) .026  
Search for meaning of life     25.24  6.50  25.27  6.42  897 (-0.066) .947  
Life satisfaction       22.78  5.75  22.59  6.09  893 (0.405) .686  

The results of the analysis of variance showed statistically significant F values for negative emotions, life satisfaction, and the presence of meaning in life. Negative emotions appeared to vary significantly with the age of the participants \( F(3,896) = 3.166, p < 0.05 \). From comparisons of the variances in couples of the mean values made with the Bonferroni test, it was found that people aged 18–25 years \( M = 18.25, SD = 5.47 \) differ significantly from individuals over 46 years \( M = 15.93, SD = 5.21 \), who experience significantly fewer negative emotions. In addition, life satisfaction varied significantly with the age of the participants \( F(3,897) = 4.913, p < 0.05 \). From comparisons of the variances in couples of average values it was found that people aged 18–25 years \( M = 22.36, SD = 5.99 \) differ experience much less life satisfaction compared to individuals over 46 years \( M = 25.1, SD = 5.27 \).

### Table 3
Mean values and standard deviations between age groups

<table>
<thead>
<tr>
<th></th>
<th>18–25</th>
<th></th>
<th>26–35</th>
<th></th>
<th>36–45</th>
<th></th>
<th>Up to 46</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive emotions</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>39.12</td>
<td>9.15</td>
<td>41.97</td>
<td>7.87</td>
<td>41.51</td>
<td>10.20</td>
<td>39.58</td>
<td>8.17</td>
</tr>
<tr>
<td>Negative emotions</td>
<td>18.25</td>
<td>5.47</td>
<td>18.10</td>
<td>5.91</td>
<td>18.45</td>
<td>6.10</td>
<td>15.93</td>
<td>5.21</td>
</tr>
<tr>
<td>Presence of meaning of life</td>
<td>22.87</td>
<td>6.11</td>
<td>25.11</td>
<td>7.38</td>
<td>24.31</td>
<td>7.32</td>
<td>22.91</td>
<td>7.84</td>
</tr>
<tr>
<td>Search of meaning of life</td>
<td>25.49</td>
<td>6.13</td>
<td>25.11</td>
<td>7.38</td>
<td>24.31</td>
<td>7.32</td>
<td>22.91</td>
<td>7.84</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>22.36</td>
<td>5.99</td>
<td>22.51</td>
<td>6.50</td>
<td>24.35</td>
<td>5.99</td>
<td>25.10</td>
<td>5.27</td>
</tr>
</tbody>
</table>

### Table 4
Mean values and standard deviations between educational levels

<table>
<thead>
<tr>
<th></th>
<th>Primary/Secondary education</th>
<th>Post-secondary education</th>
<th>University student</th>
<th>University graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive emotions</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>38.500</td>
<td>10.63</td>
<td>40.10</td>
<td>10.33</td>
</tr>
<tr>
<td>Negative emotions</td>
<td>16.90</td>
<td>5.95</td>
<td>18.10</td>
<td>5.27</td>
</tr>
<tr>
<td>Presence of meaning of life</td>
<td>24.01</td>
<td>6.94</td>
<td>23.08</td>
<td>5.66</td>
</tr>
<tr>
<td>Search of meaning of life</td>
<td>24.53</td>
<td>6.02</td>
<td>52.90</td>
<td>6.80</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>21.94</td>
<td>7.10</td>
<td>21.11</td>
<td>6.21</td>
</tr>
</tbody>
</table>

**Hierarchical multiple regression**

The statistically significant predictor variables of the hierarchical multiple regression model were found to explain 39% of the total variance of the ‘life satisfaction’ variable. More specifically, Table 5 shows that the only variables that contribute to the prediction of life satisfaction are positive emotions \( (\beta = 0.241, t = 12.120, p < 0.05) \) \( (\beta = 0.364) \), the presence of meaning in life \( (\beta = 0.290, t = 9.813, p < 0.05) \) \( (\beta = 0.311) \), negative emotions \( (\beta = -0.172, t = -5.610, p < 0.05) \) \( (\beta = -0.158) \) and sex of participants \( (\beta = 0.763, t = 1.977, p < 0.05) \) \( (\beta = 0.054) \).
Table 5

Coefficients of the model in hierarchical multiple regression with life satisfaction as dependent variable

<table>
<thead>
<tr>
<th>Life satisfaction model</th>
<th>β</th>
<th>SE</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>19.603</td>
<td>.958</td>
<td>.073</td>
<td>20.452</td>
<td>.000</td>
</tr>
<tr>
<td>Man</td>
<td>.073</td>
<td>.485</td>
<td>.05</td>
<td>.150</td>
<td>.881</td>
</tr>
<tr>
<td>Education</td>
<td>.366</td>
<td>.165</td>
<td>.076</td>
<td>2.223</td>
<td>.026</td>
</tr>
<tr>
<td>Age</td>
<td>.892</td>
<td>.244</td>
<td>.125</td>
<td>3.664</td>
<td>.000</td>
</tr>
<tr>
<td>Stage 2</td>
<td>8.500</td>
<td>1.329</td>
<td>.763</td>
<td>6.395</td>
<td>.000</td>
</tr>
<tr>
<td>Man</td>
<td>.763</td>
<td>.386</td>
<td>.054</td>
<td>1.977</td>
<td>.048</td>
</tr>
<tr>
<td>Education</td>
<td>.180</td>
<td>.131</td>
<td>.037</td>
<td>1.374</td>
<td>.170</td>
</tr>
<tr>
<td>Age</td>
<td>.132</td>
<td>.202</td>
<td>.019</td>
<td>.652</td>
<td>.515</td>
</tr>
<tr>
<td>Positive emotions</td>
<td>.241</td>
<td>.020</td>
<td>.364</td>
<td>12.120</td>
<td>.000</td>
</tr>
<tr>
<td>Negative emotions</td>
<td>−.172</td>
<td>.031</td>
<td>−.158</td>
<td>−5.610</td>
<td>.000</td>
</tr>
<tr>
<td>Search for meaning of life</td>
<td>−.039</td>
<td>.026</td>
<td>−.041</td>
<td>−1.475</td>
<td>.141</td>
</tr>
<tr>
<td>Presence of meaning of life</td>
<td>.299</td>
<td>.030</td>
<td>.311</td>
<td>9.813</td>
<td>.000</td>
</tr>
</tbody>
</table>

Finally, it is worth mentioning that age contributes significantly to the prediction of life satisfaction in the first model, while this is not confirmed in the second. Thus, the effect of age on life satisfaction seems to be mediated mainly by the presence of meaning in life and secondarily by negative emotions.

DISCUSSION

The results of the present study highlight the importance of life satisfaction and other positive factors in the well-being of individuals. Similarly, to the existing literature (Bastian et al., 2014; Kuppens et al., 2008. Park et al., 2010), it was found that the experience of more negative emotions by an individual is followed by fewer positive emotions, by a lack of meaning in life, but also from a reduced sense of satisfaction from life. On the contrary, the connection of experiencing positive emotions with the personal search for meaning and with the performance of meaning in life, as well as with the sense of satisfaction from life, proved to be particularly important. In addition, there is an increased likelihood of developing a sense of life satisfaction among people who give meaning to their lives. While, contrary to the findings of the existing literature, it was found that people who seek meaning in their lives are more likely to give a specific meaning and purpose to their lives.

Also particularly noteworthy are the differences that arose based on the gender, age and educational level of the participants (Fujita et al., 1991). More specifically, it showed the superiority of positive emotions, the reduced expression of negative emotions and the performance of a higher meaning in life in men, compared to women. The social role of women in conjunction with gender stereotypes seems to place a particular burden on women, as shown once again.

In addition, there was an increase in life satisfaction and reduced levels of negative emotions in older age groups, such as those older than 46, compared to younger adults. Equally important was the increase in the performance of meaning in life, among the higher educational levels. In fact, it has been found that graduates of public higher education institutions and holders of postgraduate and doctoral degrees recognize greater meaning in their lives, compared to students in post-secondary education institutes (Pinquart, 2002; Reker, 2005sq Steger et al., 2009).

Finally, the results of the research supported our research hypothesis, regarding the possibility that experiencing positive emotions, the absence of negative emotions and meaning in life can predict life satisfaction (Cohn et al., 2009; Zapandiotou, 2013). At the same time, the finding, which highlighted the significant predictive ability of age on the sense of life satisfaction, was of particular interest, but only in the model that did not include quantitative variables. From the statistical analysis, it emerged that age could predict life satisfaction, mediated mainly by the meaning of life and secondarily the absence of negative emotions.
CONCLUSION

It seems that the person who experiences generally positive emotions is more likely to interpret a situation in his own positive way and at the same time experience a sense of satisfaction with life. This, perhaps, is attributed to the fact that positive emotions empower a person, according to the theory of Fredrickson (2001) and at the same time, according to Seligman (2002), give meaning and purpose to his life. Finally, according to the above findings, the same seems to be true in the absence of negative emotions.

The present research was carried out during the period of the COVID-19 pandemic highlights the importance of positive emotions and positive factors as protective factors in difficult conditions and as factors that give meaning and satisfaction to life. At the same time, the need to support people who appear more vulnerable, such as young people and women, and the fact that as long as the social conditions that burden specific groups of people (inequality, inequality, unemployment, and lack of support structures) remain unchanged, problems will persist.

REFERENCES


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I want to dispense a new term to conceptualise the poison wreaking so much havoc on community mental health. The word: neo-institutionalisation. Neo-institutionalisation must be stopped at all costs. Neo-institutionalisation is the hazardously complex systematic formula or medical value justifying a patient’s need for mental health treatment. As stated under the community mental health model, clinicians explain the need for a person’s treatment every day to enrol them into therapy or mental health service. This formula, or medical value, is inputted into some form for insurance reimbursement or into an application for government services. Neo-institutionalisation evolved and came into being from the clumsy rollout of deinstitutionalisation policies in the 1970s and 1980s (Larsen & Gornitzka, 1995). The moment deinstitutionalisation stalled, the moment the shadows of neo-institutionalisation passed over the mental health community, and it has been looming over our heads ever since. The crisis is only now realised because clinicians are finally asking: Why are not some people recovering? And why do some people keep falling out of the system? The status of community mental health treatment continues to lose ground (Ogwuche et al., 2020). The number of questions is rising around poor patient outcomes. At the root of it, the vision that change-makers had when community mental health came into being is tired, and the frame which is masking the issues within is breaking, if not already broken. The term community mental health evolved from the vacuum left in the wake of deinstitutionalisation. Nevertheless, like most vacuums, impurities and filth crept into the works, mucking up what could have been a new era for mental health. Instead, these impurities continue to stifle long-term progress.

Demystifying neo-institutionalisation: recommendations and pathways to regulation reform

I have been a victim of the mental health system's broken aspects. Since I began practicing as a social worker, I have been thinking about reform – how and to what end? When people's lives and their health are at stake, we need to not only reform but overhaul the system and create a new gold standard in mental health treatment. However, turning the old system on its head and supplanting it with a functioning replacement seems rather slippery, precarious, and possibly dangerous if something goes wrong. That does not even articulate the issues required to revolutionise the system to replace it, so I can only imagine the enormity of the task ahead. As Herring et al. (2020) asserts, most of the tools used for assessment or self-assessment of emotional health were designed in the mid-20th century using language and technology derived from pen and paper written texts. However, are they fit for purpose in an age of pervasive computing with increasingly rich audio visual media devices being in the hands of young people?

To make this shift a reality, demystifying neo-institutionalisation to the public needs to be the priority of the day. People already had mixed feelings about discharging or being released from long-term settings and the system, moving to a community mental health model depending on their beliefs about recovery. Based on research on previous system initiatives and current consensus around accepted recovery practices and principles, a set of system standards that are recovery focused are suggested to guide future system developments (William, 2000). The new term, community mental health, signalled seemingly more person-centred care in modern mental health treatment, but hidden and covert aspects persisted without pushback. The local community mental health commission must increase pathways to access services so that consumers can gain access to the many lines of care already provided by the systems of care in New York State and by all regulatory bodies with a vested interest in mental health treatment. Neo-institutionalisation is complex and insidious, and it must end. The plan I suggest is threefold. The first phase of operations targets the state psychiatric centres, based on a global assessment of outlying
communities and the express needs of the consumers being discharged. The second phase targets the overhaul of treatment silos and installations in the community that needs more integrated access for consumers. Without question, the resources already exist in the community, and this document proposes how to reconfigure existing structures that provide mental health treatment to serve patients. The success of the second phase depends on the elimination of freestanding treatment silos. Treatment programmes that discriminate and choose to do only subgroups or 'high functioning' patients openly will be given a mandate by the Office of Mental Health to broaden their scope of services or be subject to a loss of licensing and funding. An example of a program that only serves a small niche of 'qualified' patients includes outpatient settings that refuse to accept state-sponsored insurance for disabled and reliant patients on Medicaid and other service dollars. Conversely, treatment centres must offer services to all patients or face citation for restructuring. A possible source would mean a reconfiguration of clinics, group practices, and day treatment centres: more funding to commit to on-site projects and community outreach projects to extend community services further. This plan's third and final phase is an ongoing community mental health surveillance and hygiene study, which will continue throughout reintegration and the patient discharge to the community. Upon the last release of patients from extended care units, when all existing treatment plans up for review have expired, the final discharge from the locale's state psychiatric centre will have walked out of the gates of the hospital.

Under the assumption that the influx of thousands of newly discharged chronic patients will test the limits of the community's local emergency rooms and the community hospitals' abilities to provide services and will primarily increase the census of mental health treatment at health centres, surveillance and hygiene study will bridge the existing gaps in each community during the critical phase of mass-organised discharges from state psychiatric centres. The study will be monitored and fed into a state-wide planning commission for full community access and integrate mental health care. Next, a broader approach, including at the global level, can be implemented and used as a model for other state regulatory bodies interested in eliminating the dated care level and the deferred recovery of patients.

I am suggesting that we turn the system on its head without further delay. We first need to re-establish the consumer's voice in treatment. The system is still very much run by so-called experts and autocratic practitioners, who left behind the noble helping profession for commercial benefit. These 'clinician-crats' now dominate the system and make up the ruling or decision-making elite in community mental health and local government. The only exception to this dominating stakeholder is the peer professional and prosumers.

Unfortunately, to do business with these 'clinician-crats', the peer profession has been commodified and reduced to dollars and cents on the state budget plan. To truly reform the system, we need to restructure the system to match consumers' needs with programs and services genuinely reflective of the community and the values we want to invest in the new mental health structure. I am suggesting that this can only mean full access and integration of mental health care into the community. No gaps, no service delays, or deferral. No disparities and no new adjectives to describe the same treatment used for decades. Integration includes research and clinical trials at the community level to move the discourse further through on-site access to the latest modalities available.

Full access and integration is the freedom once realized by the first reformers in the mental health movement of the 1970s and 1980s. Access and integration translate into ramping up entry points into local community health networks, connecting mental health treatment to all goods and services targeting healing and health-related issues and total wellness. The rise of the modern health home and the fall of the silos gesture to the system's attempt to integrate care, but, like most new turns in treatment, the outcomes reflect the care management philosophy and regulations' clumsy practices.

To be concrete, rectify these awkward practices, and make full access and integration a reality, these entry points at the county level, which control access to specialised services, need to be reformed and revised. Under the auspices of the local DCMH, the county entry points use SPOA/SPOE (single point of access/entry), filled out by clinicians applying for services for their patients.

Revising SPOA (single point of access) and other issues with connecting to services and programmes

I have had the task several times of filling out an SPOA application. SPOA applications mostly collect compiled EHR records with a few short blurs filled out by the referring clinician. Well, to get right down to it, these applications are a shining example of clumsy 'clinician-crat' work that is mucking up access to patients that need it the most. I have not only had applications rejected for purely political reasons, but I have also sat at SPOA meetings and listened to the politics of mental play out in all its fury in a small room with clinicians with large, ego-inflated heads. All of them talk about patients and clinical work in less than
humane and very subclinical language if you catch my meaning. At these meetings, I acutely observed clinical input passed over for political reaching from different agencies involved, over-involved in some instances, and failing their patients.

I am talking specifically about referral packets that go to one agency instead of others. Patients that qualify for multiple programs and their fate bound up in the political leanings, and even apparent stigma of certain disorders over others, to decide which service they would be eligible for in the end, if any. At some of these SPOA meetings, sub-meetings were even called to correct, add ‘oversight’, and make forgotten cases that were failing more visible. I have sat at these meetings too, termed ‘support circles’ in my local county. At these support circles, patients would complain about their workers, and everyone would point fingers at the service provider failing them the most. This person was usually left in the precarious position of explaining himself, even if he has done no wrong, but was the scapegoat of terrible treatment and care coordination.

Most importantly, I want all this politics and regulation to end. I want to make referrals for needed services and have my patient's fate be a product of the necessary treatment, not what looks best on paper to justify a county service.

Programmes need to stay open and operate under the highest level of professional scrutiny, which means no longer deferring recovery and long-term independence goals for politics – the end of top-down forms of treatment in which patients access care based on their treatment success (Santos et al., 2020). Years ago, the level of care philosophy made sense, but does it still make sense today when installing choice and nuanced person-centred care into the framework?

We must pave the way to end long-term in-patient treatment and funnel consumers back into the community for the long-term on their roads to recovery. Treatment and services must genuinely be centred on the patient’s needs and not exist to engraft the guise of neo-institutionalisation, passing it off as a reform and a functioning mental health system. I have many colleagues in the mental health system. These colleagues are professionals, friends, prosumers, allies, and every shade of grey in between. With this said, I associate with people in every ‘camp’ – antipsychiatry, clinicians, prosumers, and people that straddle multiple silos within the mental health community. My stance is that each ‘camp’ has a little bit to offer everyone interested in learning about mental health, healing, and spreading awareness to people that misunderstand it altogether. We all can benefit from more education/psychoeducation. Regarding stigma, misinformation, and total lack of mental health awareness, I believe the impetus becomes more significant and needs more urgent to define some terms that remain loosely articulated indeed. This loose articulation, this slippery and poorly defined language surrounding mental health and mental illness, is where the mental health community’s issues come to creep into the picture. I have many colleagues in the mental health system; some of them I’ve never met face to face. These are advocates in other states, some of them, other countries. Most of the advocates I communicate with are like-minded. These are people who understand mental health to be a deep, layered, and complex discourse.

**Recasting forced treatment and medication over objection: Further recommendations for change**

Most of the advocates I communicate with share my beliefs and stance on the hot button topics: (1) AOT (assisted outpatient treatment aka forced treatment); (2) medication over objection and (3) the need to expand areas of inpatient psychiatric settings while limiting state-level ‘extended’ care units which seem to defer reintegration into the community.

I believe in community mental health, above all. While community mental health is a broad and generic term, it generally is defined by both deinstitutionalisation and providing access to treatment and support to people with a mental health diagnosis in their neighbourhoods. With this said, we need to continue to (de)institutionalise our large treatment centres – the psychiatric state-level hospital/warehouses – and slowly fund additional beds at the local level. Without further delay, closing ‘extended care’ units in state-level hospitals supplant them with community hospital beds and services. I also welcome open dialogue approaches to treatment. I am a peer specialist and understand the importance of having peers in treatment teams and clinical conversations. I do not believe that peers or people in antipsychiatry camps are dangerous like some people do. We all have something important to offer the exchange. I think voice hearers are also embarking on their inner-voyage to better health.

If well-managed and under the right supervision by their treatment teams, peers, and networks like the hearing voices communities, which provide support to people who wish to live their lives on less medication and welcome a broader ecosystem of voices into their life. To say hearing voices isn’t ‘normal’
to people who typically hear voices if left to their biological makeup without medication takes a big piece of the humanity for these people who are just that: human.

I am an overweight Jewish man from New York State with an active schizophrenia diagnosis in terms of my humanity. I have been committed to involuntary treatment numerous times for different stays at local and state psychiatric hospitals. Simultaneously, I believe that forced treatment for Violent and SPMI (violent and severe and persistently mentally ill) people is necessary and justifiable individual situations. I do not think this treatment is the gold standard for this population (whether violent or just SPMI). Instead, we need to always revise our practices, moving studies, and research forward to move into an era where forced treatment is obsolete.

As for Kendra and the day when the very ground floor of modern mental health treatment in New York trembled and collapsed on itself, we patients will never forget it. Kendra’s death marked a new beginning for many violent and severe, persistently mentally ill patients facing possible incarceration, legal issues, and jail sentencing. That moment I am speaking was when Andrew Goldstein pushed Kendra in front of a train in 1999. Well, Andrew’s violent act is now history. But we patients must never ignore the implications of his violence, which changed the face of mental health treatment forever in New York and started adopting forced treatment laws. Kendra’s death will not be in vain. The fate of so many violently mentally ill people is now changed. Now, there is hope and available treatment for this population. There is treatment instead of incarceration and re-entry into the criminal justice system. Her death signalled to the world that we need to radically shift our methods and approach to treating people who are violently and persistently mentally ill if we are to truly help people have a real chance at survival from their condition. This signal was the sonic boom that called upon legislative bodies, advocates, and allies of people with a diagnosis to realise our paradigm for the treatment of Violent and SPMI was not working.

I am not suggesting that forced treatment works perfectly. I have seen it first hand as an ACT (assertive community treatment) practitioner moved treatment under an AOT order for potentially violent and severe, and persistently mentally ill patients. I have seen forced treatment create hatred, anger, and self-shaming cognitive distortions above and beyond the original altered perception of clients without being enrolled in compulsory care and treatment. Indeed, the stigma that evolves from an AOT (assisted outpatient treatment) label under the county department of community mental health radar is demoralising. The branding is humiliating, infantilising, and demeaning for many connected to an AOT service.

Today, until the day we devise another approach to treating this mentally ill community, we need to push hard truly. We persist in our creativity, clinical prowess, and research to build a new paradigm to supplant this existing AOT structure to treat the Violent or SPMI people mandated to mental health treatment. However, I’m afraid I disagree with how this treatment paradigm is sold, packaged for consumption by organisations like SARDAA and The Treatment Advocacy Centre.

These organisations sell these treatment modalities to advocates and legislative bodies as client-centred. SARDAA packages these laws as in the ultimate interest of the patient with a diagnosis. However, packaging could not be more misrepresentative of what is happening in practice and what is happening in the lives of those mandated to AOT laws. People mandated to AOT lose a part of their independence, autonomy, and relative status as citizens equal in the law’s name. The law confines restrictions and places limitations on people’s movement and personal freedoms under the AOT regulations. Travel, medication administration, choice in treatment staff, and frequency of contact with mental health staff and treatment teams. These mental health treatment domains are prescribed, mapped out, and monitored closely by the county government. Thus, at any given time, when the patient violates the terms of the treatment team, he or she should be prepared to be taken to the hospital for forced treatment.

The real and more immediate problem exists in client-centred care for violent and SPMI people. Practitioners working with mandated clients believe in many documented cases that they can aggressively engage in client contact without any client input and regard for their patients’ personal beliefs and values. It is an unspoken trend with all too many workers charged with providing care of people with an AOT status. These psychiatrists, nurses, therapists, and mental health clinicians will go about treatment without regard for client-centred care and harbour an attitude that this is a punitive measure.

Despite the reality of this punitive approach, clinicians, take with AOT patients, TAC and SARDAA continue to whitewash the clinical picture for these patients and maintain AOT is not punishment. These organisations maintain these measures are to avoid further ineffective and inappropriate legal actions and sometimes criminal charges or jail time. Mental health treatment will never be the right fit for Violent or
SPMI people if the system understands this approach as a punishment for people with a diagnosis. Wilson et al. (2014) examines policies and practices regarding community risk management of people with special needs who have sexually offended. Vignettes are provided to illustrate how some clients and agencies have been affected, and suggestions are made to ensure best practices in risk management and public safety.

Mental health patients will never forget Kendra’s death. For everyone with a severe mental health diagnosis who has flirted with the need for AOT treatment. We all feel the threat and loss of freedom or potential for losing our right to choose our care and treatment for our diagnosis. The loss of Kendra was subsumed by people carrying a mental health diagnosis. We will never lose that scarlet letter that labels us and marks us as eligible under the law to lose our rights if our conditions worsen. After Kendra's death, our fate to make decisions for ourselves and care will ultimately be under the law's provision and maintenance until a new paradigm arrives. Thus, the real problem then becomes how these laws are, in turn, mobilised by hardliners' pushing (forced) treatment for everyone deemed 'untreatable' in a traditional mental health setting.

While some forced treatment orders (AOT in New York) may seemingly benefit patients in specific settings with limited options for mental health care and keep them out of the hospital for more extended periods. The greenlight for AOT, or Forced treatment advocates, say, 'Here is the proof we have that forced treatment works!' is a misnomer. The wrong approach to reforming the mental health system. The assumptions of a relational approach lead to ethical guidance across the full range in the intensity and types of influence which may be ethically justified or required in psychiatric treatment. These assumptions are: (1) influence is inherent in the clinical relationship; (2) the relevant factors are continuous and (3) all decisions are subjective. While the rights-approach emphasises defining competence and developing techniques to predict future patient dangerousness, the relational approach emphasises patient–clinician responsibilities in ethical relationships and understanding all factors which legitimately bear on the use of influence (Olsen, 2003).

Suppose there are limited treatment settings/options available in the community. In that case, the push should be to expand mental health treatment options and make them more accessible to people in need of treatment. We need to ask: why is this patient benefiting from the AOT mandate? We can offer community mental health treatment to supply this fundamental gap and need that goes un supplied without an AOT order.

In rural communities and extremely resource-deprived urban ghettos, advocates for forced treatment are pushing to tighten the noose around people’s necks with severe mental health issues and limit, restrict, and make people with SPMI into forced treatment when they ‘fail’ out of treatment (Relojo-Howell, 2021). As I stated before, the real problem is limited access to out-patient programmes and mobile treatment/crisis/respite, to name a few. These treatment areas should be prioritised to expand the choices of people who want treatment and cannot access it. We need to ask: why are people falling out of therapy? Instead, these hardliners are taking steps to ensure they are forced into a treatment setting that does not work for them.

Sure, access is not always the issue. Sometimes, people with severe mental health issues do not know they are 'sick'; I was one of them. I had no idea I was on the brink of collapsing when the first episode of psychosis emerged on my mental health landscape. Due to anosognosia, a trademark symptom of schizophrenia, lots of people share a problem I had years ago when I was first diagnosed. People pushing for forced treatment use this symptom as their rallying cry for expanding AOT and reforming the guidelines around forced treatment—making it easier for people to get handed a court order to take medication, be hospitalised, or be picked up and taken to the hospital when non-compliant with medication and therapy.

However, here is the issue with using this symptom as a license to expand and re-regulate Forced Treatment. I had worked with many people with severe mental health issues as their clinician when I served under an ACT Team (Assertive Community Treatment) here in New York. Some of these people had an active schizophrenia diagnosis. Some of our patient censuses were also mandated to treat under an AOT. However, for the people who did not know they were sick and under our care, was our ACT team no longer successful in controlling patients’ psychosis with an AOT order?

Some people experienced relief from their severe symptoms and slowly returned to a more ‘normal’ life, gradually stepping down from AOT to a less restrictive treatment milieu. Still, we had several patients who were medication resistant and experienced zero relief from their most severe symptoms, even with medication. Even with an Intramuscular Injection (IM) and other drugs, most of these people continued to have firmly fixed delusions and were actively psychotic.

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With these severe cases, the most significant benefit of the AOT order was access to our patients. We were always able to meet and monitor our AOT patients. Expansion of AOT is not the answer to the mental health crisis – it is a band aid and signal that we need to find the treatment that works for diverse subsections of the population requiring new treatment modalities and more research.

For the most severe, chronic, and ‘hopeless’ cases, the people for whom AOT was designed to monitor and watch over. Our team was just another way for the government to mark these patients and keep them visible to the county mental health dept. That is, the whereabouts and activity of people felt were dangerous (posing a risk of serious harm to themselves or others). The other non-issue is with people who need treatment and do not believe they are sick or need help. Like the situation I was in years ago, patients are not in treatment yet and do not think they even need treatment because they ‘not sick’. These are not the supposed most significant risk to the community in terms of safety, either. These people are more of a threat to themselves and at risk of being a victim of violence. So, why then push to expand AOT? Why are these people used repeatedly to justify expanding AOT more than anyone else? These are the stories from the Treatment Advocacy Centre (TAC) about how AOT ‘saved’ Joe Mental Patient from hurting someone and finally getting the help they needed.

Why are these the poster patients of AOT? Because the most severely ‘disordered’ people do not benefit from AOT. They may not benefit from any mental health treatment available. These are not the people seen on the TAC website or in the TAC stories. However, these are the people most at risk of hurting themselves or others. The bottom line is that we need to expand further the mental health system, not just one area or silo. We need to develop access, improve medications, and all avenues and intersections of treatment. Until then, be wary of any ‘camp’ saying they have the answer to the mental health crisis.

**CONCLUSION**

Are you tired of politics? So am I! Therefore, I decided to get away from politics and go to mental health. Big mistake! Politics are as alive and rife in mental health as the US Presidential Campaign of 2020. The mental health awareness campaigns of modernity (e.g., Mental Health Month), commonly associated with ‘friendly’ and person-centred staff in your local non-profit agency and government-sponsored program, is a giant step forward since the days at Willowbrook. In the 1970s, the state hospitals served people with mental health conditions long before it was deplorable.

I was not born then. I was not a patient at Willowbrook. The unit at Binghamton State Psychiatric Centre I lived in for six months is no longer in operation. That’s a good sign. Things are changing. But how much of what was going on still is for some people left in the psychiatric hold? Who is to blame for the system’s broken aspects, discovered, but left unresolved by those running it?

**REFERENCES**


'In a dark place we find ourselves, and a little more knowledge comes our way': The impact of depression, anxiety, and agency on identifying with fictional characters

Nathan Hook
Tampere University (Finland)

Correspondence: hook_nathan@hotmail.com

This experimental research investigated if depression and/or anxiety impacts the strength of identification with a fictional character, and if having greater agency over a character’s choices altered identification with it. Past research in these areas is extremely limited. A hypertext fiction story-game were used as an experimental stimulus, slightly modified to offer different amounts of agency for different participant groups. Over 100 participants took part, and ANOVA analysis was carried out. The novel results found good evidence that severe grades of both depression and anxiety reduce the level of the reader’s identification with a character and that higher agency increases identification. This has practical application as a potential future mental health diagnostic tool based on an everyday task and has the potential to inform literary creation and computer game design rhetoric.

Keywords: depression; anxiety; agency; PHQ-9; GAD-7; Star Wars; hypertext; identification; identity
Recent research has explored the relationship between gaming to the common mental health challenges of depression and anxiety. Pine, et al. (2020)’s meta-analysis of 13 papers shows that ‘computer video games’ show promise for treating depression, anxiety and stress. Kowal et al. (2021) discuss the mounting evidence of the positive mental health benefits of gaming. Kandola, et al. (2021) found that boys with low physical activity who game regularly but no other boys or any girls are less likely to show signs of depression three years later, but the casual nature of this finding is unclear.

In many kinds of games as well as other media such as films and written word stories, a narrative is presented with characters for the readers to identify with. This process of identification modifies self-perception so that character attributes are seen by the reader as part of themselves (Klimmt et al., 2009). A strong sense of identification with a character increases enjoyment, cognitive elaboration, dramatic impact and the impact of the fiction of attitudes and beliefs. (Igartua, 2010). Hence, understand the mechanisms of identification is important to guide effective artistic creation. It may also provide insight that generalises to better understand other forms of identification, such as with groups or with authority figures. There is material on certain kinds of identification in early psychology such as Freud (2010, originally published 1923) and Anna Freud (1992, originally published 1936) and in the humanities but these lack testing or conceptualisation (Cohen, 2001) so there is an empirical research gap on the topic of identification with fictional characters.

Considering these two distinct topics of depression and anxiety and identification together in the context of gaming poses the question of the impact of depression and anxiety on the ability to identify with a fictional character. This is the main topic of investigation here.

Research suggests that depression can cause a wide range of cognitive impairments (Kaltenboeck et al., 2018) including attention, memory, and motivation. While not covered by previous research explicitly, we might there reasonably expect that depression will negatively impact on identification. Lukasik et al. (2019) discusses that anxiety impairs working memory but increases sensory sensitivity, so it is less clear what impact anxiety might have on identification.

A secondary research topic is the impact of the identification on the amount of agency the participants have over the character. Agency can be seen as the defining feature that separates interactive games from static fiction such as conventional written word stories. Shaw (2011)’s qualitative research found that agency over a character increases identification, but there is a lack of empirical evidence on the relationship between agency and identification. It may be that agency increases identification as Shaw suggests, or it may be that the additional cognitive load of making choices reduces identification.

Exploring both topics together in the same experiment has the benefit of yielding greater insight from the same research effort. Beyond this, exploring both topics together enables investigating not just the effect of depression, anxiety and agency on identification in isolation, but any interaction effects that may exist.

Experimental research by Hook (2019) used a hypertext fiction (HF) story game (Montfort, 2003) as stimulus and discovered that women, but not men, identify more strongly with characters of their own gender. Hook & Morys-Carter (2020) supported this finding and found no significant evidence that atheists or Christians identify more strongly with a character of their own religion. This precedent of using HF as stimulus in experiments is the basis of the experimental design discussed below.

METHODS

Participants

Participants were recruited by posting adverts on social media in Star wars, gaming, and role-playing social media areas. It ran online for around two weeks in July 2021. A total of 107 responses were recorded, and all are included in this analysis.

The majority (79%) of the participants identified as male, 12% as female, 3% as ‘other/non-binary’, and 7% preferred not to say. Most of them identify with Europe (59%) or North America (36%) with small numbers recording Asia (2%) or Africa (3%). Most (82%) were native English speakers. They were almost evenly split between those with no degree (31%), those with a science degree (30%), and those with an arts/humanities degree (31%), with a few having both science and arts/humanities degrees (8%).

A majority (61%) of the participants knew the wider Star Wars media, while almost a third (31%) only knew the main films. A majority (61%) had played more than ten interactive fiction games, and a majority (64%)

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had many years of experience with tabletop role-playing games. The participants then might be considered to have a broad fluency with games that involve identifying with a character.

**Materials**

The experimental stimulus was a short custom-written hypertext fiction (HF) story game, sometimes called 'choose your own adventure' games. In this format, the reader reads a page of text then selects one from a series of hyperlinks to decide what the protagonist chooses to do in the story. An original HF was written for this experiment to ensure the participants did not have any prior exposure to it; the researchers have additional creative writing qualifications.

This story was based on the *Star Wars* setting, which as well as the films and TV series has also been used previously by many computer games, board games, and multiple tabletop role play games (RPGs); the quote in the title of this paper comes from *Star Wars* media. The use of a fictional setting far from everyday life made it unlikely the participants would share any identities with the character, while the use of a famous fictional setting makes it still relatable. Using a popular setting also likely attracts more participants, increasing the sample size. The complete story included six binary choices for participants to make during the story about the protagonist's decisions.

Previous research (Hook, 2019) has found that the gender of the character can have a significant impact on identification. In this story the character was written without having their gender specified, with no references to their gender and a gender ambiguous science-fiction name.

**Design**

The experimental design was based on the method used by Hook (2019) and Hook & Morys-Carter (2020) and coded using the Twine software for creating HF.

The dependent variable was the participant’s identification with the character. Following the same design as Hook (2019) and Hook & Morys-Carter (2020)’s experiments, this was captured by two seven-point Likert-type items: ‘How strongly did you identify with [character name]?’ and ‘How strongly were you able to take on the role of [character name]?’ The responses were averaged to reduce the impact of the precise wording of the question.

The main independent variables were the level of depression and the level of anxiety of the participants. Depression was assessed using the well-established PHQ-9 questionnaire (Kroenke et al., 2001). This asks nine questions with a choice of four ordinal answers for each, which together are used to generate a total score between 0 and 27, which in turn produces an overall ordinal grade (none, mild, moderate, moderately severe, severe). Anxiety was assessed using the GAD-7 questionnaire (Swinson, 2006), which asks seven questions, and scores them in a similar way to produce an ordinal grade (normal, mild, moderate, severe).

Another independent variable was the level of agency the participants had over the story. To test this, the participants were assigned randomly and secretly by the software to one of two groups. For one group, participants were given the full six binary decisions to make when they played through the story. For the other group, they only had three decisions. For the other three decision points the participants were only shown a single hyperlink to continue, removing their agency over the character’s choice. Which three of the six decision points were affected was chosen randomly for each participant, and when a decision point was chosen which of the two options was shown and which was hidden was also randomly selected in each case. This was the only difference between the two groups.

**Procedure**

The story game was a series of webpages presented online with participants using their own devices in their everyday settings. This gave high ecological validity and enabled a diverse international mix of participants.

Data was collected by online form, and participants gave consent by completing the form and clicking the submit button. Potential participants could play through the story game and not take part by not completing or not submitting the form though it is unknown how many may have done this. An email address was given in case participants wished to withdraw later, and no one did this.

As well the two identification questions and the PHQ-9 and GAD-7 questions, participants were asked additional background questions including their gender, broad geographic identity, education level,
distractions while taking part, and Star Wars exposure. Names and other identifying data were not requested, so all data was anonymous. Data was stored with appropriate security, and ethical review and approval was arranged from the author’s university.

RESULTS

The primary analysis conducted was an independent ANOVA, with depression, anxiety and group as the independent variables and the average of the two identification questions as the dependent variable. All 107 participants were included, with none excluded.

The main effect of participant depression on identification was significant, $F(1, 102) = 2.73, p = 0.033$. Post hoc tests using Tukey found significant differences between the ‘severe’ and ‘None’ groups ($p = 0.033$) and approaching significant differences between the ‘severe’ group and the ‘moderate’ group ($p = 0.060$). Means are shown in Figure 1.

Figure 1
The Interaction of depression grade on identification with character

![Graph showing interaction of depression grade on identification with character]

The main effect of participant anxiety on identification was significant, $F(1, 103) = 3.26, p = 0.025$. Post hoc tests using Tukey found significant differences between the ‘severe’ group and both ‘mild’ group ($p = 0.014$) and ‘normal’ group ($p = 0.026$). Means are shown in Figure 2.
In relation to the second research topic of looking at the effect of agency on identification, there was a significant difference \( F(1, 105) = 4.80, p = 0.031 \) with higher agency producing higher levels of identification. Means are shown in Table 1.

### Table 1
The Interaction of agency on identification with character

<table>
<thead>
<tr>
<th></th>
<th>Low Agency</th>
<th>High Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean identification (SD)</td>
<td>( \bar{x} 3.85 (1.51) )</td>
<td>( \bar{x} 4.44 (1.27) )</td>
</tr>
<tr>
<td>N</td>
<td>42</td>
<td>65</td>
</tr>
</tbody>
</table>

### Exploratory analysis

ANOVA tests were rerun looking at the two participant groups separately.

For the high agency group, depression approached significance \( (p = 0.087) \) and was strongly significant for anxiety \( (p = 0.007) \). The minor shift in significance might be attributed merely to the reduced sample size. Means are presented in Table 2.

### Table 2
The Interaction of depression and agency on identification with character

<table>
<thead>
<tr>
<th></th>
<th>Low Agency</th>
<th>High Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>( \bar{x} 3.97 (1.51) )</td>
<td>( \bar{x} 4.75 (0.96) )</td>
</tr>
<tr>
<td>Mild</td>
<td>( \bar{x} 3.63 (1.35) )</td>
<td>( \bar{x} 4.33 (1.25) )</td>
</tr>
<tr>
<td>Moderate</td>
<td>( \bar{x} 4.44 (1.49) )</td>
<td>( \bar{x} 4.44 (1.31) )</td>
</tr>
<tr>
<td>Moderately severe</td>
<td>( \bar{x} 3.17 (2.02) )</td>
<td>( \bar{x} 4.00 (3.54) )</td>
</tr>
<tr>
<td>Severe</td>
<td>( \bar{x} 2.50 (2.12) )</td>
<td>( \bar{x} 2.67 (1.53) )</td>
</tr>
</tbody>
</table>
For the low agency group, depression was not significant ($p = 0.425$), and anxiety was also not significant ($p = 0.708$). Means are presented in Table 3.

Table 3
The Interaction of anxiety and agency on identification with character

<table>
<thead>
<tr>
<th></th>
<th>Low Agency</th>
<th>High Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>$\bar{x}$ 3.72 (1.53)</td>
<td>$\bar{x}$ 4.55 (1.12)</td>
</tr>
<tr>
<td>Mild</td>
<td>$\bar{x}$ 4.19 (1.07)</td>
<td>$\bar{x}$ 4.66 (1.25)</td>
</tr>
<tr>
<td>Moderate</td>
<td>$\bar{x}$ 4.13 (1.85)</td>
<td>$\bar{x}$ 4.50 (1.35)</td>
</tr>
<tr>
<td>Severe</td>
<td>$\bar{x}$ 3.17 (1.89)</td>
<td>$\bar{x}$ 2.38 (1.38)</td>
</tr>
</tbody>
</table>

Further ANOVA tests were carried out using the secondary questions. Only a single significant result was found, in relation to the gender question $F(3, 103) = 2.73, p = 0.048$. However, Tukey analysis revealed this was due to significant differences between males and the ‘prefer not to say’ group ($p = 0.028$). It is interesting that this group appears to be distinct from the other gender groups, and while the number of participants are small the difference is very stark. There were no significant differences between males and females identifying with the gender undefined character. Means are shown in Table 4.

Table 4
The Interaction of participant gender on identification with character

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Other / non-binary</th>
<th>Prefer not to say</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean identification (SD)</td>
<td>$\bar{x}$ 4.30 (1.20)</td>
<td>$\bar{x}$ 4.35 (1.36)</td>
<td>$\bar{x}$ 4.33 (1.04)</td>
<td>$\bar{x}$ 2.79 (1.65)</td>
</tr>
<tr>
<td>N</td>
<td>84</td>
<td>13</td>
<td>3</td>
<td>7</td>
</tr>
</tbody>
</table>

DISCUSSION

This study has found good evidence with multiple highly significant results that the more severe forms of depression and anxiety lessen the capacity to identify with fictional characters, which by extension reduces the amount of enjoyment drawn from engaging with such artistic works. This might be seen as part of the ‘vicious cycle’ in therapy terms where it is the nature of such conditions that they become a self-supporting cycle. It is consistent with previous notions that ceasing to derive pleasure from previously enjoyed pursuits is a possible symptom of depression. Nonetheless this specific finding represents the first discovery with statistical evidence of this specific symptom, associated with both severe depression and severe anxiety.

The study has also found good evidence with significant results that higher levels of agency over a character increase the sense of identification with it. This would imply that interactive media such as games are a creative form inherently stronger in this particular regard than static media.

It is also interesting to note on the topic of agency that due to the need to keep the stimulus consistent across participants the true level of agency in the story-game stimulus was extremely limited. At either three or six points depending on the assigned group participants had a choice of two options which each produced a different next screen of text, but both of these options then led back to the same next page of narrative. That is, the story-game offered the illusion of agency rather than impactful agency that produces meaningful changes in the narrative. This is still ecologically valid, as many commercial computer games (for example those produced by Telltale) also offer only the illusion of agency. The point here is that even the limited illusion of agency can produce this striking impact in identification.

The lack of significant findings when looking only at the low agency group is interesting. We speculate from this that only those not suffering from severe depression or anxiety and able to capitalise on the higher agency to identify more strongly; the cognitive impairments caused by depression and anxiety impair the benefits of agency. However, we also note the means at face value remain suggestive, so this lack of significance may also simply reflect the smaller sample sizes when splitting the data in this way.

The secondary finding relating to gender is surprising. We note that the participants who identified as ‘other/non-binary’ identified broadly as much as male and female participants, so do not believe the finding is due to such participant recording ‘prefer not to say.’ One possible explanation is that those reluctant to reveal their gender were adopting a less committed and engaged stance to the experiment.
Reflection on the method

This experiment has continued to develop the experimental method first published in Hook (2019), using a novel story-game as an experimental stimulus to apply the experimental method to the study of identity. It also applies the experimental method to the game studies discipline where less scientific methods have historically been dominant. For more information, Järvelä et al. (2014) has a wider discussion of digital games as stimulus while Hook (2012) has a discussion of classic psychology experiments as if they were games.

While still a good sample size with over a hundred participants, this experiment recruited less participants than other similar experiments. We speculate one reason for this is the longer questionnaire with more probing questions may have put off some potential participants. We also note that despite the software assigning participants randomly to the two groups with equal chance, 65 responses were received for the high agency group and 42 for the low agency group. It may be that potential participants tended to drop out more often when playing the low agency version, finding it less engaging.

Practical applications of the findings

This finding has direct application to the design of interactive media, by informing us that the reader’s sense of identification with a character can be increased by adding more agency, or at least the illusion of more agency. While this research has compared two different amounts of agency, it could be argued that this finding implies that interactive media has an additional advantage in producing stronger identification than static media. Further research is needed to explore this implication.

Considering the findings about both mental health and agency together, this might suggest a reason why those suffering from depression or anxiety often choose to spend time playing interactive games. The lower identification caused by their mental health is offset by the higher identification caused by their sense of agency. To put it another way, interactive media such as games retains a potency for them that static media such as conventional fiction does not.

These findings might also generalise to other forms of identification which are difficult to study experimentally. For example, it would imply that building identification with a celebrity or politician might be better achieved by giving people an illusion of agency over them.

Implications for future research

If further research continues to produce evidence that identification is weaker for those with more severe levels of depression and anxiety, then it may be possible in theory for this to become a mental health diagnostic tool, one that unlike existing tools is based on a more everyday task of reading a short work of fiction rather than having to answer personally probing questions. While this is unlikely to be a sufficient tool in itself, this would expand the toolbox of existing diagnostic tools.

That this research has not explored is whether a person with depression or anxiety would identify more strongly with a character that had the same mental health condition as themselves. While such research raises greater ethical challenges, an understanding of this would offer valuable insight. Related to this would be research into whether a story about a depressed character successfully overcoming depression would have therapeutic power to support a reader overcoming depression.

This research has revealed the importance of the impact of mental health on identification with characters, which suggests that future research using this methodology may benefit from gathering data from participants on this topic to statistically control for it. Gathering such data also has the benefit that the conclusions here can be tested for alongside the main hypothesis that future research is primarily testing.

CONCLUSION

This research has applied a relatively new experimental design variant to explore the impact of a person’s mental health on the capacity to identify with fictional characters. This is a previously under-researched topic and the findings potentially represent the discovery of a new symptom of both depression and anxiety.

Being run online, this experiment has produced are relatively large and international pool of participants, if sadly not as large as some previous experiments in this format.
The ANOVA analysis found significant and novel results that both severe depression and severe anxiety weaken identification with a character, and a separate result that higher agency increases identification. Aside from the academic pursuit of knowledge, these findings have direct practical application for artistic creation of games, films, and written text which seek to build identification with fictional characters, and perhaps other activities that seek to build identification with another.

This research also informs future experimental design in this tradition, in stressing the benefit of assessing the mental health of participants. It further demonstrates this experimental approach to study this topic that previously belonged to the humanities.

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Never forget who you are, for surely the world will not: The impact of the quantity of identities in identifying with fictional characters

Nathan Hook
Tampere University (Finland)

Correspondence: hook_nathan@hotmail.com

Recent experimental research has found surprising findings of identification with fictional characters. While these findings are looking at how identification functions with different identities are interesting, it does not explore the effect of the quantity (rather than specific quality) of the fictional character’s identities. This experimental research investigated if participants identified more strongly with a shallow fictional character or a richly defined one. The outcomes of the limited past research in this area are inconsistent with each other. Two hypertext fiction story games were used as an experimental stimulus, slightly modified for different participant groups. Almost 230 participants took part, and repeated measures ANOVA analysis was carried out. The novel results found good evidence that readers identify more with richly redefined characters. This has practical application for informing literary creation and challenges existing computer game design rhetoric. The lower identification of other/non-binary participants merits further study, but it may be practically challenging to recruit a sufficiently large number of participants.

Keywords: fictional characters; Game of Thrones; hypertext; identification; identity
In narratives across different media, readers are presented with characters to identify with. Understanding the mechanisms of identification is important to artistic creation because strong identification with characters is associated with the spectator's enjoyment and cognitive elaboration and predicts dramatic impact and impact on attitudes and beliefs (Igartua, 2010). When a game player identifies with a character, their self-perception is modified, so the player sees some character attributes as part of themselves (Klimmt et al., 2009). Understanding identification with fictional characters is also important because it may also generalise to understand identification and identity in the everyday world, which are practically difficult to investigate experimentally.

Cohen (2001) notes that in the humanities, identification lacks formal testing or conceptualisation. Oatley (1994) suggests identification refers to players/readers imagining events as if seen from the character's eyes with their cognitive and emotional responses akin to the character, but there seems little evidence that readers regularly engage in first-person viewpoint imagination.

In sociology, Holt (1950) discusses identification with a group, while in early psychology, Freud (2010, originally published 1923) regards identification as a primitive emotional attachment and Anna Freud (1992, originally published 1936) discusses identification with an aggressor. In social science, the focus on identifying with real people, objects, or constructed groups has led to a research gap in identifying fictional characters.

Recent experimental research has found surprising findings of identification with fictional characters. Hook (2019) used a hypertext fiction (HF) story game (Montfort, 2003) and found that women, but not men, identify more strongly with characters of their own gender. A follow-on experiment (Hook & Morys-Carter, 2020) supported this finding and also found no significant evidence in its primary finding that either atheists or Christians identify more strongly with a character of their own religion. This implies the concept of in-group bias from social identity theory (Tajfel, 1970) may not generalise well to the mechanisms of identification.

While these findings are looking at how identification functions with different identities are interesting, it does not explore the effect of the quantity (rather than specific quality) of the fictional character's identities. This is the topic of investigation here.

Burke & Stets (2009) defines identity as a meaning set that defines oneself, consisting of elements that fit into three categories: a holder of a role in society, as a specific group member, or as a holder of particular characteristics. Stryker (2017) notes these are internalised, not merely outwardly played. In this sense, it is possible to speak of a quantity of identities, the number of identities that one defines oneself by.

Shaw’s (2011) qualitative interview findings suggest players will identify more strongly with characters who have many rather than fewer role identities. In contrast, Barton (2004) and McCloud (1998) argue shallowness makes it easier for players to place themselves into characters. Hence the current research base is limited, and predictions varied.

**METHODOLOGY**

**Participants**

Participants were recruited by posting adverts on social media in *Game of Thrones* gaming and role-playing social media areas. It ran online for around two weeks in November 2015. A total of 228 responses were recorded, and all are included in this analysis.

Just over two-thirds (68%) of the participants identified as male, 27% as female, 5% as ‘other/non-binary’, and 1% preferred not to say. Most of them were from Europe (76%) or North America (17%). They were almost evenly split between those with no degree (35%), those with a science degree (31%), and those with an arts/humanities degree (34%). Half of them knew the main *Game of Thrones* story (50%), while another 35% reported they knew wider *Game of Thrones* setting material. Most (75%) had played three or more interactive fiction games, and almost two-thirds (64%) had many years of experience with tabletop role-playing games. While this was an artefact of recruiting participants to participate in an experiment involving playing an HF, it also meant participants had a general level of fluency with games that involve identifying with a character.

**Materials**
The experimental stimulus was two short custom-written hypertext fiction (HF) story games, sometimes called ‘choose your own adventure’ games. In these stories, the reader reads a page of text then selects one from a series of hyperlinks to decide what the protagonist chooses to do in the story. These HFs were written for this experiment to prevent the participants from having any prior exposure; the researcher had additional creative writing qualifications. Using a fictional setting for these stories far from everyday life made it unlikely the participants would share any identities with the characters. The use of a famous fictional setting makes it more relatable and likely attracted participants, increasing the sample size.

These stories using setting from the Song of Ice & Fire series that started with Game of Thrones (Martin, 1996), from which the quote in the title comes. This setting has been used previously by many computer games, board games, and multiple tabletop role play games (RPGs). In both cases, the story game detailed a different original character, a knight travelling the land of Westeros to attend a tournament at the capital. The participants had six binary choices to make during the story about the protagonist’s decisions.

Design

The experimental design was similar to the method used by Hook (2019) and Hook & Morys-Carter (2020) and also coded using the Twine software for creating HF. The participants were assigned randomly to one of two groups. In addition, the sequence of the two stories was independently randomised.

One character was described only as a knight (a role identity) on the character briefing screens. The other character was described as a knight (a role identity), as loyal to a particular noble house (a group membership identity), and a believer in a particular fictional religion (a personal characteristic identity). Which character was described in more detail was switched based on which group the participant was assigned to. This was the only difference with the stories themselves being unchanged.

The dependent variable was identification with the character. Consistent with Hook (2019) and Hook & Morys-Carter (2020’s experiments, this was captured by two seven-point Likert-type items: ‘How strongly did you identify with [character name]?’ and ‘How strongly were you able to take on the role of [character name]?’ were asked about both characters. The responses were averaged to lessen any influence of precise question-wording.

Procedure

The story game was a series of webpages presented online with participants using their own devices in their everyday settings. This gave high ecological validity and enabled a diverse international mix of participants.

Data was collected by online form, and participants gave consent by completing the form and clicking the submit button. Potential participants could play through the story game and not take part by not completing or not submitting the form though it is unknown how many may have done this. An email address was given in case participants wished to withdraw later, and no one did this.

Participants were asked the two identification questions about each character and additional background questions such as their gender, broad geographic identity, education level, distractions while taking part, and Game of Thrones’ knowledge for possible secondary analysis. Names and other identifying data were not requested, so all data was anonymous. Data was stored with appropriate security, and ethical review and approval was obtained via the author’s University’s processes.

RESULTS

As with the two-story experiment designs of Hook (2019), the two-story design used here means a complete replication of the experiment is built-in, independent except for using the same participants. However, unlike Hook (2019), this design had two somewhat alike characters so comparisons between stories could also be made. While this comparison across stories is perhaps slightly less valid in that the characters and stories are different, it is stronger for being within-participants. Means and standard deviations are shown in Table 1.
Table 1
Means (Standard Deviations) and the Number of Participants in Each Group

<table>
<thead>
<tr>
<th>Character</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character 1</td>
<td>4.65 (1.24)*</td>
<td>4.37 (1.40)</td>
</tr>
<tr>
<td>Character 2</td>
<td>4.27 (1.31)</td>
<td>4.65 (1.46)*</td>
</tr>
<tr>
<td>N</td>
<td>113</td>
<td>115</td>
</tr>
</tbody>
</table>

* Indicates where characters had three role identities on the briefing screen, rather than one.

The primary analysis used a repeated-measures ANOVA with the two characters as repeated measures and the participant group as the between-subject factor. All 228 responses are included. The combination of character and group was highly significant $F(1, 225) = 11.401, p < 0.001$. This is shown in Figure 1 below.

Figure 1
Estimated marginal means

![Estimated marginal means graph]

**Exploratory analysis**

Further analysis was applied using data based on the secondary questions.

Gender was looked at due to previous research findings in this area. Means for males and females are very similar. While the means for the ‘other/non-binary’ participants did appear much lower, caution is needed due to this group’s small size. Details are shown in the table below. Repeated measures analysis based on gender did not produce significant results. $F(2,223) = 0.425, p = 0.594$

Table 2
Means (Standard Deviations) Split by Gender Identity

<table>
<thead>
<tr>
<th>Character (n)</th>
<th>Character 1</th>
<th>Character 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female (61)</td>
<td>4.42 (1.39)</td>
<td>4.46 (1.53)</td>
</tr>
<tr>
<td>Male (154)</td>
<td>4.62 (1.25)</td>
<td>4.50 (1.33)</td>
</tr>
<tr>
<td>Other/Non-binary (11)</td>
<td>4.09 (1.41)</td>
<td>4.45 (1.21)</td>
</tr>
<tr>
<td>Prefer not to say (2)</td>
<td>1.50 (0.707)</td>
<td>1.50 (0.707)</td>
</tr>
</tbody>
</table>
This lack of significant gender difference at first glance could be seen to contrast with the finding of Hook (2019), which was that females identify more strongly with a female character and males identify equally regardless of character gender. However, it can be seen as consistent with this prior finding by reflecting on the nuance that females do not identify less strongly than males with a male character but merely do not gain the identification boost they would have if they were female.

Linear regression was carried out, including gender, whether the participant is a native English speaker, their education level, and Game of Thrones knowledge. None of these were significant, which was a strong contrast with the significant finding for participant groups in the main analysis.

**DISCUSSION**

This study has found good evidence with some highly significant results that the number of role identities does impact on the strength of identification with that character. It should also be noted this effect was found with merely a couple of extra sentences on a character briefing screen at the start. It would seem reasonable to speculate that if the roles had been actively referenced or explored in the story, the effect might have been even stronger.

**Reflection on the method**

This experiment has continued to develop the new experimental method first published in Hook (2019), with the additional complexity of a built-in replication that enables between-participant comparisons. It demonstrates the practical use of a novel game as an experimental stimulus. For a wider discussion of digital games as an experimental stimulus, see Järvelä et al. (2014) and a discussion of classic experiments as games, see Hook (2012).

Aside from the tradition in Social Identity Theory, the use of experiments is also unusual in studying identity. This experiment also demonstrates the experimental method’s application to identity by investigating the related topic of identification. It also demonstrates applying the experimental method of testing hypotheses to the game studies discipline which has been dominated by other methods.

**Practical applications of the findings**

Many digital games have included protagonists who are generic ‘everyman’ figures (e.g., Half-Life by Valve Corporation, 1998) or who start the game with amnesia (e.g., Planescape: Torment by Interplay Entertainment, 1999). In contrast, this research suggests more distinctive characters with multiple role identities would increase identification with that character and enjoyment.

Considering this finding in the context of role-playing games in which players make their own characters (e.g., tabletop RPGs, such as Dungeons & Dragons), this finding suggests they can be improved adding a step in the process of character creation to prompt defining multiple identities for the character. It also implies that playing characters grounded in a society with many identities leads to greater identification than playing outsiders such as ‘adventurers.’

There might also be applications for other fields. For example, presenting multiple identities of a celebrity or politician to potential followers might strengthen the sense of identification with them.

**Implications for future research**

This research has produced good evidence that richly defined characters with multiple identities rather than shallow characters produced stronger identification, providing evidence supporting Shaw’s (2011) interview findings. It would be interesting to explore with further experiments how far this goes. We might expect that adding more identities will not produce a further effect after a certain saturation point. There may also be some personal differences in how many identities about a fictional character the reader can mentally manage, similar to the personal differences in the number of digits held in short-term memory.

The lower identification of other non-binary participants merits further study, but it may be practically challenging to recruit a sufficiently large number of participants. This is consistent with Hook (2019) where the data was suggestive of them being a distinct third group, if also too few to provide good evidence of this.
This research has also explored a more complex variant of the design and analysis that included not just replication but also within-participant analysis comparing the same participants with two different characters. The results of this approach seem consistent with the results of the between-participant analysis, so this variant design should be considered as an option in the design of future experiments. While this does require more work in writing the story and coding the hyperlinks, it does produce a dataset that enables richer significant tests.

CONCLUSION

This research has applied a new experimental design variant to further explore identification with fictional characters and extend its scope from specific identities to the topic of how the quantity of identities affects the strength of identification. This is a topic where previous research is limited and there is no clear expectation from past research in which direction the outcome will be. It is also extended that design with a more complex and richer variation that included within-participant comparison for the first time.

This online experiment produced data from a large international pool of participants, diverse in many ways but slanted towards experienced gamers fluent in taking on the role of characters in games. The repeated measures ANOVA analysis found unpredicted yet very highly significant findings (P < 0.001) that more richly defined characters with additional identities produce stronger identification than less well-defined shallow characters, even when the change is as minor as a couple of extra sentences on a briefing screen at the start of the story. This is very strong evidence in a situation where the expected results were unclear. No significant gender differences were recorded which fits with the nuance of previous findings on the topic of own-gender bias in character identification that males and females identify equally strongly with a male character. It also found that the range of other variables about the participants did not produce significant differences. It also found that the range of other variables about the participants did not produce significant differences, which makes the headline finding even more striking.

Aside from the academic importance in advancing scientific understanding of the mechanisms of identification these findings have direct practical application for human activities where building audience identification with a fictional character is relevant, which might include artistic creation of games, films, and written text. As noted, higher levels of identification are believed to increase enjoyment, cognitive elaboration, dramatic impact and impact on attitudes and beliefs. These findings might also apply to other activities that seek to build identification with another, such as promoting a celebrity or gathering support for a political leader. The secondary findings also indicate the unimportance of other factors and highlight the potential research topic of non-binary participants as distinct third group.

These findings inform the design of future experiments in this tradition, in that they stress the importance of ensuring an equal quantity of identities between characters to maintain the validity of the comparison, unless that is the topic being researched. It further demonstrates how identification can be tested experimentally. This more complex design using two stories about comparable characters that enables the analysis to include both within-participants and between-participants analysis better informs the design of future experiments by showing the practical application of this more complex design variant.

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The think-feel-act cycle of happiness

Orose Leelakulthanit
National Institute of Development Administration (Thailand)

Correspondence: orose@nida.ac.th

For most of us, the ultimate goal of existence is happiness: we seek to live well and to live a life filled with happiness. It is for this reason that it is important for us to find ways to achieve happiness. This issue has been investigated by numerous researchers, who have taken a variety of approaches in their discussion of happiness and how to achieve it. In the present study, the author will use what has been called the 'think-feel-act' approach to happiness, and an attempt will be made to integrate many of the relevant studies in a meaningful way. Briefly, the 'phenomenon of thinking' in this context consists of the construct of optimism, while the 'feeling phenomenon' is comprised of the construct of gratitude. The 'act phenomenon' includes the constructs of exercising, learning, and purpose, which in turn consist of acts of kindness and taking action for a better world. The relationships among all of these constructs and happiness will be seen to be positive. At the end, a discussion of the study is provided.

Keywords: act; feeling; happiness; thinking; well-being
One might wonder why happiness is important. If you believe, as the present author does, that happiness is a choice and a skill that can be learned, then why is it important enough to go out of your way to achieve it? Why choose happiness? Happiness makes you feel good. Happiness is fun and it feels good, and that is a good reason why happiness is important in itself. One may live longer when one is happy. Many studies have demonstrated that happy people live longer. For example, one study investigated nuns who wrote a short biographical sketch before taking their vows. It was revealed that at the age of 85, 90% of the nuns that had written cheerful biographies (top 25%) were still alive compared to just 54% that had expressed being the least cheerful. At 94 years of age, 54% of the most cheerful were alive compared to only 11% of the least cheerful. Many other studies have shown similar, revealing results concerning the relationship between the feeling of happiness and one’s longevity.

It can lead to better health. There is a famous expression in English that is supposed to make the listener feel good: ‘When life gives you lemons, make lemonade.’ In other words, if you find yourself in a ‘tough spot’ or in a difficult position that makes you unhappy, you have to just make the best (lemonade) of it. It has been well-documented that there is a close relationship between stress and illness, between the mind and the body that is; and the reverse is also true of course; if you lack stress your body will respond to this good feeling. In other words, happy, positive feelings (like negative feelings) can actually change the chemical make-up of our bodies, producing chemicals for example that strengthen our immune system, repair our cells, and add to the strength of our bodies generally. It can be said that happiness is the opposite of stress. Happiness makes us ‘bounce back’ quicker. Happiness and optimism can be said to go hand in hand; that is, optimistic people see bad things as of a more temporary nature and good things as being more permanent. Their positive expectations regarding good things help them to perceive and take advantage of options and opportunities in a more expedient way. There is a saying, ‘You get what you look for.’ Optimists look for opportunities for good outcomes.

Happiness makes you more productive. Oswald et al. (2015) observed that there is a 12% increase in productivity on the part of workers who felt that they were happy, while unhappy workers were found to be 10% less productive. Happiness has large and positive causal effects on productivity. Positive emotions appear to invigorate human beings. Happiness makes you more creative. A happy mood can ‘free our mind’; and increase our ability to think creatively. At the same time however, being in a good mood may also distract us (Shin et al., 2018). Feeling happy can help us to solve problems better and faster. Studies have indicated that people who experience a positive mood are able to solve problems in a better and faster way, and often their solutions are more inventive and they are able to concentrate better (e.g., Frederickson, 2003). In addition to this, it has been asserted that happiness can also improve one’s ability to learn and remember things. Further, better problem solving is another reason why happiness is considered to be significant. It is important to look for the ‘win-win’ situations. Researchers have theorised that positive emotions such as happiness have served an evolutionary purpose. In other words, where negative emotions encourage us to engage in a fight or flight response through the generation of chemicals in our bodies, positive emotions encourage us to learn, explore, and grow. In short, positive emotions create a completely different way of ‘thinking’ in our bodies and a different way of responding to our environment.

When we are happy we are more likely to help others. It has been asserted that not only does doing good help us to feel good, but it also been asserted that people that are happy are more willing to share their good feelings and circumstances with others that are less fortunate. In other words, happy people make the world a better place to live in. Given the various benefits of happiness discussed above, it is logical that happiness is something that one would naturally seek in life, and therefore, how to achieve happiness merits study – hence the purpose of the present writing. Generally speaking, there are many ways to achieve happiness; however, this study will focus on using what can be called a ‘motivational pathway’ to happiness in terms of cognition affection and the behavioral (think-feel-act) aspects of human activity as the underlying themes.

**LITERATURE REVIEW**

**Optimism and life satisfaction**

According to Sharpe et al. (2011) optimism is a dispositional trait of a person and is connected with four personality factors: emotional stability, extraversion, agreeableness, and conscientiousness. Optimists are individuals that often have positive expectations regarding what is going to happen in the future and expect positive outcomes (Peters et al., 2016; Scheier & Carver, 1985). For this reason, optimism can be considered an important indicator for the promotion of what has been termed ‘subjective well-being’ (SWB) (Alarcon et al., 2013; Carver & Scheier, 2014). On the other hand, pessimists are those that expect negative events to occur and therefore pessimism is often linked to stress and negative feelings, such as anxiety and anger, among other mental health problems (Carver & Scheier, 1998; Scheier & Carver, 1992). These differences
between optimists and pessimists in terms of their interpretation of the future researchers refer to as the ‘optimism bias’ (Sharot, 2011). According to this bias, there are three cognitive modes that can be used to explain why optimistic people create positive expectations for themselves (Hecht, 2013).

First is selective information processing (i.e., optimistic people focus on positive aspects of events and their surroundings and tend to rely upon negative elements. Second is referred to as the locus of control; this is where optimists tend to rely upon their own decisions and to have trust in their own capabilities. The third cognitive mode that leads to an optimistic bias is what is called attribution styles; this is where optimists feel that their achievements are a result of elements and attitudes that are internal to themselves and that offer stability in their lives. A variety of studies have indicated that this ‘optimism bias’ is associated with one’s increased satisfaction in life (Bailey et al., 2007; Karadem, 2006). However, knowledge in this area is incomplete, particularly as regards the mechanisms that are activated by optimism, those that mediate the relationship between this construct and the subjective perception of life as a whole (Margolis & Lyubomirsky, 2018; Zhang et al., 2014). It has been suggested in a recent study by Diener et al. (2018) that optimism can be said to predict SWB because optimism helps people to find meaning in their lives using different cognitive processes. According to this line of thought, the present study aims to demonstrate how optimism may provide resources that also increase one’s life satisfaction.

**Optimism and positive affect**

One of the most important ways in which optimism seems to contribute to SWB is the positive affect that is experienced in daily life. According to Diener (2000), the greater is the level of SWB that people have, the greater are their pleasant experiences and the fewer are their painful experiences. In this sense, optimistic people experience more positive affect and happiness as they focus more on their expectations regarding success and use positive coping strategies. This is in contradistinction to pessimistic people, who concentrate more on the negative elements in their lives (Schütz & Baumeister, 2017; Segerstrom et al., 2017). Segerstrom and Sephton (2010) have confirmed this by testing the hypothesis that optimism has a direct influence on a person’s attitudes such that as optimism increases, so does the individual’s positive affect. According to this line of thinking, the so-called bottom-up perspective of SWB emphasises the importance of positive affects in one’s daily activities and this leads to the positive interpretation of one’s life (Kahneman & Deaton, 2010). This kind of thinking is in agreement with ‘the broaden and build theory’ discussed by Fredrickson (1998; 2001; 2013). According to this theory, one’s positive attitudes help individuals ‘build’ personal resources that are long lasting and that can also increase their SWB (Extremera & Rey, 2018; Nelson et al., 2015; Weinstein & Ryan, 2010). It can be seen then that these perspectives suggest that optimistic people are likely to experience greater levels of life satisfaction, and thus it is suggested here that positive affect will have a mediating effect on the relation between optimism and life satisfaction.

**Optimism, prosociality, and meaning in life**

Recently, it has been hypothesised that what is called prosociality is a basic psychological need of humans (Martela & Ryan, 2016), and this can be seen to complement three other needs-relatedness, autonomy, and competence, which comprise the self-determination theory (SDT) (Ryan & Deci, 2000). Over the last few years, there has been greater attention paid to how prosocial variables such as optimism are related to prosociality (Baumsteiger, 2017), and in a recent study conducted by Maki et al. (2016), the authors concluded that prospection promotes prosocial behavior and consequently increases the likelihood that people will help others. It is thought that optimists typically possess better connection skills, but at the same time they also make an effort to develop positive relationships with others (Carver & Scheier, 2014; Segerstrom, 2007). It seems to be the case that optimism allows a person to employ his or her positive affective resources which act as drivers and motivational mechanisms for going beyond one’s exclusive interest in self (Carver & Scheier, 2014). In this regard, gratitude is one of the most studied emotions that transcends one’s individual interests, and it is also relevant to prosociality behavior (Haidt, 2003; Stellar et al., 2017). Gratitude refers to acknowledging or being grateful for the benefits received from others (Nelson et al., 2016). Although different studies have suggested a strong relationship between optimism and gratitude (Emmons & Shelton, 2002; Rey & Extemera, 2014), it has not been determined whether optimism and other prosocial variables actually increase gratitude, and it would therefore be interesting to investigate whether optimism is related to life satisfaction through prosocial behaviour, given the fact that establishing interpersonal relationships is responsible for the construct of important human sources of strength and meaning (Fredrickson et al., 2008; Hicks et al., 2010; Stavrova & Luhmann, 2016) and is therefore fundamental to SWB (Diener et al., 2018a). In more concrete terms, self-transcendent emotions such as gratitude are crucial for enjoying our lives and for developing more meaningful outlooks on the world (Lambert et al., 2009; Van Cappellen et al., 2013). Nakamura suggested that helping others and being grateful can make people feel proud and can foster a sense of meaning in life (Nakamura, 2013). In this way,
optimistic people experience a greater degree of gratitude, providing them with greater sense to their lives and in turn enhancing their life satisfaction. The eudaimonic perspective of well-being suggests that in order for people to experience long-lasting happiness, they need to live a life that is rich in meaning (Ryan & Deci, 2008), and following this line of thought, various studies have demonstrated the significance of the perceived importance of meaning of one’s life to an increase in one’s life satisfaction (Steger, 2018; Steger et al., 2008).

Dispositional gratitude

Dispositional gratitude has been defined as ‘a generalised tendency to recognise and respond with grateful emotion to the roles of other people’s benevolence in the positive experiences and outcomes that one obtains’ (McCullough et al., 2002, p. 112). Scholars and practitioners have demonstrated that dispositional gratitude has the possibility of facilitating a person’s well-being because it is associated with several important phenomena, such as stress, anxiety, psychopathology, health, adaptive personality characteristics, positive relationships, subjective well-being, and humanistic-orientated functioning (e.g., Jordan, Masters, Hooker, Ruiz, & Smith, 2014; McCullough et al., 2002; Park, Peterson, & Seligman, 2004). Since the time when dispositional gratitude was first investigated (McCullough et al., 2002), empirical research has examined its relationship with such indicators as well-being. Several scholars for example have identified several mechanisms that underpin the relationship between gratitude and well-being, asserting for example that individuals that experience gratitude also experience a higher degree of well-being through what has been termed ‘schematic biases’ that allow them to be open to the helpful actions of others—which are considered to be beneficial to one’s self (Wood et al., 2008). In fact, being grateful helps one to cope with stress and can lead to the reduction of negative emotions that can stem from the numerous comparisons that we make in our social actions (Emmons & Mishra, 2011). Moreover, if we experience positive emotions in a more or less routine way by being grateful, it can lead to the reduction of certain mental problems and types of stress (Fredrickson, 2004; Fredrickson & Joiner, 2002).

Additionally, it has been asserted (e.g. Emmons & Mishra, 2011) that being grateful is associated with several other mechanisms that influence one’s sense of well-being, such as improved self-esteem, enhanced access to positive memories, higher spirituality and mindfulness, the easier attainment of goals, greater social resources, and improved physical health among others. In summary, it can be seen that several theoretical explanations and mechanisms both directly and indirectly can link dispositional gratitude to the components of a sense of well-being. It should not be understood however that happiness and a person’s sense of well-being do not come about without any work on the individual’s part; in fact, it has been suggested that a certain amount (or a lot) of introspection is required if one wants to achieve a long-lasting sense of happiness that is tied to the feeling of gratitude (Wood et al., 2008). Empirical findings suggest that individuals that experience a sense of gratitude are more likely to engage in such positive self-reflection, and that this can lead to long-lasting happiness and well-being (e.g., Wood et al., 2008). Dispositional gratitude can also be seen to play an important role in a person’s adaptation to life events that he or she considers significant, as suggested in the following passage: ‘adaptation to satisfaction can be counteracted by constantly being aware of how fortunate one’s conditions are, and how it could have been otherwise, or actually was otherwise before’ (Frijda, 2007, p.14). Considering the numerous mechanisms that can be seen to link gratitude to well-being, it can be expected that dispositional gratitude is (at least) moderately related to the categories, dimensions, and indicators of well-being.

Exercise

It has been extremely well documented that there are multiple benefits of exercise or physical activity (PA) on a person’s mental health (Saxena et al., 2005). For instance, a large body of literature demonstrates that PA is effective in reducing depression and anxiety (Strohle, 2009). It is also true however that these previous studies have for the most part focused on the effects of PA on the negative aspects of mental health and its use as a way to “cure” or prevent mental disorders (Rosenbaum et al., 2014). The relationship between PA and mental disorders is important, according to the present author, because mental disorders can be linked to increased morbidity, premature mortality, and greater medical costs (Alexopoulos,2005; Katon et al., 2003); on the other hand, the relationship between PA and positive mental constructs has remained for the most part unexplored. The World Health Organization has stressed the positive dimension of mental health and has stated that ‘health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’ (WHO, 2014). At the beginning of 21st century, Seligman and Csikszentmihalyi (2000) pointed out that the empirical focus of psychology should shift from ‘only preparing for the worst things in life to also building positive qualities.’ That is, attention should not be paid only to the negative aspects of our lives when examining the relationship between PA and mental health.
Happiness is a positive element of a person's mental well-being and it is generally defined as a subjective state of mind that is characterised by a feeling of enjoyment, which reflects the individual’s overall feeling about life (Diener, 2000; Veenhoven, 2010). Most people feel that happiness is one of the most if not the most important aspect of their lives (Diener & Seligman, 2004), and a growing number of studies focuses on the benefits that can come from happiness in terms of one’s health. For example, a 15-year follow-up study revealed that a higher level of happiness is related to lower mortality and morbidity (Koopmans et al., 2010), and recently several countries (France, Canada, and the UK for example) have even included a national happiness index as an indicator of their progress (Ghent, 2011).

Among the factors that have been associated with happiness, PA has received increasing attention among psychologists, and in cross-sectional studies based on large general populations it is associated with happiness (Lathia et al., 2017; Richards et al., 2015). Some reviews have indicated that PA might be an important correlate of happiness and that the investigation of the effects of PA on happiness is a promising research area (Diener & Tay, 2012; Dolan et al., 2008), investigation that could provide new ways in which to apply health promotion models to PA interventions (Huppert, 2009).

**Learning**

But what according to researchers is the single variable that is most closely tied to improved health and longevity? The answer is education—it has been found that when people are deeply engaged in what they are doing and when they are learning new things, their sense of well-being is exponentially enhanced. This relationship is also clear as we grow older, for in older age, according to recent research, our brains possess the plasticity to adapt to the life situations we encounter and are able to assist us to a greater extent than previously thought; old ‘digs’ then can indeed learn new tricks. ‘I think most social scientists would put their money on education as the most important factor in ensuring longer lives’ says psychologist Laura Carstensen, director of the Stanford Center on Longevity. In other words, people with more education get better jobs, which pay more money, are less physically demanding, and provide more enjoyment. Such individuals live in safer neighbourhoods, generally practice healthier lifestyles, and experience less stress. In a paper published earlier by the National Bureau of Economic Research, David Cutler and Adriana Lleras-Muney reviewed education-longevity research around the world and found that ‘education not only predicts mortality in the U.S., it is also a large predictor of health in most countries, regardless of their level of development.’ They cited research that indicated that 25-year-olds with some college education in 1980 could expect to live 54.4 more years, on average. On the other hand, it was found that 25-year-olds with only a high school degree had a life expectancy of only 51.6 more years, or nearly three years less.

A similar study in 2000-20 years later found that the gap in life expectancy between those with some college and those were high school graduates had increased to seven years. Some studies suggest that all or most of the benefits of education are a result of making more money, but not all researchers agree with this, as seen in Carstensen’s statement: ‘While income level best predicts how quickly people decline after they get sick, education predicts whether or not people get sick in the first place.’ She explains further that people with a higher level of education tend to have better problem-solving skills and the tools that they can use to help themselves, and they can enhance their health and survivability by making lifestyle decisions that are backed by good, well-thought-out information. Lisa Berkman, professor of public policy and epidemiology at Harvard University, has suggested that although the importance of income is significant in terms of life happiness, it is basically outdistanced by the significance of education. One of Berkman’s students did an in-depth study of different school attendance requirements that were set by state laws 70 and 80 years ago. Berkman stated that ‘[i]f you lived in a state where the schooling laws made you go to school for a longer period of time, you had better cognitive functioning later in life.’ In other words, regardless of the amount of money that a person earns monthly, just being physically in a classroom had a significant effect on one’s mental health later in life.

There has also been a discussion of the close relationship between a person’s sense of happiness and how deeply he or she is in tasks that provide knowledge and a feeling of fulfillment. It is common to see in daily life that people that are intensely absorbed in what they are doing can easily lose track of time; hours can pass like minutes. They indeed may be tired because of the task but can emerge energised and happy. This condition is known as a name coined 30 years ago by psychologist Csíkszentmihalyi, who recalls encountering people as a child in wartime Europe that were able to happily lose themselves in an activity, such as chess despite being in constant physical danger and the terrible scenes of war. The activity was absorbing and meaningful in itself, a condition that has been referred to as autotelic. ‘People just liked to do such activities, They did not need to be told to do it. They did not need money to do it.’ Csíkszentmihalyi goes on to characterize the development of his theory: ‘I later constructed this kind of model or theory for such behavior. Since nobody knew what autotelic meant, I called it "flow". Researchers over the years have
shown that when people are totally engaged in what they are doing, it can trigger healthy changes in their respiratory systems and brain chemistry.

Indeed, the idea of flow is easily associated with creativity and the image of a musician or artist 'lost' in what they engaged in, and Csikszentmihalyi indicates that in some ways, society values the arts and sporting pursuits exactly for this reason; it allows the spectator to witness something that they can identify in as being beneficial; that is, losing oneself in what one is doing, which everyone has experienced at one time or another, particularly most frequently when we are children. Perhaps this is why we become engaged in such activities in the first place. 'The real challenge,' he says, 'is to take something that you have to do that has purpose and meaning'; and figure out how to create a state of flow while doing it: 'It's possible to experience your job and your family life as flow, and that to me is more important than that we provide opportunities for flow in art and sports.' One important point is that a feeling of flow can come in so-called stages, where a person may have a high goal of achieving a particular task or activity, but at the same time be able to experience a sense of “flow” or connection with what he or she is doing at 'lower' stages of engagement in the activity. From this point of view, one can think of there being a kind of path toward flow that also provides a sense of satisfaction and happiness. Researchers have found however that in order for the flow of our tasks to yield the benefit of happiness they have to be sufficiently challenging, for it is the feeling of a challenge that attracts us to the activity and holds our interest; thus producing health and/or happiness.

These conditions have been given a name as well: 'just manageable difficulty' our challenges have to be neither too difficult nor too easy; they have to be 'just right' or just manageable. The benefits of learning and engagement are perhaps particularly important in regard to healthy ageing, as Berkman states, 'your mind is really like a muscle, and using it is a key' to lifelong mental health. In fact recently for example there has been an increase in attention to mental exercise as a way of preventing such diseases as Alzheimer, although this connection requires much more investigation. Nevertheless, it is probably safe to say that most scientists believe that there is a beneficial relationship between lifelong learning and remaining socially active, and mental well-being and happiness later in one's life. Indeed, older people that become isolated have been seen to lose the activities that trigger their minds to engage in enjoyable and stimulating activities. Jacquelyn James is the director of research at the Sloan Center on Aging and Work. She has been overseeing an ongoing study regarding the benefits that older people obtain from continued work. According to the study, the older that individuals were seen to be engaged in what they were doing, the more benefits they derived from the activity. Examples are not only paid work but also various types of caregiving, volunteering, etc. It is not just being involved in an activity that produces the benefits of engagement; the engagement needs to be connected with a sense of purpose and achievement in order to produce happiness. It has been said that if a person does not have a purpose in his or her life, he or she will seek it out in one way or another. From this point of view, engagement in what we are doing is crucial, not matter what our age, but as James indicates, 'As we get older, it is more important to find things to do that light up our lives.' Our minds and our attitudes are a central part of this effort, and we thrive when we find new things to do and that truly engage us. Whether it is acquiring a new skill or a language (which is very high on the list of the benefits of mental acuity), joining a new group or meeting new people, or finding ways to continue using our existing skills, successful aging and longevity are closely tied to lifelong learning frameworks.

Purpose

A sense of purpose from the viewpoint of the present study refers to dedicating oneself to a cause beyond oneself – it provides motivation in our life and gives us meaning and a sense of direction. When we have a sense of purpose it can make us feel as though we are contributing to those surrounding us. While it might sound strange, it has been suggested that seeking happiness can result in a negative effect on one's life and well-being. This was a finding in a paper entitled Can Seeking Happiness Make People Happy? Paradoxical Effects of Valuing Happiness. In that paper, a review of several studies led the researchers to assert the following: 'People who highly value happiness set happiness standards that are difficult to obtain, leading them to feel disappointed about how they feel, paradoxically decreasing their happiness the more they want it' (Mauss et al., 2011). Instead of setting goals that may be unreachable, research suggests that it might be better to focus on achieving a sense of purpose in life. In fact, findings revealed that having a purpose in life or at least a feeling of having a purpose in life rather than happiness that focuses on one's self can lead to a more protracted feeling of satisfaction (Esfahani Smith & Aaker, 2016).

Acts of kindness and happiness

One can wonder whether acts of kindness actually improve the well-being of the actor. Advances in the behavioral sciences during the past few decades have developed numerous theories of human social, cooperative and altruistic behavior, and these theories make it possible to explain a variety of different types
of kindness (for example, love, sympathy, gratitude and heroism). The theories predict that people will be ‘happy to help’ one’s family, friends, community members, spouses, and even strangers under certain conditions. More recently, kindness has been increasingly viewed as an intervention to lift one’s subjective well-being, the idea being that ‘random acts of kindness’ can enhance the well-being of the receiver of the action as well as the giver of the action. For this reason, acts of kindness could be a valuable way of addressing a variety of social problems, ranging from social isolation to more serious mental and physical health conditions. This notion has been addressed by a variety of researchers, in addition to charity and governmental organisations (Aked & Thompson, 2011; Huppert, 2009a).

Still it can be asked, why would performing kind acts improve well-being? Why would helping others make you happy? Broadly speaking, and more abstractly, happiness can be viewed as an internal reward system that promote survival and reproduction, according to Buss (Buss, 2000), and according to Hill et al. (2013), happiness is a psychological reward, an internal signalling device that ‘tells us that an adaptive problem has been, or is in the process of being, solved successfully’. From this point of view, it is easy to explain why ‘eating’ makes you happy; such types of behavior and adaptive goals, and for the reasons discussed above, it is equally easy to explain why acts of kindness can make people happy; it is because caring for family, trading favours with others, and increasing one’s status are also important adaptive goals (Schulkin, 2011). Indeed, it might even be expected that helping others can produce a greater degree of happiness than helping oneself, and some people have asserted that acts of kindness toward others have favoured evolution. Thus, the approach to altruism of evolutionary behavioral science predicts that people will be happy to help family, friends, community members, spouses, and even strangers under some conditions. This prediction has received some support from the extant literature, where a large body of research has indicated that there is an association between kindness and well-being (Anik et al., 2009; Konrath & Brown, 2013). However, much of this research has been of a correlational nature, for example showing that people that spend more money on others are happier (Aknin et al., 2013), or that people that volunteer to help others are healthier (Jenkinson et al., 2013).

**Acting for a better world and happiness**

The happiness and welfare of societies depend to a great extent on advancements that are made regarding sustainable development, a concept that has become more comprehensive and complex in recent years. This concept emphasizes that various types of development-economic, environmental, and social—cannot be viewed in isolation. In fact, there are action plans in place on a global scale that are aimed at sustainable development. The latest addition to these action plans is the well-known 2030 Agenda for Sustainable Development, drafted by the United Nations in 2015. Here, 17 Sustainable Development Goals (SDGs) have been adopted with the purpose of ending poverty and ensuring social participation and environmental protection, among other goals. It has been suggested that these goals must be met so that the welfare of the entire world can be achieved. The goals are constructed according to three dimensions: economic, social, and environmental development. These goals have been defined so as to ensure sustainable development in the world (United Nations, 2015), where one of the aims is to measure sustainable development using the indicators created for each of the dimensions. These indicators are necessary for adequately measuring the progress of sustainable development at the national, regional, and global levels. The indicators can also be employed in order to assist with the processes of decision making with consideration of the three dimensions cited above (Díaz-Sarachaga et al., 2018). The SDGs cited above have been adopted by approximately 200 countries (Campagnolo & Eboli, 2015; United Nations Development Program [UNDP], 2015), and it is clear that these three indicators must achieve a global balance in order to achieve sustainable development. According to Basiago (1998), economic sustainability suggests a type of production system that is able to meet the necessary levels of consumption with available resources but without neglecting the needs of the future. On the other hand, social sustainability can be considered as a process that highlights the quality of people’s lives (Mckenzie, 2004), where the main purpose is social welfare carried out continuously. In brief, environmental sustainability refers to the preservation of natural resources (Goodland & Daly, 1996).

Sustainable happiness has been viewed by O’Brien (2005) as the pursuit of happiness, but as a pursuit that adds to the welfare of the world, of society, and of the individual without taking advantage of others. Neither can it damage the environment or add to the lessening of the quality of life of future generations. O’Brien also indicates that this happiness depends on sustainability. According to economists, the happiness of societies is related to one’s personal income, while sociologists emphasize the importance of social capital in achieving a happy community; and ecologists have suggested that the well-being of people is only possible through the sustainability of the environment—everyone sees what he/she is interested in.
However, those that advocate sustainable development have suggested, in the World Happiness report, that happiness depends on a number of factors. These include such elements as a person’s “livelihood, housing, nutrition, clothing, security, feeling good, living in a clean environment, social adaptation, justice, freedom, equality, good social relationships,” and many others. The report indicated that sustainable development is only possible when all dimensions are considered (Helliwell, Layard, & Sachs, 2016). It is possible for an individual to contribute to a better world if he/she is able to see beyond self-concern and mere economic survival, which is difficult at times to do. However, as indicated in the present study, one can achieve happiness if one can look beyond self and place greater focus on the greater good of the world by creating a clean environment and making an effort to reduce the negative effects of climate change.

DISCUSSION

Positive emotions can be seen as ‘road marks’ for a person’s well-being and happiness. There are certain moments in a person’s life when his or her positive feelings are highlighted, emotions such as gratitude, joy, interest, contentment, and love, moments when the individual is not burdened by negative feelings such as anxiety, sadness, anger, and despair. It has been asserted that how one views the balance of one’s positive and negative feelings in life will influence their evaluation of their subjective well-being (Diener et al., 1991). Building on this finding, Kahneman (1999) has suggested that ‘objective happiness’ can perhaps ‘best be measured by tracking (and later aggregating) people’s momentary experiences of good and bad feelings’ (however see Fredrickson, 2000c). Accordingly, having positive emotions can signal having a good life and feeling good about it. However, this is not the entire story, for having positive emotions can also signal the likelihood of the acquisition of positive feelings of happiness over time. From this point of view, positive emotions are more than end states in themselves but are avenues to extended growth and happiness in the future. Again, from this point of view, man’s psyche cannot be viewed as a closed system—our feelings influence those around us and we are therefore responsible for our feelings and our behavior because of their influence on the environment. This constitutive characteristic has been called ‘the self-transcendence of human existence,’ and indicates that human life always points beyond itself, whether immediately to one’s family, or less immediately to one’s community or the environment. The greater the extent to which the individual reaches beyond him or herself, it can be said the more human he or she is in terms of self-actualization, to use Maslow’s term. There is a ‘Catch-22’ here however: it can be said that self-actualisation is not attainable at all because the more we reach for it, the more we will miss it. In other words, self-actualization is a side-effect of self-transcendence, according to Frankl (Frankl, 1985, p. 133).

A person that is searching for meaning in life will naturally look for something of value, and there are at least two ways of looking. If the person looks in the right direction, he or she will recognize the true nature of sickness, old age, and death, and then he or she will search for a kind of meaning that transcends all human suffering, as the Buddha’s life highlighted: In my life of pleasures, I seem to be looking in the wrong way (Buddha, 1966, p.8). What is the best way to prepare people for all of the suffering that they are likely to encounter in life? What is the best way to equip people to realise their potential and live a fulfilling and worthy life? The answer to both questions is to seek meaning in one’s life and to use Frankl’s term.

From the above literature review, the following can be hypothesised: (1) Thinking (optimism) leads to happiness; (2) Feeling (gratitude) leads to happiness; Acting (kindness, acting for a better world) leads to happiness; (4) Thinking (optimism) leads to Feeling (gratitude), which in turn leads to happiness; (5) Thinking (optimism) leads to feeling (gratitude), which leads to Acting (kindness, acting for a better world), which then leads to Happiness.

CONCLUSION

According to the think-feel-act framework of happiness, it can be concluded that the thinking part of our brain—namely, optimism—the feeling part of our heart; namely, gratitude and the action part of our hands, including exercising, learning, being kind to others and taking action for a better world – all contribute to our happiness. The route to our happiness depends on the choices that we make, which are likely to be determined by the strength of our character.

Having a purpose in life will make an individual happy but the purpose should not be too high or too low. Setting up the purpose at too high level can make a person frustrated because it is too far beyond his or her capability whereas setting up the purpose at too low level may be useless and not challenging at all. Therefore, the optimum purpose is the one which is just about right to go with the ‘flow’ of an individual’s capability in achieving it. If the task is too difficult or too complicated, it is possible to break it down to a smaller chunk in order to make it challenging but not intimidating.
The think-feel-act cycle of an individual’s behavior can create happiness. The benefits of this behavior may be in the form of self-concerned such as being in a good physical and mental health through exercising or in the form of others-concerned through helping others by being kind or through protecting the environment by being environmentally friendly. It is noteworthy that the purpose in life should go beyond oneself and the purpose of learning should go beyond creating wealth. The acquired knowledge can be further disseminated to others in order to enable them to live the more fulfilled lives and feel happy. We do not only enjoy ourselves for natural beauty but we do not want to do harm to the environment for its own sake as well.

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Non-ordinary mental expressions (NOMEs): Clues on the nature of the human mind

Enrico Facco1,2; Luciano Pederzoli3; & Patrizio Tressoldi1
1University of Padua (Italy)
2Italian Center of Clinical and Experimental Hypnosis (Italy)
3EvanLab (Italy)

Correspondence: patrizio.tressoldi@unipd.it

The aim of this paper is to describe some ostensibly odd, non-ordinary mental expressions (NOMEs) that have been considered implausible, illusory or hallucinatory phenomena, possible symptoms of disorders of the neurological or psychological functioning. They include a large variety of phenomena, encompassing hearing voices, seeing presences, communication with non-incarnated entities (including channeling), transpersonal experiences, out-of-body experiences, near-death-experiences, previous life memories, presentiments and precognitions, seeing at distance, mind interactions at a distance, mind-matter interactions at distance. We think that individuals experiencing NOMEs should not feel like they were outsiders or diseased; they should feel free to talk about their uncommon experiences and be listen to with an open, not-judging mind, respecting the patients’ experience and narration. In fact, NOMEs are non-pathological phenomena laying in a still misunderstood grey area between mental health and psychological or psychiatric disorders, while some of them suggest intriguing properties of human consciousness. Their ostensible incompatibility with some axioms and theories of consciousness shows the inescapable epistemological implications of their proper investigation and understanding.

Keywords: altered states; anomalous experiences; consciousness: epistemology; non-ordinary mental expressions.
The aim of this paper is to describe several intriguing phenomena of non-ordinary mental expressions (NOMEs) as well as conditions that may favour or elicit them and suggest a possible theoretical interpretation.

Cardeña et al. (2004; 2014) introduced the concept of anomalous experiences (AEs), to overcome the concept of altered states of consciousness (ASCs; see Vaitl et al., 2005). Later on, the term non-ordinary mental expressions (NOMEs) was introduced, to include a broader set of experiences, i.e., both non-pathological ASCs and AEs (Cardeña & Facco, 2015; Facco, 2014; Facco et al., 2015; Facco et al., 2020). The term 'non-ordinary' emphasise their deviation from the adopted Weltanschauung (worldview) and avoids any prejudice or a priori idea of abnormality or ostensible oddity. Rather, it emphasises the diversity of these experiences with respect to what is conventionally admitted i.e., the epistemological and metaphysical implications raised by their phenomenology, description and study.

There is a trait d’union between several NOMEs – including hypnosis, meditation, mystical experiences, near death experiences (NDEs), end of life experiences and memories of previous lives (Facco, 2012; 2017; Facco et al., 2015; 2019c) – a fact that calls for bringing them together under one roof, in order to properly understand their possible common elements, meanings and related mind-brain processes. NOMEs also include superior states of consciousness – including the spiritual self (James, 1958), the expansion or enlargement of the self (Arieti, 1967; Russell, 1912), the superconsciousness of Assagioli (1988), wisdom, sages, and the concepts of enlightenment and epopteia (elicited by the initiation to Greek mysteries and described by Aristotle in Eudemos, fr. 10) as well as similar states in shamanism.

The scientific study of NOMEs – as well as all subjective phenomena – calls for a neurophenomenological approach taking into account the first person perspective (1PP) encompassing its value and meaning and merging both first and third person perspectives (3PP) in a whole (Varela, 1996; Rudrauf et al., 2003).

Epistemological and metaphysical aspects

Different NOMEs, such as visions, prophecies, NDEs and mystical experiences, are suggestive of a different and wider reality than the one conventionally admitted by the current Weltanschauung ruled by classical thought and materialist monism. Here, it is worth emphasizing that the monist materialist view adopted by mainstream neurosciences is metaphysical in nature and, as such, is based on undemonstrated axioms. As a result, none of the available hypotheses about life, death and reality – i.e., the materialist idea of a single, biological life doomed to become nothing or the idea of an afterlife (no matter which otherworldly dimension), and reincarnation – are more plausible, rational and/or truthful than the others (Testoni et al, 2017).

Despite being beyond the field of interest of positive sciences, they are no less relevant and concrete in the comprehension of the meaning of life and its doom. Likewise, all formal axiomatic theories and disciplines (starting with mathematics) include statements which can neither be proved nor disproved, according to Gödel’s Theorems of Incompleteness (Raatikainen, 2018), a fact also showing the limits of the mathematical apriorism at the base of Galilean sciences. It is therefore necessary to maintain a profound humility and the Socratic awareness of knowing that we do not know, in order to maintain an appropriate open-mindedness. One should also refrain from rejecting a priori anything looking ostensibly odd on the basis of the adopted axioms and theories, a temptation woefully witnessed by the universal presence of detractors in the history of science.

Materialist monism is a partial, self-contradictory metaphysical stance, unable to comprehend subjective phenomena and everything looking ‘immaterial’. Its limits should be overcome by merging materialist monist and dualist stances in a higher-order integration – which has been named by different authors neutral monism, dual aspect-momism, whole monism or holonomism (Facco et al., 2017; Fanksepp, 2005; Studenberg, 2018). On the other hand, the claimed transcendent realities held by dualists look like a sort of nowhere lands; perhaps, it is more reasonable to assume that we are simply blind to what is beyond our apparent horizon. As the history of scientific revolutions teaches us (Kuhn, 1962), it would not be surprising if some phenomena viewed today as implausible and belonging to the uncertain world of parapsychology or science fiction would turn out to be real. As Schopenhauer wisely stated, ‘truth is born as a paradox and dies as the obvious’.

NOMEs are a universal phenomenon of the human mind, present in all cultures since prehistoric times. They are the result of its still elusive physiology and its relationship with an unknown world in the extraordinary effort to probe the unsolved mystery of the meaning of life and death, in the geometry of an equally mysterious space-time. Thus, a proper understanding of NOMEs calls for an interdisciplinary approach, including neuroscience, philosophy, anthropology and physics. Being real facts (though ‘immaterial’ mental
Non-ordinary experiences

The major non-ordinary experiences, all of which share some common element, will be shortly outlined here and their possible interpretations will be discussed.

Hearing voices

'These entities, often dead (even animals) "transmit" messages to me in the form of images (luminous figures) and thoughts. They don't appear in particular moments but unpredictably, especially when I feel more receptive. The otherworldly spirit belongs to a non-negative world, where there is no judgment, and it manifests itself so that I can be a go-between with a person, sometimes even a stranger.'

This is a simple example of a wide range of experiences, the common feature of which is the perception of voices directly speaking to the subject and perceived as belonging to other identities. Needless to say, such experiences are often traumatic when they occur in healthy people, since they may be easily taken for symptoms of psychiatric disorders, such as psychosis and dissociative personality disorders. In fact, for most of the 20th century, auditory hallucinations where considered as a pathognomonic symptom of schizophrenia.

Mercifully, these experiences have been increasingly studied in non-clinical populations since the 1980s, in order to better understand their features and prevalence, as well as improve their management and prevent the risk of developing severe discomfort or psychiatric disorders (Holt & Tickle, 2014; Iudici, et al., 2019; Salvini & Stecca, 2013). 'Voice listeners' themselves have greatly contributed to the better knowledge of these ostensibly odd phenomena often in collaboration with mental health professionals – especially the Dutch psychiatrist Marius Romme. In doing so, they have encouraged mutual-help and direct information meetings, which have fuelled the international Hearing Voices Movement and the Hearing Voices Network (www.hearing-voices.org).

At this time, it seems more reasonable to define hearing voices as an extension of the normal inner speech, misattributed to other identities and to take into account that inner speech is an essential activity for cognition and metacognition, planning and making decisions, as well as evaluating, knowing and motivating oneself (Facco et al 2019c).

Seeing presences

'I had the cat in front of me looking at me, and suddenly we both turned to the door of the room. There was a man with dark hair and black eyes looking at me. The thing that struck me the most this time, compared to the other experiences I had, is that it was in the flesh: the other times it was in an ethereal, let's say impalpable form. The cat started chasing him, and the man turned around and left. The doors and windows were closed, it was evening after dinner in autumn/winter. He hit me because he was real flesh and blood, so much so that I thought he was a thief. He had a stern look, but not aggressive.'

While experiences of this kind are not uncommon in people who are experiencing the recent bereavement of a loved one (Cooper, Roe and Mitchell, 2017; Tressoldi et al., 2022), they can also be experienced by other people who are not in psychological or physical conditions able to foster illusions of this kind (Badcock et al., 2017).

Communication with non-incarnated entities

The desire and practices to communicate with people who have concluded their life experience on our earthly dimension goes back to the origins of humanity and likely developed in parallel with religious, spiritual and cultural beliefs, suggesting a continuity of existence after the death of the physical body. In ancient Egypt, a clear concept of death as a transition to another dimension had already been well described in the Pyramid Texts (dating back to 27th–22nd century BC), the Sarcoptagus Text and the Egyptian Book of the Dead. Likewise, since the beginning of Indian culture the atman (individual soul) was considered as a
part of the universal Atman. The Bardo Thödol (Tibetan Book of the Dead, dating back to the 8th century BC) describes both a coarse consciousness, closely connected to the brain and dying with it (akin to the Western scientific view) and a surviving subtle mind-energy moving toward its ultimate existence or doomed to reincarnation. According to Hippocrates, everything unceasingly changes and all things are interrelated, no one being endowed with an autonomous, independent, intrinsic existence: rather, they are simultaneously concordant and contrary in their transformation (De Diæta 1, 3–5). He also warns against the view that everything comes out of Hades and returns to Hades an opinion of people trusting in their eyes rather than their reason for 'nothing which is living can die, and it is impossible that what is not may start to be' (De Diæta, 1, 4, 9).

In her review on the different forms of communication after death, Julie Beischel (2019) classifies those with other entities as spontaneous, facilitated, assisted and requested. Spontaneous ones are those occurring without a clear intention, but only following a simple desire for this to happen. Instead, facilitated and requested communications are experiences sought through specific techniques, such as the use of psychotrophic agents or the use of equipment or other tools supposed to facilitate the communication with disembodied entities. The most widely known devices are probably voice recorders – a topic also known as psychophony, metaphor or instrumental transcommunication. However, there is no evidence of the effectiveness of these techniques to date.

The study of assisted communication through mediums – or, say, people claiming to have this ability – has obtained some evidence in recent years. Julia Beischel and Mark Bocuzzi and others attempted to check the alleged information provided by mediums by devising experimental designs with the maximum of blindness, in order to prevent them from obtaining information either indirectly from the applicants or by conventional sources, such as internet (Beischel et al., 2015; Beischel & Zingrone, 2015; Beischel et al., 2017; Tressoldi et al., 2021).

Currently, the analysis of all published studies until 2019 suggests that some of the investigated mediums may have unconventional access to information about the deceased (Sarraf et al., 2020). Nevertheless, the origin of this information retrieval remains unclear at best; it has been interpreted as depending on alleged telepathy, retrieval from hypothetical sources of universal memory storing all individual experiences, or non-local properties of consciousness-information.

### Channelling

Another modality of communication with non-incarnate entities is through so-called channelers, i.e., people who make their voice and body available for communication from alleged entities, including both deceased persons and non-earthly beings (Pederzoli et al., 2021).

Leaving aside the history of these phenomena, which also goes back to the dawn of religions and other cultures, recent scientific research has started to investigate the origin of this information, examining whether it may spring from the channeler (such as implicit memory and unconscious sources of information), rather than a hypothetical external intelligent sources. On the other hand, this is hardly possible, being a matter of a subjective channeler’s report devoid of any possible objective confirmation. For example, should the channeler report messages from an alleged angel or an unearthly entity, one cannot obviously check whether it is a “real” entity; rather (and more reasonably) it might result from his/her inner world and its projection into the outer world. Therefore, any report of channelling should be interpreted by taking into account its meaning and value without attributing it to any alleged external identity.

A further step to check the source of channelers’ information has been attempted by the Hypno-Channelings research programme (Pederzoli et al., 2018). By hypnotically inducing an OBE in the channeler followed by a contact with a discarnate entity, it is possible to interview this purported entity through the channeler’s voice. Of course, the content of these interviews could still reflect channeler’s and/or hypnotist’s mind (the latter through direct, indirect or subliminal suggestions), while any proof of facts that both the channeler and the hypnotist cannot know would undoubtedly show something more than a simple projection from their inner world.

A short excerpt from the interviews with the entity named ‘Him’ (the text can be read in full in “Contents of the interviews with ‘Him’, available at [https://doi.org/10.6084/m9.figshare.6984251.v13](https://doi.org/10.6084/m9.figshare.6984251.v13)) is reported below:

'LP [the hypnotist] asks how long, after the extinction of the Physical Body and the Subtle Body, our identity that can be contacted by mediums persists. He also asks how long he can be contacted while he is processing the next incarnation. "He" specifies that these are two different situations. In the former, the Subtle Body is
sometimes not well ‘synchronized’, especially with the passage represented by death, and both a better synchrony and a period of re-elaboration of the experience acquired in life just ended would be desirable, before the possible subsequent incarnation. Rather frequently the Subtle Body remains, however, after the death of the Physical Body. According to ‘Him’ it is an anomaly because it shouldn’t happen, but that is a temporal phase of quite easy contact: you contact the Subtle Body. When there is a strong emotionality on the part of loved ones, the Subtle Body is influenced by it and finds it difficult to disappear.

Clearly, the above information is nothing more than the channelers’ opinion, far from showing the possibility of communication with entities in other hypothetical realms. Nonetheless, the Hypno-Channelling procedure can be used to explore these ostensibly odd mental facts and check some of their phenomenological and physiological correlates, as done for example by Wahbeh et al., 2018; Wahbeh et al., 2019; Wahbeh & Radin, 2018.

**Transpersonal Experiences**

Unlike contact with disembodied entities, transpersonal experiences – also called mystical or spiritual experiences – refer to a direct contact or union with a primary spiritual principle, named in different ways according to the ethnic and socio-cultural background (e.g., God, Atman, Allah or any other entity). Here is an excerpt of a recent case studied by Facco et al. (2019a):

‘We are essences/essences of love Almost reunited with the whole thing.... I feel myself a current that has flowed and passed through. We are all reflected in the same light... acknowledgement of being a spirit... And I see my outline of semi-opaque light superimposed on the outline of full light in which we are immersed... I see the silhouette Me in the Whole’s silhouette And I mean Spiritual Peace... .... And I mean that we are individual cells of the same spirit... In each one is imprinted the DNA of the Spirit... but each one lives to accomplish more than herself... And I mean... ....each one of them completing themselves and the life of the entire organism.... ....and as I pray I see my unfinished body thinning as the Essence of God’s Imagination Similarity expands.’

These experiences, with their fusional flavour, allow one to overcome the usual dualistic separation between the self and the outer world and realize to be an inseparable part of it. They are closely related to the above-mentioned enlargement of Self, an example of which is the outstanding NOME that Federico Faggini the inventor of computer processors has described in his autobiography (Faggini, 2019):

‘When I went back to bed, as I waited in silence to fall asleep again, I felt a powerful charge of love energy emanating from my chest, that I had never felt before.

‘This feeling was clearly love, but a love so intense and so incredibly fulfilling that it outweighed any idea or experience of mine about the nature of love. I perceived it as a wide beam of white, glittering, vivid, blissful light bursting from my heart with incredible strength. Even more incredible was to experience that the source of that love was me!

‘Suddenly that light exploded and filled the entire room and then expanded to embrace the entire universe with the same white splendour: Then I knew without a shadow of a doubt that this was the “substance” of which everything that exists is made. It was what created the universe from itself. To my great surprise, I recognised that light was me! The whole experience lasted perhaps less than a minute and changed me forever.’

These experiences are mainly spontaneous, as in the above-mentioned cases, but they may also be elicited by specific procedures, such as meditation (Chen et al., 2011) or by the controlled intake of psychotropic agents, such as psilocybin (Griffiths et al., 2008) or ayahuasca (Bresnick & Levin, 2006; Trichteret al., 2009).

**OBEs**

Spontaneous OBEs in physiological conditions are reported by an average of about 9% of respondents and up to 26% of people, who claim to have experienced at least one OBE in their lifetime (Alvarado, 2015; Braithwaite et al., 2011). Only rarely are these experiences voluntary, a fact making hard any scientific investigation into their physiological and phenomenological features (Carruthers, 2015; Smith & Messier, 2014).

This limitation may be at least partially addressed with hypnotically induced OBEs (H-OBEs) (Facco et al., 2019b; Pederzoli & Tressoldi, 2018). The advantage of H-OBE is the possibility to study its neurophysiological correlates as well as to interview the participants and administer them psychological
tests during their experience, in order to investigate their phenomenological features and compare them to the ordinary state of consciousness.

H-OBEs have been recently compared to OBEs imagined in a state of ordinary consciousness (I-OBE) (Facco et al., 2019b). The results showed significantly higher scores of the altered state, positive affect, altered experience, and attention subdimensions of the Pekala Consciousness Inventory in H-OBE than in I-OBE; unlike I-OBE, H-OBE was associated with a significant power decrease in beta and gamma EEG activity in the right parieto-temporal derivations.

This technique also allowed to detect OBE-related changes in the experience of vision, time and movement (De Foe et al., 2017; Tressoldi et al., 2014, 2015, 2021): (a) I see it [an object] a little bit all at the same time, then, as I think about going through it, I see the inside too. The body sees in three dimensions, while in this state I perceive by intuition all its essence, including all the information about the object; (b) I do not perceive any sense of movement from one place to another, but a sort of immediate displacement with the Psychic Body; (c) It is as if time had stopped. I feel really good. I can move right, left, above and below in a non-concrete space that seems to be infinite. I can also go to another space, darker and more concrete, and move there as I like.’

Near-death experiences

NDEs are the best known and most intriguing NOMEs. Despite being real clinical facts with a clear phenomenology and epidemiology, NDEs have been a priori rejected or reduced to a matter of brain going awry, according to the ruling materialist approach of medical science. Being placed at the boundary between life, death and hereafter, NDEs also clashed with the doctrine of the Two Magisteria, held by Pope Pius XII and later on endorsed by the American Academy of Sciences of USA as well (Alberts, 1998; Facco et al., 2015; Parnia et al., 2017).

Fortunately, following the seminal work of Moody Jr. (1977, 1980) an increasing interest has developed at the end of the last century and a wealth of data are now available in the literature. NDEs occur during life-threatening conditions (e.g. cardiac arrest and haemorrhagic shock) with loss of consciousness, but have also been reported in non-critical conditions as well such as during haemodialysis or during severe psychological distress (Charland-Verville et al., 2014; Facco & Agrillo, 2012a, 2012b; Gabbard, Twelmlow & Jones, 1981; Lai et al. 2007).

Their main features are now well known and can be summarised as follows: (a) awareness of being dead; (b) OBE; (c) passage through a tunnel ending in a non-ordinary dimension where visual and auditory perceptions seem to be enhanced; (d) experience of great peace and well-being, immersed in a celestial landscape or a light emanating a feeling of great bliss and love; (e) meeting with deceased relatives and/or non-defined entities, often reported as beings of light; (f) Holographic life review; (g) perception of a limit not to be trespassed, often with someone (entity or deceased relative) warning them to go back because his/her mission has not ended yet; (h) return to the physical body with a clear awareness that it was not a dream or a hallucination, but a real experience; the return is usually unpleasant, given the gap between the profound bliss during the NDE and the post-critical clinical condition; (i) an indelible memory and lifelong positive permanent effects on the meaning of life and death, leading to self-transformation and the fear of death being overcome.

Several hypotheses have been advanced in recent years in an attempt to provide a neurobiological interpretation of NDE features. However, none of these hypotheses has been demonstrated so far, while some of them are ill-founded, being contradicted by already known facts. The main available hypotheses will be only listed here, for the sake of concision (for further analysis see Facco, 2018; Facco & Agrillo, 2012b; Facco, et al., 2015): (1) retinal ischaemia as a cause of tunnel vision; (2) acidosis and ionic shift; (3) increased release of endogenous opioids, glutamate and/or other neurotransmitters as well as administered drugs as a cause of changed emotional state and hallucinations, equating NDEs to delirium; (4) REM intrusions, equating NDEs to hypnotic or hypnopompic hallucinations; (5) temporal lobe epilepsy; (6) residual EEG activity during cardiac arrest; (7) dysfunction of the parieto-temporal junction as a cause of OBEs; (8) psychological interpretation (i.e., expectation of hereafter).

Very uncommon well-documented cases were able to witness what happened in the emergency room during their cardiac arrest from outside their body. In the last of these cases, it was also possible to estimate the persistence of consciousness for at least three minutes during ventricular fibrillation (Sabom, 1998; van Lommel et al., 2001; Parnia et al., 2014).
Besides checking NDEs in real time as soon as the patients regains consciousness, they may be studied by reliving them during hypnosis (Palmieri et al. 2014; Martial et al., 2019). Palmieri et al. (2014) have used hypnosis and EEG monitoring to improve recall and decrease memory inaccuracy in patients with previous NDEs, as well as check their neural markers compared to memories of both real and imagined events. NDE memories were similar to real memories and differed from memories of imagined events as regards detail richness, self-referential and emotional information. Their EEG correlates were also significantly different from memories of imagined events, being associated with theta (a well-known marker of episodic memory) and delta band activity (related to mental activities like the recollection of the past, as well as trance states, hallucinations, and other related portals to transpersonal experiences). In short, NDE memories are stored as episodic memories of events experienced in a peculiar state of consciousness.

**Previous life memories**

Likewise NDEs, memories of previous lives seem ostensibly odd, appearing to be closely related to philosophies and religions extending far beyond the perspective of positive sciences and even beyond the sphere of the monotheist Abrahamic tradition.

The memory of past lives suggests the idea of reincarnation, but they prove nothing. On the other hand, reincarnation is neither less rational nor plausible than the idea of a single life (with or without hereafter). In Western culture the belief in the reincarnation was held by Pitagoras and Plato (see the myth of Er), and by Origen (3rd century A.C.) in Christendom, but was then withdrawn by the Church following the Synod of Constantinople in 543 A.C. Thus, its disappearance from Western culture reflects nothing more than a cultural filter engendered by the doctrine of the Church, while the East, especially India, has always held it.

The problem of reincarnation calls for a rigorous rational approach and a genuine philosophical perplexity, while the memories of previous lives are real clinical facts in themselves, neither demonstrating nor disproving any philosophical assumption. As a result, the duty of scientific research is to analyse them without prejudices of whatsoever origin (including scientific ones), in order to facilitate their comprehension.

The problem of previous lives is twofold: a) spontaneous memories, especially in small children; b) hypnotic regression to previous lives.

Following the pioneering work of Ian Stevenson (1960, 1977), over 2500 children (mainly pre-schoolers) reporting memories of other deceased identities have been described to date, including Western children, i.e., people belonging to a culture which does not admit reincarnation. The available data show the following facts (see Mills & Tucker, 2014 and Tucker, 2008 as reviews): (a) Spontaneous memories arise at an average age of three years and are forgotten during school age, like many childhood memories; (b) The data recorded in several cases allowed Stevenson to verify the truthfulness of memories and trace the identity of the deceased person, in the majority of cases resulting in a violent death; (c) Some children have intriguing marks and/or birth defects corresponding to the site of the injury causing the death of the perceived identity (e.g., the entry wound of a bullet); (d) A 16-month median elapsed time between the death of the recalled identity and the child's birth has been estimated; (d) The memories mainly deal with the last part of the previous life and are associated with strong feelings; (e) Some children's behaviors seem to be coherent with the reported previous life, including affection for family members in the previous life and symptoms similar to those of post-traumatic stress disorder (e.g., fear of water when the previous identity died by drowning); and (f) The psychological profile of these children shows greater verbal skills, better memory and school performance and more social activity than their peers and no meaningful psychiatric symptoms (Haraldsson, 1995, 2003).

Matlok’s recent book (Matlok, 2019) and other articles on individual cases (Masayuki, 2017; Tucker, 2016), also support the reality of this kind of experience. In conclusion, the memories of past lives are clear, undeniable facts, calling for a proper interpretation.

Hypnotic regression to alleged previous lives looks to be a much simpler phenomenon generally unrelated to genuine facts and, therefore, may be regarded as a matter of pseudomemories. The capacity to report previous lives is also related to hypnotisability, cultural and religious background and higher scores on measures of magical ideation and absorption (Meyersburg et al. 2009; Pyun & Kim, 2008; Stevenson, 1994). On the other hand, the fact of being pseudomemories does not exclude their meaningful content, in that they may arise as imagined and conceptualized symbolic representation of anecotic emotions and contents springing from the unconscious, in order to make them noetically definable and tellable (Facco et al., 2019c). If so, they could aid psychotherapeutic interventions in exploring patient’s unconscious in a way akin to dream interpretation.
To the best of our knowledge, only two cases of veridical memories have been reported in the literature on hypnotic regression to past lives. The former was a patient reporting an intriguing correspondence between his uncommon medical conditions and past life memories, of which no satisfactory interpretation is available (Lucchetti et al. 2013). The second case was an American woman who recalled the identity of a Spanish woman named Michaela Maria Ruiz de Prado who lived during the 16th century. The report was very detailed and included several facts never published in English, some of them retrievable only in Archives in Cuenca (Spain) (Tarazi, 1990; an excerpt can be found at https://psi-encyclopedia.spr.ac.uk/articles/antonia-case-study-analysis).

Presentiments and precognitions

According to the Merriam-Webster dictionary, presentiment is defined as ‘a more or less obscure, vague, indefinite sensation of what might happen.’ When dealing with sensations, one must take into account their psychosomatic nature, including both emotions and physiological aspects such as cardiac, respiratory and digestive symptoms. Here, we shall refer only to those not depending on more or less conscious reasoning processes, i.e., related to expectations stemming from prior knowledge. For example, when we often travel a road with dangerous intersections, we may have a feeling of someone entering our lane, a feeling which may be favoured by our previous experience. Instead, no previous experience may justify a more or less conscious, vague emotion of discomfort occurring when we walk a familiar, safe path and then realize that the roadside has fallen away a little further ahead. In other words, the core of the problem is if and how one can anticipate rare and unpredictable events.

Despite the anticipation of random unpredictable future events being considered impossible, some evidence of this phenomenon has been collected in recent years by checking physiological reactions a few seconds before the administration of pleasant or unpleasant random events e.g., car accidents or gun shoot in the face (Duggan & Tressoldi, 2018; Mossbridge et al., 2012).

The essential difference between presentiments and precognitions is that in the latter, one is aware of it and can thus translate it into thoughts and words, for example:

‘I was 15 and it was Sunday. I was in the bathroom, and I was about to get in and out. At one point, a voice behind me told me to come out later. It hit me very hard, I looked back but obviously nobody was there. After 15 minutes, my grandfather’s desperate screamed came from the ground floor. He was feeling sick while my grandmother was passed out. I stepped in immediately, diagnosed a poisoning from the furnace, and saved their lives. If I had gone out at the usual time, they would have died.’

Despite appearing to be uncommon and/or odd, these kinds of phenomena can be scientifically studied. Storm et al. (2017) reviewed 50 studies aiming to scrutinize the ability to perceive information related to a particular image, while dreaming. The results clearly revealed that the identification rate of the correct images was significantly higher than would be expected by chance.

Seeing at a distance

Unlike precognition, seeing at a distance or ‘Remote Viewing’ (a very popular term on the internet), is defined as the conscious and voluntary ability to collect information about objects, people, places, regardless of distance and time and any possible barrier able to mask them.

Let us report a well described example dealing with an experiment performed on 3 November 2003 about six weeks before the capture of Saddam Hussein with a group of experts in this technique (Schwartz, 2018). The participants were asked to describe the location and circumstances of Saddam Hussein at the time his location would have become known to American forces. The participants’ imagined location was the following:

‘Saddam will be found “underneath an ordinary looking house. It is on the outskirts of a small village, near Tikrit.”

‘The house is part of a small complex; delimited on one side by a dirt road and, at the back, by a nearby river.’

‘The house can be identified because it has a large tree growing at both ends and has a strange kind of partial second floor above the front door.’
Figure 1 shows a photo of the place where Saddam Hussein was captured (released by the US Department of Defense), including many details described during the remote viewing.

Figure 1: Photo of the place where Saddam Hussein was captured, released by the US Department of Defense (from Schwartz, 2018).

An example like this is incapable of establishing the reality of this phenomenon, but still remains intriguing.

The Star Gate project (conducted from 1972 to 1995) is one of the most famous projects using remote viewing for US intelligence purposes (all information can be found in Marwaha and May 2017, 2018).

This project was funded with approximately $20 million, but the American Institutes for Research declared that the psychic-spy operation had been a bust. On the other hand, Jessica Utts, president of the American Statistical Association, correctly emphasized that establishing the reality of the phenomenon is a different problem from that of examining whether it may be useful for government purposes (Utts, 1996). As far as the former is concerned, in her analysis she reported that there is no doubt that ‘Using the standards applied to any other area of science, it is concluded that psychic functioning has been well established.’

Remote viewing has also been used in archaeology, such as in the recovery of the American brig Leander, sunk in 1834 while en route from the island of Cuba to Boston, Massachusetts (Schwartz & De Mattei, 2000). Other studies suggest the possibility to predict stock market fluctuations above chance, (Kolodziejczyk, 2013; Smith et al., 2014), while others fail to show any positive result (Katz et al., 2018).

Remote viewing has also been used in police investigations, the most outstanding of which is the kidnap of American Brig. Gen. James D. Dozier by the Red Brigades in Italy on 17 Dec 1981. The Washington Post published an article by Sally Squires entitled The Pentagon’s Twilight Zone on 17 April 1988, reviewing it and concluding that it was unsuccessful. On the other hand, a released CIA report confirms the use of remote viewing and its success: ‘On 18 December, we conducted our first session. This is a drawing of the first session which was sent to Italy. The search for General Dozier should be concentrated in the Padua area. This briefing was done two days prior to General Dozier’s actual rescue...Among other information obtained in a session on 21 December was the following... The only city found in northern Italy to contain a unique circle park with a cathedral was Padua... 8 days prior to his release, the remote viewer named the location of Gen. Dozier as Padua’. (https://www.cia.gov/library/readingroom/docs/CIA-RDP96-00788R001700270020-4.pdf).

**Mind interaction at a distance**

Mind to mind interaction at a distance belongs to what is commonly named telepathy, which refers to shared information between people not attainable by conventional means.

At the end of 2020, 113 effect sizes on the Ganzfeld protocol were available and freely accessible for independent analysis (Tressoldi & Storm, 2021). This protocol maximizes the visual and auditory isolation of participants, in order to check their capacity to identify what their partner saw or heard at distance in a separate room. As a whole, these studies showed the capacity of isolated subjects to identify their partner’s perceptions with on average a 7% higher than chance.

The mental connection between isolated coupled subjects may also involve unconscious processes, such as EEG changes, yielded by visual and/or auditory stimulation in the participant (the transmitter) located at a distance in another isolated room (Bilucaglia et al., 2019; Tressoldi et al., 2014, 2016; Girolini et al., 2016, 2018).
The hypothesis of mind interaction stems from the possibility of non-local properties of consciousness, a huge problem raised by quantum physics. Perhaps, the world at large is less “local” than believed so far and nature might reveal itself as a huge integrated, complex system made of interrelated events including all living creatures (Atmanspacher, 2014, 2015; Barlow, 2015; Charlton, 2007; Connolly, 2015; Nepe & Close, 2015; Walach & Romer, 2011; Wang et al. 2013).

In conclusion, the idea of mind-to-mind interaction at a distance, despite being ostensibly odd when observed by the traditional positivist-materialist approach anchored to classical physics, might be more plausible and real than commonly believed and worth of further investigations to explore and better understand it.

**Non-ordinary interactions of consciousness**

The non-ordinary interactions of consciousness include the interaction on human behaviour, health, as well as organic compounds and electronic equipment. An example of possible non-ordinary interactions on human behaviour is the so-called ‘Maharishi effect’ named after Maharishi Mahesh the Indian yogi founder of transcendental meditation and Maharishi University in the US. The Maharishi effect claims that population's behaviors and/or negative events might be affected by transcendental meditation exercised by a number of meditators equal to approximately the square root of 1% of this population (e.g., 100 meditators would be enough for a population of 1,000,000 people), a formula based on the Hagelin’s quantum field theoretical model (Hagelin, 1987). According to this hypothesis, the simultaneous deep meditative state in many subjects would create a field of psychophysical coherence for the entire population, reducing the number of negative events, such as assaults, rapes, road accidents, etc.

Empirical support for this theory has been found in more than 50 studies (e.g., Cavanaugh & Dillbeck, 2017; Dillbeck & Cavanaugh, 2016, 2017; Orme-Johnson & Oates, 2009). Indeed, the strange, ostensibly esoteric idea of mental interaction is much more common than traditionally believed, since it is not different in principle from the routine practice of prayer in all religions; in fact, prayer is routinely recommended by priests and jointly exercised by worshippers to help saving humanity from wrong behaviours and disasters.

The practices of healing and intercessory prayer involve vary widely according to ethno-cultural and theoretical models. For example, in Reiki and pranotherapy, healing is understood as a direct relationship between practitioners and patients able to channel the vital energy, while in theistic religious models, healing is obtained through the relationship with the divine and its power (a thousand-old view, form Imhotep temples in ancient Egypt to Lourdes).

Given the difficulties of conducting controlled clinical trials (including the placebo group), there is little evidence to support these remote interactions. Only a few meta-analyses on distant healing are available providing, as expected, contradictory results (Astin et al., 2000; Hodge, 2007; Masters et al., 2006). Besides their intrinsic limits and pitfalls, the lack of meaningful results also depends on the great differences of the adopted techniques and goals, encompassing many physical as well as psychiatric disorders. In this regard, the study of the effects of healing intentions on animals seem to be more interesting, animals being presumably less influenced by expectations and, thus, the placebo effect. For example, Bengston et al. (2007, 2012, 2018), reported the healing of lab rats that had been injected with lethal cancer cells, by exercising simple mental techniques centered on the intention to heal and a mental connection to the animals to be healed, without any direct contact.

Several studies on mental interaction on the growth of organic material, such as plants, seeds and cell cultures, seem to provide better results than those on humans. In the last meta-analysis, 49 of these experiments were analysed by Roe et al., (2014). Among these, a study investigated the effects of energy-charged cotton, hands-on treatment by healers or their recorded voice on breast cancer cells in vitro. Surprisingly, the authors found a significant downregulation of ATP citrate lyase and interleukin 1b after 4 and 24 hours of exposure to the recording in three independent experiments and concluded that: (a) the effect was reproducible; (b) healing intention can be captured and released; (c) hands-on delivery of healing intention is more effective than recording (Beseme et al., 2018). Furthermore, Radin et al., (2007) and Shah & Radin, (2013) in a double-blind, randomized, placebo-controlled experiment using chocolate exposed to good intentions by a group of meditators reported a significant improvement of mood and a decline in fatigue only in the intention group.

Studies on mental interaction with electronic equipment, mainly random number generators, date back as far as the 1930s (Duggan, 2019), and a review of more than 300 studies has been published by Bösch et al. (2006). The latest developments in this line of research aim to: a) better understand the role of the mind on subatomic particles, such as photons (Radin, Michel, & Delorme, 2016; Radin, Michel, Johnston, & Delorme,
2013; Radin, Bancel & Delorme, 2921; Tressoldi et al., 2016) and b) investigating the possibility of building up mentally controlled electronic equipment (Tressoldi et al., 2020).

**Clues about the nature of the human mind**

The aforementioned data reported above, deal with intriguing but ostensibly odd phenomena, which have been rejected a priori by positive sciences, due to the incompatibility with the adopted Weltanschauung. Nevertheless, they are 'real' mental non-pathological facts requiring a proper explanation. In the comprehension of NOMEs two options are possible: (a) all of them are fancies and should simply be discarded and, (b), their oddity at least partly depends on the ruling paradigm, a huge epistemological problem. In fact, science, as any other rational discipline, is metaphysically grounded on plausible but undemonstrated axioms and can only perceive and check what is compatible with them. In other words, seeing means simultaneously being blind to what is beyond the field of view as it has been well painted by a famous anecdote dealing with a man under a street lamp looking for the house keys he lost elsewhere, because that was the only place where he was able to see.

The 20th century physics has undergone a radical revolution and a shift of paradigm in order to understand the ostensibly absurd properties of space-time and matter-energy. Perhaps, medicine and psychology, which are still anchored to the physics of the 19th century, will begin to undergo a similar rethinking of their paradigm in the near future. A clue to this possible change is the recent introduction of quantum biology and quantum theories of consciousness (Lambert et al., 2013; Mohseni et al., 2014; Poznanski et al., 2017). If this is the case, a new rigorous scientific perspective may open up, allowing researchers to better understand some of the phenomena described above. We do not claim anything about their truthfulness, apart from the need to face what looks ostensibly odd with a rigorous scientific, open-minded approach, in order to comprehensively examine it. It also calls for a similar sceptical stance, according to the original Greek meaning of the term σκέψις (sképsis), i.e., reflection, search, refusal of dogmas of whatsoever origin (even scientific ones) and the nurture of a rigorous doubt neither admitting nor excluding anything a priori. Any other stance is subjected to dogmatic drift and ideology, leading to two possible opposite flaws: a) to implicitly trust non-existent phenomena and, b), to a priori neglect existing ones. Both of them are affected by a similar though opposite dissociation from reality.

All NOMEs, if properly understood, may shed much light on the true nature of the human mind and the mind-world relationship. Nonetheless, NOMEs cannot only be faced by a narrow mechanist-reductionist paradigm only, rather, they call for a neurophenomenological approach taking into account the content and meaning of subjective experience.

Some NOMEs, like the intriguing experiences of previous lives, lay as non-pathological phenomena in a continuum between normal consciousness and dissociative identity disorders. The interplay between their neurobiological base, experience and introspective activity provide the base of inner life and its relationship with the outer world (Facco et al., 2019c).

Finally, the objectivism of positive science may result to be a 'transcendental naivety', as Husserl (1970) defined it. In fact, science in itself is a product of the human mind aimed to provide the most rigorous rational knowledge. As such, it inhabits and lives in the world of consciousness, the nature of which is irreducibly subjective, while the so-called objectivity cannot trespass the boundaries of shared subjectivity. This should be enough to start overcoming the century old Cartesian split between res cogitans and res extensa still adopted by both dualists and materialist monists, an essential step to better comprehend the consciousness and its place in the world.

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**REFERENCES**


Appreciation and emotional well-being during COVID-19: The role of sense of coherence

Pranati Misurya¹, Lakshmi Sunita Nair², Shambhavi Tiwari³ & Kirti Sharma⁴

¹University of Exeter (United Kingdom)
²University of Southampton (United Kingdom)
³University of Copenhagen (Denmark)
⁴Guru Nanak Dev University (India)

Correspondence: pm534@exeter.ac.uk

Appreciation and sense of coherence have been widely researched for their relationship to well-being. However, the relevance of these concepts regarding their relationship with each other, as well as the current state of well-being, adds a unique perspective to the literature. In the present study, we investigate the role of appreciation towards emotional well-being in the context of COVID-19, and whether the sense of coherence mediates this relationship. Participants (N = 234) were presented with measures of appreciation, sense of coherence, and well-being. Results indicate that appreciation leads to emotional well-being and sense of coherence mediated this relationship. Further, results indicate positive correlations between all the three variables. Findings contribute to the literature on positive functions served by appreciation, specifically towards emotional well-being. Additionally, this study points to the mediating mechanism through which appreciation exerts its positive effects by pointing out the role of sense of coherence in this link.

Keywords: appreciation; emotion; emotional well-being; mediation; sense of coherence
Life satisfaction is “conscious cognitive judgement of one’s life” (Pavot & Diener, 1993, p.164) and is understood to be the cognitive aspect of subjective well-being (Diener et al., 2002). Epidemic outbreaks such as H1N1 and SARS have been found to be associated with negative sequelae of events leading to possible increase in depression and anxiety symptoms (Brooks et al., 2020). Coronavirus outbreak, being a similar health emergency, has also posed challenges for mental health of individuals in terms of anxiety and depression (Li et al., 2020), and psychological distress (Moccia et al., 2020; Ogwuuche et al., 2020). This, in turn, has called for development of special guidelines for emergency psychological crisis interventions worldwide and thus the need for deliberation on the role of mental health professionals in attending to such concerns (Banerjee, 2020; Cullen et al., 2020; Relojo et al., 2016).

Rajkumar (2020), in his review investigating the role of mental health during COVID-19 found ‘subsyndromal’ mental health issues emerging as a common response to the outbreak. Similarly, research studies have pointed to the need for increased attention to psychological factors associated with an outbreak such as the role of affective temperament and attachment styles (Moccia et al., 2020). Other researchers have explored situational factors associated with the pandemic in relation to mental health. For instance, Tell et al. (2020) in their study investigated the psychological impact of COVID-19 on stay-at-home orders and daily quality of life and found it to be associated with greater health anxiety, financial stress, and loneliness (Dey & Relojo-Howell, 2021).

Role of appreciation

Appreciation is defined as ‘acknowledging the value and meaning of something – an event, a person, a behaviour, an object – and feeling a positive emotional connection to it’ (Adler & Fagley, 2005, p.81). The construct of appreciation as detailed by Adler & Fagley (2005) includes a number of components namely: (a) the ’have’ component (focus on what one has instead of the lack); (b) ’awe’ component (deep and spiritual connection to something e.g., nature); (c) ’rituals’ component (performing of acts likely to engender a sense of appreciation); (d) ‘present moment’ component (here and now); (e) ’self/social comparison’ (downward comparison to self/others as a way to foster experience of appreciation); (f) ‘gratitude’ component (a sense of being thankful in response to a favour / benefit received from a person); (g) ’loss/adversity’ component (experience of positive feelings for what one has in response to the loss/adversity suffered); and (h) the ’interpersonal’ component of appreciation (feeling a sense of positivity about the people in life).

Appreciation has been previously associated with several cognitive and emotional aspects that are relevant to subjective well-being and life satisfaction1 (Adler & Fagley, 2005). It has been found to play a unique role in predicting life satisfaction while controlling for the influence of the Big 5 personality factors and gratitude (Fagley, 2012). Appreciation as a higher order construct, along with the lower eight components contribute towards subjective well-being, specifically, the ’have’ component of the appreciative world view towards life satisfaction (Fagley, 2012). Research has also linked appreciation to mental health, e.g., a study by Lim (2017) found appreciation to positively predict mental health among Korean students, whereas in the workplace, appreciation has been associated with improved peer relationships and increased value and meaning in work (Fagley & Adler, 2012).

Given the positive functions associated with appreciation, the present study seeks to expand on the positive functions served by appreciation in the context of the current COVID pandemic.

Sense of coherence

Sense of coherence (SOC) is one conceptual idea that has received widespread attention in health and well-being literature (Almedom, 2005; Geyer, 1997). One of the key proponents of this approach, Antonovsky (1987) introduced the concept and defined it as a ‘global orientation, a pervasive feeling of confidence that

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1 Life satisfaction is “conscious cognitive judgement of one’s life” (Pavot & Diener, 1993, p.164) and is understood to be the cognitive aspect of subjective well-being (Diener et al., 2002).
the life events one faces are comprehensible, that one has the resources to cope with the demands of these events, and that these demands are meaningful and worthy of engagement’ (p. 19).

The components of SOC (Antonovsky, 1987) include ‘comprehensibility’ which refers to the cognitive perception of the events or being cognitively able to make sense of the events, ‘manageability’ which refers to the perception of an individual that they have the required resources to manage the event and ‘meaningfulness’ which refers to the conviction of the individual that the demands placed are worthy of time and effort.

The development of the construct and the Orientation to Life scale to measure it (Antonovsky, 1987) has been followed by widespread research on SOC. It has since been linked to a number of positive outcomes such as less stress in the workplace (Albertsen et al., 2001), better quality of life (Eriksson & Lindström, 2007), mitigating effect on life stressors (Flannery & Flannery, 1990) and work engagement (Van der Colff & Rothmann, 2009). Further, SOC also enhances the ability to employ adaptive coping strategies, resulting in higher self-esteem, psychological and physical well-being (Pallant & Lae, 2002).

SOC emerges as a relevant construct during the current pandemic as it has been associated with a period of uncertainty and stress (Ruiz-Frutos et al., 2020). SOC is thus understood as the capability which is likely to enable individuals to better manage stressful situations and has also been previously associated with the development of resilience (Gómez-Salgado et al., 2020).

Present study

In the present study, we aim to investigate appreciation as a construct in relation to well-being in the current context of COVID-19 situation. The features of appreciation that we consider in this study should enable a perception that sees life as comprehensible, manageable, and meaningful. This understanding of the importance of appreciation in increasing SOC can thereby contribute to well-being. Further, we consider the role of these factors in understanding positive coping during the current COVID-19 pandemic situation.

We pre-registered the study (including the hypotheses) after the collection of the data [https://osf.io/gkd5m/?view_only=e92431ed73d4220ae3a4a141e599e26; blinded for review]. In line with this, we had the following hypotheses:

H1. Appreciation, SOC and emotional wellbeing will be positively correlated.
H2. Appreciation will lead to emotional well-being.
H3. The relationship between appreciation and emotional well-being will be mediated by SOC.

Power considerations

Sample size determination for conducting mediational analysis have been discussed in literature by MacKinnon et al., (2002) based on different methods of mediational analysis, particularly structural equation modelling (SEM; Cole & Maxwell, 2003; Holmbeck, 1997; Kenny et al., 1998) and bootstrapping (MacKinnon et al., 2004; Shrout & Bolger, 2002). Currently, widely known guidelines about minimum sample size for conducting mediational analyses are suggested based on the power 0.80 by Fritz & MacKinnon, (2007, p.14).

For the present study, we aim to compute a mediated regression model, with dependent variable emotional well-being, the independent variable of appreciation and mediator sense of coherence. For the mediation analysis, thus we estimated effect sizes for path $a$ i.e., the total effect of the independent variable on dependent variable and path $b$ i.e., the indirect effect of the independent variable on the dependent variable through the mediator variable. Based on previous research on appreciation and sense of coherence and emotional well-being conceptually closely related to our study (Fagley, 2018; Togari et al., 2008) we estimated medium effect size ($f$) for both paths $a$ and $b$. The sample size calculation, thus for mediation analysis with power = .80, effect size = .26; .39 for a bootstrapping test resulted in a suggested sample size of $N = 126$ for a percentile bootstrap and $N = 115$ for a bias-corrected bootstrap. Considering 10% oversampling, we aimed to obtain a sample of $N = 140$.

Procedure and participants

Participants were invited to the study via an online survey exchange website (www.surveycircle.com). Participants voluntarily agreed to take part and provided consent before participation. The inclusion criteria for the present study were adults above the age of 18 years. No exclusion criteria were applied to obtain a demographically diverse sample. The final sample thus consisted of 234 participants (73 females, 160 males.
and 1 participant who identified as non-binary), aged from 18 to 64 (M = 26.46, SD = 6.55) years. 55.55% of the participants reported to be students, 26.49% were full-time employees, 7.26% were employed part-time, 5.12% reported to be unemployed, 3.41% were self-employed, 0.85% were retired and 1.28% preferred not to say. With regard to ethnicity, 49.14% of our participants reported to be Asians, 32.47% reported to be Caucasians, 4.27% reported to be Latino/Hispanic, 2.13% reported to be African Americans, 1.28% reported to belong from two or more ethnic backgrounds, 0.42% reported to be native Americans and an additional 10.25% participants did not report or reported as unknown ethnicity.

When entering the study, participants were first presented with basic information about the study and asked for consent. Then, they provided demographic information about their age, gender, employment status, ethnicity and the country they resided in. Following that, participants were asked to respond to a series of questions assessing appreciation, then another questionnaire assessing SOC and finally a questionnaire assessing Emotional Wellbeing (see below). Finally, participants were thanked for their participation and were debriefed about the purpose of the study. The study was conducted in accordance with the code of ethics set by the World Medical Association (’Declaration of Helsinki; World Medical Association, 2013).

Measures

Appreciation. Participant’ appreciation levels were measured via the 18-item short version of the Appreciation scale developed by Adler & Fagley (2005). Participants rated on a scale of 1 (strongly disagree/never) to 7 (strongly agree/more than once a day) their level of appreciation for events in general. Sample items included ‘I do things to remind myself to be thankful.’ and ‘I reflect on how fortunate I am to have basic things in life: food, clothing and shelter.’ In our study, the appreciation scale yielded good internal consistency estimates with Cronbach’s Alpha = 0.933.

Sense of coherence

In our study, we used the SOC-13 that captures a respondent’s attitude or feelings towards an object/concept by selecting on a scale from 1 (never have this feeling) to 7 (always have this feeling). Exemplary items include ‘When you talk to people, do you have the feeling that they do not understand you?’ and ‘Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well?’ In the present study, internal consistency estimates are Cronbach’s Alpha= 0.54.

Well-being

The Fordyce Emotion Questionnaire (Fordyce, 1988) was used to assess the current level of well-being. It consists of two items, namely, ‘In general, how happy or unhappy do you usually feel? choose the response that best describes your average happiness?’ and ‘Most of the time I feel happy, unhappy or neutral.’ In the present study, we estimated well-being using the first item only due to missing, incomplete or incorrectly filled responses by the participants for the second item. Respondents were asked to indicate their level of well-being on a 0–10-point scale ranging from ‘feeling extremely happy’ to ‘feeling extremely unhappy’.

Study materials are available at the Open Science Framework, blinded for review: https://osf.io/gsudt/?view_only=96db6d5f7cd34b9b97e59999c00e54b3

RESULTS

Means, standard deviations and correlations (including 95% confidence intervals) between all variables are shown in Table 1. As can be seen therein, appreciation correlated positively with both emotional well-being (r = .45, p < .001) and SOC (r = .29, p < .001), thus confirming our first hypothesis.
Table 1
Means, Standard Deviation, and Correlations with Confidence Intervals

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
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<th>2</th>
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</thead>
<tbody>
<tr>
<td>Appreciation</td>
<td>92.67</td>
<td>17.99</td>
<td>.45**</td>
<td></td>
</tr>
<tr>
<td>Emotional well-being</td>
<td>6.79</td>
<td>1.93</td>
<td>[.34, .54]</td>
<td></td>
</tr>
<tr>
<td>Sense of coherence</td>
<td>56.83</td>
<td>7.79</td>
<td>.29**</td>
<td>.40**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[17, .41]</td>
<td>[.29, .51]</td>
</tr>
</tbody>
</table>

N = 234. Values in square brackets indicate the 95% confidence interval for each correlation.

* p < .05  
** p < .01

To test the hypothesis that appreciation fosters emotional well-being (H2) we conducted simple linear regression analysis. The results of the regression indicate that appreciation significantly predicted in emotional well-being (F(1, 234) = 57.69, p < .001, R² = .19) thus, confirming hypothesis 2.

The relationship between appreciation and emotional well-being was also found to be significantly mediated by a SOC, confirming hypothesis 3 (Table 2). As Figure 1 illustrates, the regression coefficient between appreciation and emotional well-being and the regression coefficient between SOC and emotional well-being was found to be significant. The standardized indirect effect was (.13) * (.07) = .04. We tested the significance of this indirect effect using bootstrapping procedures. Unstandardized indirect effects were computed for each of 10,000 bootstrapped samples, and the 95% confidence interval was computed by determining the indirect effects at the 2.5th and 97.5th percentiles. The bootstrapped unstandardized indirect effect was .01, and the 95% confidence interval ranged from .00 to .02. The indirect effect was statistically significant (p < .001). The results thus align with our hypothesis (H3) of the mediation of SOC in the relationship between appreciation and emotional well-being.

Table 2
Means, Standard Deviation, and Correlations with Confidence Intervals

<table>
<thead>
<tr>
<th>Effect</th>
<th>b</th>
<th>95% CI</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>Total</td>
<td>0.05</td>
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</tr>
<tr>
<td>Direct</td>
<td>0.04*</td>
<td>0.02</td>
</tr>
<tr>
<td>Indirect (mediation)</td>
<td>0.001**</td>
<td>0.01</td>
</tr>
</tbody>
</table>

* p < .05  
** p < .01
DISCUSSION

The present study examined the role of appreciation in emotional well-being and the mediating role of SOC in this link during the current pandemic (COVID-19). Our study supported this relation as results indicated that individuals who reported higher rates of appreciation, also reported higher rates of SOC and well-being.

Appreciation has been previously acknowledged for promoting wellbeing (Adler & Fagley, 2005; Fagley & Adler, 2012) and enhancing ‘adaptive coping to negative events’ (Watkins et al., 2003, p.449), thus as a consequence also highlighting its significance during a pandemic due to its association with psychological distress (Brooks et al., 2020; Tull et al., 2020). We found appreciation to positively predict well-being and this relationship was mediated by SOC. In the context of the pandemic, the findings contribute to the existing line of work (Antonovsky & Sagy, 1986) which demonstrates that a strong sense of coherence (SOC) is associated with a more positive perspective to stressful situations. This can be corroborated by Gallagher et al., (1994) who linked weak SOC with the choice of avoidant coping strategies, which would consequently affect well-being (Vainio & Daukantaite, 2016). Both subjective and psychological well-being are hence, found to be embedded in and supported by SOC (Feldt et al., 2000; Pallant & Lae, 2002).

SOC leads to well-being as it is likely that a high SOC would enable an individual to see the world as comprehensible and manageable as well as help in striving for inner meaning and purposefulness. This belief in the meaningfulness of the world has been previously associated with posttraumatic growth (PTG) (Forstmeier et al., 2009) and meaning-based coping (Lethborg et al., 2006). Life experiences are a factor that have an influence on SOC, it is these experiences which then lead to the development of GRR (Generalised Resistance Resources) which in turn is proposed to be related to one’s sense of coherence (Hochwälder, 2012). The study adds to the finding that appreciation can also be considered as a GRR that has an influence on sense of coherence. While it is understood that a sense of coherence (SOC) can change in response to different life experiences, in the current paper it is worthwhile to note whether appreciation can account for those changes in sense of coherence (Schnyder et al., 2000). These findings also point to the need for increased research to understand the sources and correlates of sense of coherence (see Antonovsky, 1979), Antonovsky,1987; Volanen et al., 2006; & Hochwälder, 2012).

Lastly, since Sense of coherence, a personality trait has been understood to be a ‘psychologically-based stress resistance resource’ (Kovi et al 2017). It is postulated that a sense of appreciation would allow for a sense of
meaning and comprehensibility via SOC. Particularly in the context of adversity and trauma, appreciation of life comes with ‘a sense of reordered priorities – a recognition of what is important’ (Janoff-Bulman, 2004, p. 33). This struggle with comprehensibility to make sense of distressing events often becomes a pathway to ‘questions of value or significance’ (Janoff-Bulman, 2004, p. 33) in individual lives. Comprehensibility, the range to which an individual is able to make sense of hardships (Adler and Fogley, 2012), also happens to be a cognitive component of SOC. This appreciation of the preciousness of life and the resources on offer, can thus also be linked to a healthy level of wellbeing in the presence of sense of coherence (SOC).

Sense of coherence leads to well-being because a high SOC enables an individual to see the world as comprehensible and manageable as well as strive for inner meaning and purposefulness as reflected by meaningfulness, these are the concepts which also form a part of both psychological and subjective well-being (Krok, 2015). This belief that the world is meaningful has been previously associated with PTG (Forstmeier et al., 2009) as well as meaning-based coping (Lethborg et al., 2008).

Psychological stability during a stressful event is then understood to be the result of developing an appreciative understanding of the situation within a coherent perspective of the world.

In conclusion, the present research suggests that coping with stressful life events is understood to be a complex phenomenon than has been previously suggested (Folkman & Moskowitz, 2004). It is important to develop a greater understanding of the factors that can enable positive experiences, even in the presence of ongoing stressors. The present study sought to illuminate these factors as well as to explicate the link between them. Therefore, the present research suggests that psychological stability or well-being during a stressful event can be understood to be the result of developing an appreciative understanding of the situation within a coherent perspective of the world.

CONCLUSION

Coping with stressful life events is being recognised as a more complex phenomenon than has been previously understood (Folkman & Moskowitz, 2004). Thus, it is important to develop a greater understanding of the factors that can enable positive experiences in the presence of ongoing stressors. The present study thus illuminates these factors and explicates the link between them.

Future research on appreciation is warranted since appreciation appears to contribute unique variance in the prediction of life satisfaction and positive affect beyond that contributed by emotional self-awareness, optimism, and spirituality. Considering there are state level and trait level differences in appreciation, as suggested by the authors appreciation as a skill can be learnt, trained and developed (Adler & Fogley 2005)

Future research in this direction can establish how this mediation may vary with respect to age, gender and social support, especially as Antonovsky (1987) contends that SOC tends to stabilise by the age of 30, and majority of our participants fall below that age. It may also be worthwhile to investigate the role of sense of coherence in a non-pandemic situation as environmental changes are associated with changes in SOC (Feldt et.al., 2000).

Both demographic and other psychosocial factors that were not specifically explored in the present study, may have implications in the associations between SOC, appreciation and well-being. For a more comprehensive picture of the shared effect of the variables, longitudinal studies to assess temporal variations would provide better opportunities.

Despite the nature of our findings that are discussed above, the present work comes with certain limitations. Firstly, the generalisability of the results is limited since the study is not longitudinal in nature and hence does not consider variations over time. Secondly, young adults are overrepresented in the sample and the survey was also only accessible to those who used the internet and digital devices as the study was conducted using an online platform. Finally, considering our sample, generalisability to a particular country or population is limited.

Future research in this direction can establish how this mediation may vary with respect to age, gender and social support, especially as Antonovsky (1987) contends that SOC tends to stabilise by the age of 30. It may also be worthwhile to investigate the role of SOC in a non-pandemic situation as environmental changes are associated with changes in SOC (Feldt et al., 2000).

Both demographic (age, gender, employment status) and other psychosocial factors (mental health and physical health status) that were not specifically explored in the present study can be further explored.
Further, for a more comprehensive picture of the shared effect of the variables, longitudinal studies to assess temporal variations would provide better opportunities.

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**Conflict of interests:** The authors declare no competing interests.

**Ethical approval:** The study was conducted in accordance with the code of ethics set by the World Medical Association (‘Declaration of Helsinki’; World Medical Association, 2013).
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Self-compassion and posttraumatic growth: The mediating role of psychological flexibility

Pranati Misurya¹, Nidhi Udgar², Vasundhara Shukla², & Pooja Anand²
¹University of Exeter (United Kingdom)  
²University of Delhi (India)

Correspondence: pm534@exeter.ac.uk

Self-compassion and posttraumatic growth have previously been associated with positive mental health and functioning. They have recently garnered increased research interest in psychotherapeutic milieu as they have also been found to promote adaptive responses to trauma. On the other hand, psychological flexibility represents a variable known to have an impact on many human abilities including the capacity to shift mindsets and behavioural responses and is increasingly being understood as a crucial trait to develop for therapeutic change. The present study sought to examine whether self-compassion would lead to posttraumatic growth as well as the mediating role of psychological flexibility in this relationship. Data was obtained from 208 participants (females=143, males=65), age range=18 to 50 years (M=27 years, SD=6.89) who reported being exposed to at least one traumatic experience in the last 5 years. The results found positive correlations between all the three variables used in the study. It was found that self-compassion does lead to post-traumatic growth ($c^* = 4.9303$, CI = 0.4947 to 9.3659, p = 0.0295). Psychological flexibility proved as the mediator between self-compassion and post-traumatic growth, with indirect effect IE = 5.9091 at 95% CI = (3.2340, 8.9695). The findings add to the host of literature on positive functions served by self-compassion, specifically in its contribution towards post traumatic growth. Further, this study explicates the mediating mechanism through which self-compassion exerts its potential effects by pointing out to the role of psychological flexibility.

Keywords: flexibility; mediation analysis; posttraumatic growth; psychological flexibility; self-compassion
Trauma and its implications for one’s physical, behavioural and emotional and psychological responses has been one of the most relevant questions in human history, especially the social sciences (Tedeschi et al., 1998). A considerable amount of literature has focused on the prevalence and exposure to traumatic events and have most often highlighted it to occur in one of the following ways – “being witness to death or serious injury, unexpected death of a loved one, being mugged, being in a life-threatening automobile accident, and experiencing a life-threatening illness or injury” (Kessler et al., 2017).

Clinically speaking, PTSD and other forms of adjustment disorders are relevant as associated possible outcomes - emotional distress, increased physiological arousal, increased aggression against self and others, depersonalization, avoidance, other cognitive deficits including attention disturbance, ruminations and flashbacks, guilt, compulsions, anxiety and depression can likely become further predictors of decline in overall functioning (van der Kolk, 2000), characteristic of Post - Traumatic Deprecation. However, it is not just negative outcomes that constitute the gamut of stress responding. Initial research in the field has typically focused on the negative sequelae of traumatic events, however, interest in understanding how traumatic experiences can be a source of positive change and growth began in the 1980’s and 1990’s, in response to the paradigmatic shift towards studying healthy responses and attitudes of the human nature (Maslow, 1970).

Post-traumatic growth as described by Tedeschi and Calhoun (2004), reflects an enhanced state of thinking and functioning including shifting of values and orientations in the wake of the trauma. It has been understood to operate on a continuum, with the rates of growth reported between 30 and 80% (Linley & Joseph, 2004). Post-traumatic growth can result in five areas which include “new perspectives, improved relationships, personal strength, appreciation of life and spiritual change” (Tedeschi & Calhoun, 1996). Studies reveal that Post Traumatic Growth and Post Traumatic Deprecation can co-occur (Zięba & Wiechec, 2019). Thus, the trajectory that a traumatic event triggers for an individual, whether towards growth or depression or both, cannot be seen in isolation. It is important to understand the psychological factors influencing growth subsequent to trauma – where one recognizes the damaging nature of trauma, while also giving credit to pathways that give way to PTG, both as a process and as an outcome and it is within this context that the present study is situated.

One of the more recent relationships that have been explored in the context of protective variables that serve as buffers in the aftermath of traumatic events, is that between self-compassion and post traumatic growth. Self-compassion, with underpinnings in Buddhist philosophy, is defined as allowing oneself non-judgmental understanding in the face of pain & failure, seeing them as part of human experience without avoiding or disconnecting from them, thus giving oneself a chance to heal and grow (Neff, 2003a). It includes three interactive and amplifying components, those being Self-kindness, Common Humanity and Mindfulness. Thus, in a large body of trauma research, self-compassion emerges as an important construct, associated with reduced intensity of ruminations & depressive symptoms (Nolen-Hoeksema et al., 2008), effective coping with stress through reliance on positive cognitive restructuring, lowering experiential avoidance, over-identification and obsessive ruminations through mindfulness (Allen & Leary, 2010).

For individuals who have undergone or are living with trauma, event centrality or the degree to which trauma becomes an integral part of one’s identity (Kemani et al., 2016) and has a substantial impact on trauma recovery. Thus, it becomes necessary to reorganize the mental resources and switch to alternative perspectives. Psychological flexibility is the ability to experience the present moment fully and to persist or change behavior in the service of chosen values (Gloster et al., 2011). Studies have found an association between post-traumatic stress symptoms, PTG and psychological flexibility (Boykin et al., 2020) with it serving as a protective factor for even those who are negatively impacted by ‘Early Life Trauma’ (Richardson & Jost, 2019). Hence, a focus on the development of psychological flexibility becomes even more important.

As we have seen so far, despite the ubiquitous nature of the prevalence of traumatic events, the range of responses to the same can differ in significant ways, emphasising the need for a broader lexicon when it comes to stress responding. Just as observers can exert a degree of intentional control over the perception of reversible figures (Toppino, 2003); research has shown that restructuring and re-scripting form an integral component to post-traumatic stress recovery (Kangaslampi & Peltonen, 2019) and post-traumatic growth (Janoff-Bulman, 2004). Thus, multiple variables such as self-compassion & cognitive fusion (Basharpoor et al., 2020), psychological flexibility (Boykin et al., 2020), resilience, social support & positive coping (Yu et al, 2014) may mediate and moderate this relationship.

Thus, the current study focuses on self-compassion and psychological flexibility in how they pertain to post-traumatic growth. As we have highlighted earlier, there is much literature to evidence that both self-
compassion and psychological flexibility may be seen as predicting and protecting factors when it comes to posttraumatic growth, and both independently have been the focus in the management of PTSD in the context of cognitive restructuring (Adams and Leary, 2007) and coping strategies (Vettese et al., 2011). There is less research, however, in understanding the interlinked pathways by which these may operate. Few emerging studies do highlight psychological flexibility as increasing the chances of compassionate responding (Hayes et al., 2006), through mindfulness and values-directed action (Atkins & Parker, 2012). We extend the line of previous work by Wong & Yeung (2017), where they found that self-compassion leads to post-traumatic growth and that several adaptive cognitive processes such as acceptance, positive reframing and meaning mediate this relationship. Thus, in the present study, we consider the role of psychological flexibility as the mediating variable between self-compassion and post-traumatic growth.

**METHODS**

**Participants**

The sample consisted of 208 participants who were recruited using a Google form which was posted on social media websites such as LinkedIn, Instagram and Facebook. The mean age of the participants was 27 years, of which 68.8% were females and 31.3% were males (Table 1). Inclusion criteria for participation in the study included being at least 18 years of age and having experienced a crisis or negative life event(s) (e.g., losing a loved one, experiencing abuse, experiencing natural disaster, having an accident, having cancer/other diseases).

<table>
<thead>
<tr>
<th>Variable</th>
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<tr>
<td>Gender</td>
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</table>

**Procedure**

Participants were invited to the study using a link to the Google Form posted on various social media sites such as LinkedIn, Instagram and Facebook. After obtaining informed consent, participants were asked to complete an online survey. They were required to fill in a short demographic questionnaire, and to respond to a checklist through which they reported the type of past crises or traumatic event(s) experienced by them. Only those participants who had undergone one or more of the enlisted events were asked to complete the Google Form. After completion of the survey, participants were debriefed and due to the sensitive nature of the questions asked, the participants were provided details of mental health services that they can access. This study was conducted in accordance with the guidelines of the Declaration of Helsinki (Holm, 2013).

**MEASURES**

**Past traumatic events**

The past traumatic events experienced by the participants were measured by a checklist of events. The checklist included different types of traumatic events such as academic achievement problems (e.g., failure and frustration), relationship problems (end of an important relationship and conflicts), death of a close one, problems in social adjustment in school or workplace (e.g., feeling socially isolated and experienced bullying), betrayal (e.g., fraud, lied to, cheated etc.), serious illness of oneself or a close person (e.g., chronic illness, potentially fatal illnesses, surgery etc.), experienced parent’s separation or divorce, childhood maltreatment (e.g., physical, emotional, sexual, economic and psychological abuse), sudden unemployment, suffered grievous injuries to oneself or was a witness to other being seriously injured (accident, human/natural disaster), was involved in a crime as a victim or witness (e.g., sexual violence, robbery, attack
etc.) and had incurred a significant economic loss or crisis. Participants were asked to report the duration that had passed since they experienced the events (less than 6 months ago, 6 months to a year ago, 1 to 2 years ago, 2 to 5 years ago and more than 5 years ago).

Posttraumatic growth

The Post Traumatic Growth Inventory (PTGI) was developed by Tedeschi & Calhoun (1996), which construes posttraumatic growth as a construct that depicts innate capacities of the people who emerge from adversity with more adaptive, fuller depictions of who they are and how they want to live (Calhoun & Tedeschi, 2013; Tedeschi et al., 2018). The PTGI is composed of 21 items and participants have to rate their response on a 6-point Likert scale based on the degree to which the given change took place in their lives as a result of crisis. The test-retest reliability for the 21-item PTGI was $r = 0.71$.

Self-compassion

The Self-Compassion Scale (Neff, 2003b) was used to assess self-compassion as a trait measure. The scale includes 26 items that are responded to on a 5-point scale and is based on a two-factor model: positive and negative self-compassion. The self-compassion scale has been validated in community and clinical samples, demonstrating adequate reliability and validity (Castilho et al, 2015; Costa et al, 2015).

Psychological flexibility

The Multidimensional Psychological Flexibility Inventory (MPFI) was developed as a method of objectively assessing individuals to identify the areas in which they are flexible and the areas in which they find themselves being rigid and inflexible. The MPFI (Rolffs et al., 2018) is a 60-item scale used to evaluate dimensions (Acceptance vs. Experiential avoidance, Present Moment Awareness vs. Lack of contact with present moment, Self as context vs. Self as content, Defusion vs. Fusion, Values vs. Lack of contact with values, Committed action vs Inaction) each of psychological flexibility and inflexibility. It demonstrated a satisfactory convergent validity and divergent validity.

Data analyses

Regression analysis was the principal data analysis technique used to examine the hypotheses. All tests were 2-tailed, and significance was set at 0.05. All statistical procedures were completed using SPSS. To test mediating effects, we used PROCESS for SPSS Macro (Hayes, 2012). In our study using the process modelling approach, we tried assessing the direct effects between self-compassion and post-traumatic growth and indirect effect as mediated through psychological flexibility (Figure 1). Bootstrapping, a nonparametric resampling procedure which does not impose an assumption of normality on the sampling distribution, was applied with 5,000 resamples. Bias-corrected 95% confidence intervals (CI) were used to investigate mediation effects. The mediational model used here lends itself well to research in this domain and has been used in studies assessing post-traumatic growth and its associations with different variables with a single mediator. Prior studies assessing coping strategies as a mediator of the relationship between social support and post-traumatic growth (Zhou et al, 2014), resilience as a mediator of relationship between PTSD and PTG (Lee et al, 2020), cognitive processes as mediators of the relationship between self-compassion and PTG (Wong & Yeung, 2017) among others have used a similar mediational framework.

RESULTS

Descriptive and preliminary statistical analysis

The highest number of participants, i.e., 133 participants (63.9%) reported relationship problems (e.g., end of an important relationship, farewell, broken hearted, conflicts), followed by 129 participants (62%) who experienced academic problems (e.g., failure and frustration), death of a close one (102 participants, 49%), and 92 participants (44%) suffered problems with social adjustment like feeling socially isolated and experience of bullying(Table 2). With regard to time since the experience of the event, the highest percentage of participants were found to be between 1-3 years (29.3%), followed by traumatic experience more than 5 years ago (20.7%), between 6 months-1year (19.2%), less than 6 months (16.3%) and finally between 3-5 years (13.9%) (Table 3).
Table 2
List of Traumatic Events Reported

<table>
<thead>
<tr>
<th>List of events</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic achievement problems</td>
<td>129</td>
<td>62.02</td>
</tr>
<tr>
<td>Relationship problems</td>
<td>133</td>
<td>63.94</td>
</tr>
<tr>
<td>Death of loved one</td>
<td>102</td>
<td>49.04</td>
</tr>
<tr>
<td>Problems in social adjustment</td>
<td>92</td>
<td>44.23</td>
</tr>
<tr>
<td>Betrayal</td>
<td>72</td>
<td>34.62</td>
</tr>
<tr>
<td>Serious illness</td>
<td>61</td>
<td>29.33</td>
</tr>
<tr>
<td>Parents’ separation or divorce</td>
<td>37</td>
<td>17.79</td>
</tr>
<tr>
<td>Childhood maltreatment</td>
<td>37</td>
<td>17.70</td>
</tr>
<tr>
<td>Unemployment</td>
<td>52</td>
<td>25.00</td>
</tr>
<tr>
<td>Accident or injuries (or was a witness)</td>
<td>34</td>
<td>16.35</td>
</tr>
<tr>
<td>Crime victim</td>
<td>35</td>
<td>16.83</td>
</tr>
<tr>
<td>Incurred huge economic losses</td>
<td>29</td>
<td>13.94</td>
</tr>
</tbody>
</table>

Table 3
List of Traumatic Events Reported

<table>
<thead>
<tr>
<th>Duration of events</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 6 months ago</td>
<td>35</td>
<td>16.83</td>
</tr>
<tr>
<td>6 months–1 year ago</td>
<td>40</td>
<td>19.23</td>
</tr>
<tr>
<td>1–3 years ago</td>
<td>61</td>
<td>29.33</td>
</tr>
<tr>
<td>3–5 years ago</td>
<td>29</td>
<td>13.94</td>
</tr>
<tr>
<td>More than 5 years ago</td>
<td>43</td>
<td>20.67</td>
</tr>
<tr>
<td>Total</td>
<td>208</td>
<td>100</td>
</tr>
</tbody>
</table>

Correlation between variables

In the initial steps of the data analysis process, descriptive statistics and correlational analysis were completed. The frequency description, means, standard deviation for the variables are shown in Table 4. The highest mean value was found for psychological flexibility (M=126.) as compared to the other two variables namely self-compassion (M=87.4), and post-traumatic growth (M=69.5). The descriptive statistical analysis of the data was followed by a correlational analysis among the variables. All the variables were found to have positive significant correlation with each other. With respect to the type of traumatic event, problems with social adjustment were negatively associated with post-traumatic growth.

Table 4
Descriptive Statistics and Correlations for the Self-Compassion, Psychological Flexibility, and Posttraumatic Growth (n=208)

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-compassion</td>
<td>4.20</td>
<td>0.74</td>
<td>–</td>
<td>.443*</td>
<td>.328*</td>
</tr>
<tr>
<td>Psychological flexibility</td>
<td>2.98</td>
<td>0.53</td>
<td>.443*</td>
<td>–</td>
<td>.469*</td>
</tr>
<tr>
<td>Posttraumatic growth</td>
<td>69.56</td>
<td>17.7</td>
<td>.328*</td>
<td>.469*</td>
<td>–</td>
</tr>
</tbody>
</table>

*p < .05

Mediation analysis

For the purpose of the study, mediational analysis was performed to examine the mediating role of psychological flexibility in the relationship between self-compassion to posttraumatic growth. An analysis was done to test the simple mediation model and direct and indirect effects were computed. As shown in Figure 1, the direct effect between self-compassion and post-traumatic growth (c’ = 4.9303, CI = 0.4947 to 9.3659, p = 0.0295) was found to be significant. This implies that a higher degree of self-compassion leads to a better post-traumatic growth. Also, both indirect relationships between self-compassion and psychological
flexibility, as well as psychological flexibility and post-traumatic growth were also found to be significant. Most importantly, the overall indirect mediational effect of psychological flexibility on the relationship between self-compassion and post-traumatic growth values at 5.9091, after bootstrapping, with class interval between 3.2340 and 8.9695, and is statistically significant. This further implies that psychological flexibility is an important variable that influences the relationship between Self-compassion and Post-traumatic growth.

![Diagram](image)

**Figure 1**

*Mediational Model of the Self-Compassion, Post-Traumatic Growth & Psychological Flexibility*

This figure depicts the direct and indirect effects between self-compassion, post traumatic growth and indirect effects through psychological flexibility.

**DISCUSSION**

The present study investigated the role of self-compassion in facilitating post-traumatic growth by considering the mediating influence of psychological flexibility. First and foremost, in our current study, the highest number of participants, i.e., 133 participants (63.9%) reported intensely negative experiences due to intimate interpersonal relationships (like termination of an important relationship, being in frequent conflicts with romantic partners etc). The other predominant source attributed to be a traumatic experience was that of significant academic failures or frustrations, which held true for 62% of the participants. Given that the mean age of the participants in the current study was observed to be 27 years, the issues reflected in the data are to be expected, in line with Erikson’s theory of psychosocial development (Marcia, 2002). There is evidence to suggest that for young adults going to college is understood as a stressful experience with encounters which could lead to the development of stress related pathology (Galatzer-Levy et al., 2012), specifically, stressful attachment associated incidents including the loss of a significant relationship or of a loved one have been associated with the development of PTSD (Fearon & Mansell, 2001).
Similarly, given the age group, difficulties or failures in academic and career-related pursuits also have the potential to damage one’s view of self and identity, which could lead to the situation being experienced as difficult (Turner, Husman & Shallert, 2002). In a related study, lower academic performance in a sample of university students was linked with the subsequent development of PTSD symptoms (Periera et al., 2018).

With respect to the type of traumatic event, problems with social adjustment were negatively associated with post-traumatic growth. It is to be noted, however, that the relationship between the type of traumatic event and traumatic growth remains variable. Recent research supports less growth following harmful events purposefully caused by other persons, (Kılç, Magruder, & Koryürek, 2016), compared to non-interpersonal events (Shakespeare-Finch & Armstrong, 2010). Positive correlations have been found between self-compassion, psychological flexibility and post traumatic growth. Furthermore, the results also indicate that self-compassion leads to PTG and psychological flexibility proves to be a mediator between self-compassion and PTG.

A study by Nolen-Hoeksema et al. (2008) revealed that heightened self-compassion is not only associated with reduced symptom severity in PTSD but has also been linked consistently to well-being (Zessin, Dickhäuser, & Garbade, 2015) and adaptive psychological functioning (Neff, Kirkpatrick, & Rude, 2007). Especially in the context of our study, wherein academic related stressors/trauma is one of the major events reported by participants, research indicates that self-compassion can be significantly involved in the learning process, where it has been linked to coping with failure, increased feelings of mastery and self-competence (Neff, Hsieh & Dejitterat, 2005). Given such findings, it is easy to understand how self-compassion a factor can be leading to PTG. Looking at this relationship from a cognitive and affective processing viewpoint, studies demonstrate that higher levels of self-compassion facilitate individuals to engage in lower experiential avoidance and feel less threatened by the painful thoughts and memories (Thompson and Waltz, 2008). Furthermore, research also supports that self-compassion is an important aspect of building coping resources in traumatic and stressful situations, especially with regard to positive cognitive restructuring, which entails altering one’s perspective of a stressful situation in order to see it in a more positive light. Self-compassion provides the basis of such a coping strategy in two ways – first, an individual is able to overcome over-identification and obsessive rumination with problems; and secondly a self-compassionate individual finds it easier to refocus on positive elements of the experience rather than the negative ones (Allen & Leary, 2014). Thus, the sub-processes of self-compassion, namely, mindfulness, and self-kindness, enable a balanced perspective towards emotions, events and experiences and thereby facilitating post-traumatic growth (Wong & Yeung, 2017).

Similarly, the results of the present study also indicate psychological flexibility as mediating the relationship between self-compassion and PTG. In existing research in the field, psychological flexibility has been seen to have positive outcomes in terms of overall mental well-being (Marshall & Brockman, 2016), and has also been one of the core principles in the practice of Acceptance and Commitment therapy (ACT; Hayes, Strohsal & Wilson, 2011), which has been seen to be efficacious in treatment of PTSD as well (Woidneck, Morrison & Twohog, 2014).

As mentioned earlier, the mediating influence of psychological flexibility on the relationship between self-compassion and PTG, has been the focus of limited research. However, these findings can be understood within the framework of the Functional-Descriptive Model (FDM, Tedeschi & Calhoun, 2004) which underscores that it is not the event, but the emotional struggle consequent to trauma that serves as the catalyst for PTG (Tedeschi & Calhoun, 2004). Individuals not only have differing understanding of events, but they also differ in the emotional evaluation of those experiences (Leahy, 2002). In this light, it may be possible that a psychologically flexible individual will be more openly able to accept and understand their emotional experience which is also in alignment with his/her personal values. Thus, engagement towards negative/traumatic emotional experiences, rather than avoiding the same, is important in the context of PTG and is made possible by Psychological flexibility (Leahy et al., 2012).

Furthermore, emerging studies also emphasize psychological flexibility as augmenting self-compasionate, non-controlling and non-judgemental ways of responding, through the sub-processes of mindfulness and values directed action (Hayes et al., 2006). Not just this, psychological flexibility may have implications in reducing the event centrality of the trauma as well, though further research may be needed to corroborate the same (Boykin et al., 2020).

Thus, these findings may also be beneficial for trauma practitioners and clinicians in attempts at fostering self-compassion amongst clients, in a manner that facilitates post-traumatic growth as well. The research would find a significant role in guiding intervention planning directed at reducing PTSD symptom severity as well (Miron et al., 2015), incorporating strategies such as self-compassion and psychological flexibility along
with the third wave CBT approaches (e.g., ACT, Dialectical Behavioural Therapy [DBT], & Mindfulness Based Interventions [MBI]) that emphasize changing the context of thoughts and behavioural responses (Hayes & Hofman, 2017). The current paper illuminates some of the processes involved in the third wave psychotherapeutic approaches and contribute towards healthier and more adaptive responses to trauma. Finally, the area of self-compassion as a facilitator of recovery from trauma needs more attention in both trauma and in general mental health research and services. In terms of policy framing as well, the findings of the research may serve as useful indicators to factors to consider when developing structured intervention programmes towards the treatment of trauma and related stress disorders. It further has implications for professionals undergoing training in the field, in terms of fostering sensitization towards the varyingly complex presentation, as well as towards conceptualizing protective and facilitating factors subsequent to the experience of trauma.

**SUMMARY**

Constructs such as post-traumatic growth, resilience and self-compassion are gaining emphasis in everyday life as well as in research in current times. The present study sought to examine whether self-compassion would lead to post-traumatic growth as well as the mediating role of psychological flexibility in this relationship. The study was successful in meeting the objectives proposed and has been able to establish a significant mediational relationship between the variables under consideration.

**Limitations & future directions**

The present study has some limitations in terms of sample size & representativeness. The smaller sample size and the sample consisting of a large percentage of relatively younger participants reduce the generalisability of the findings. The proposed mediation model is needed to be replicated on the clinical sample and other diverse samples. A case for causality cannot be made due to the cross-sectional design of the present study. A longitudinal study is needed to have a more comprehensive understanding of the association between self-compassion and post-traumatic growth, required to make a causal inference, which can be taken up in future research. Moreover, looking at anecdotal data and personal narratives could further help in enriching the data, and help us understand the processes involved in a more experiential light.

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**Ethical approval:** An ethics committee approval was not requested. This study did not include any human experimentation or description about the study purpose. Participants were informed about the research purpose and were informed about their rights withdraw from the study at any time.
REFERENCES


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What to change about the admissions process for doctoral programmes in counselling psychology from the perspective of applicants

Robinder Bedi & Thomas Douce
University of British Columbia (Canada)

Correspondence: robinder.bedi@ubc.ca

Applicant voices have been absent from research on admissions in counselling psychology programmes. The purpose of this study was to obtain feedback that can inform needed revisions to application requirements and admissions procedures. We distributed an online survey to all counselling psychology doctoral students in Canada, asking what they would change about the admissions process that they experienced. Responses from 49 currently enrolled students, representing about 28% of the entire population of currently enrolled students, were obtained and analysed using inductive content analysis. Responses were grouped into five categories: (i) ‘Revise considerations for evaluating applicants’; (ii) ‘Introduce interactions with programme members’; (iii) ‘Streamline the admissions process’; (iv) ‘Improve clarity and communication’; (v) and ‘Change financial policy’. This is the first study to investigate the perspective of applicants to counselling psychology programmes and offers a type of experiential data completely neglected in counselling psychology programme admissions research. The results can be used to inform admissions committees in updating outdated requirements and procedures to be more research-informed. We suggest providing applicants with a clearer rationale for admissions requirements, for admissions committees across programmes to better align admissions requirements, and to promote open-houses for applicants to meet faculty and students.

Keywords: counselling psychology; counselling psychology admission; graduate school admission; psychology; student feedback
Admissions committees for training programmes in counselling psychology have long sought to select the ‘best’ applicants for their programmes (Alexander et al., 2002). This is a critical responsibility for several reasons. First, counselling psychologists can work with highly marginalised segments of society who have already been significantly harmed. Therefore, in light of the need to adhere to ethical gatekeeping, accepting students who pose minimal risk of harm to the population and significant likelihood of benefit is paramount and therefore should be a key consideration in admissions. Second, admitting applicants who will have pronounced difficulties or who will be unable to successfully meet the programme’s training outcome goals can become a large time and energy burden on programme faculty and often other students, and takes valuable limited growth-promoting resources away from others. Therefore, admitting students who are most likely to succeed should not only reduce attrition and failure rates but also ensure that scarce resources are used in the most efficient and effective way possible. Third, after an applicant is admitted, there is a considerable investment of money from both the student and university. Considering this era of financial accountability, programmes (and students) in counselling psychology should seek to maximise return on investment in a manner that is financially judicious. Clearly, admissions for counselling psychology programmes should be taken very seriously and be evidence-based.

Given the high stakes, great time demands, and resource commitment required of both applicants and faculty, it is surprising how little empirical research and peer-reviewed academic scholarship has been devoted to the counselling psychology programme application process. There exist few research studies examining the adequacy, reliability, and predictive validity of counselling psychology doctoral programme application requirements and outcomes, disaggregated from general graduate programmes in psychology (most of which are research programmes rather than scientist-practitioner or practitioner-scholar programmes) or from clinical and other applied professional areas of psychology (which subscribe to somewhat different values and priorities; see Alexander et al., 2002). The scarce peer-reviewed published literature that is counselling psychology-specific (Alexander, 2002; Bonifazi et al., 1997; Holmes, 1982; Kopal et al., 1995; Littleford et al., 2018; Loewy et al., 2009; Norcross et al., 2010, 2014; Purdy et al., 1989) seems to have all been conducted in the US. All of it has focused on the perspective and experiences of programme faculty, either directly (by using them as research participants) or indirectly (focusing on programme administration and programme variables). The voices of applicants are conspicuously absent in the literature, and therefore not able to scientifically influence evidence-based decision-making in admissions.

Systematic feedback, such as that which can be provided by applicants, is important for quality assurance and continuous quality improvement in admissions. Without feedback, change and innovation is hampered, which could partly explain why counselling psychology admissions has not changed much in over 20 years (for example, Alexander et al. (2002) and Littleford et al. (2018) found almost identical admissions criteria and application requirements in counselling psychology programmes nearly 20 years apart, despite large institutional, educational, sociocultural and ideological shifts in society over this time period. A call for change is about more than simple modernisation. There are important reasons for programmes to seriously consider revising their admissions processes on the basis of research evidence.

First, it appears that, in admitting students, counselling psychology programmes in Canada (and the US) continue to rely on an incomplete pool of indicators of desired programme outcomes (i.e., limited content validity), including some indicators of questionable predictive validity. For example, they typically rely heavily on classic academic measures such as grade point average (GPA) and Graduate Record Examination (GRE) scores (Littleford et al., 2018; Owen et al., 2014). While these are solid predictors of graduate programme grades and of the obtainment of domain-specific knowledge (Smaby et al., 2005), including for racially and ethnically diverse individuals (Kuncel et al., 2001), they show mixed and often low predictive validity for trainee skills and personal development (Smaby et al., 2005) – two integral elements of counselling psychology training. As another example, interviews, which can be costly and time-consuming, are highly relied upon in counselling psychology admissions, at least in the US (Littleford et al., 2018; Owen et al., 2014). This is despite dubious predictive validity, especially if they are unstructured (Owen et al., 2014). This is also in light of claims that initial interviewer impressions could partly be a function of implicit racial/cultural bias or of the large number of general social-cognitive biases present in most individuals (e.g., confirmation bias, availability heuristic; see Owen et al., 2014). Therefore, the admissions process can be improved by eliminating application requirements with little predictive validity, such as reference letters (Owen et al., 2014), and adding in ones that better predict a wide range of programme outcomes, especially student skill development. Additional research (both exploratory and confirmatory) on admissions is therefore needed to make progress in increasing the content and predictive validity of application requirements and selection procedures. For content validity in particular, stakeholders not typically consulted (e.g., applicants) could help identify novel considerations and expand the pool of indicators programmes can select from in making admissions decisions.
Second, there have been longstanding calls for counselling psychology programmes to infuse the profession’s core diversity values and social justice initiatives into the admissions process (e.g., Alexander et al., 2002; Loewy et al., 2009). This is because relying heavily on traditional selection factors like grades and GRE scores has been shown to hinder efforts to admit individuals from many minority groups (US Department of Education, 2012), who seem rarely, if ever, formally consulted, despite their insider perspectives on the impact of their marginalised status on application requirements and selection procedures. As a result, information about how applicants, including those from underrepresented groups, understand and experience the overall admissions process, can help identify barriers and biased elements of the admissions process and ensure better equity in admissions.

Third, there are calls to take on a revolutionary new approach to graduate school admissions. For example, Sternberg et al. (2012) called for emphasis on community leadership, and potential for making an impactful difference to society. Therefore, perhaps it is time to move beyond the blind spots and legacies inherited by current programme faculty. Feedback from other stakeholders, such as applicants, holds promise for such advancement.

The applicant perspective

It is important to acknowledge that the direct perspectives of applicants were not solicited in any of the past research studies conducted on counselling psychology admissions cited earlier. Not only do we know very little about the admissions process in counselling psychology in general, but we also know almost nothing about the contributions that the applicant perspective can make to improving it. Being informed by the applicant perspective in revising or reaffirming application requirements and selection procedures in counselling psychology is important for several reasons. First, the counselling psychology value of inclusivity means including the perspective of all others involved yet investigations have solely focused on the faculty/programme perspective – despite students being the intended recipients and ‘consumers’ of counselling psychology training programmes. Second, applicants can provide useful critiques of the status quo around areas like, for example, clarity of application materials requested, usefulness of particular requirements, race/ethnicity-infused barriers to the particular requirements and procedures, quality/quantity/responsiveness of communication from programmes, and transparency about the importance accorded to certain criteria and about decision-making processes. In their feedback, applicants might suggest innovative application requirements that they believe are more valid or reflective of their worth as prospective students, re-affirm application requirements they see value in, and repudiate those that they do not. Therefore, including the perspective of applicants can overcome faculty blind spots and could lead to innovative ideas in revising application requirements or selection procedures that can lead to more satisfied students, which in turn, promotes better student outcomes (Hatcher et al., 1992). Third, action by admissions committees based on better matching applicant values, on how to increase applicant satisfaction, and on how to minimise key applicant barriers to applying, can result in larger applicant pools. This will afford programmes greater selectivity in choosing the ‘best’ applicants for their particular programme.

Purpose of the study

The purpose of this exploratory study was to address the paucity of research on admissions in counselling psychology doctoral programmes from the perspective of the applicant and better understand the experiences and understandings of applicants to counselling psychology programmes. Specifically, applicants to doctoral counselling psychology programmes in Canada were asked, in completely open-ended manner, if there was anything they wished was different about the admissions process they experienced. Given that this was the first study of its kind, a parsimonious, face valid approach is desirable to open up this new avenue of research. Without this self-report feedback, counselling psychology programmes will remain uninformed about the perspective and lived experience of applicants to their programmes – key stakeholders in counselling psychology training.

The Canadian psychology context

This study collected data from a sample of applicants to Canadian counselling psychology doctoral programmes. The much smaller size of the applicant pool in Canada facilitates sampling a much greater proportion of the population, increasing the likelihood of more representative sampling and reducing sampling biases that are more likely to be present when trying to reach a much larger population of counselling psychology applicants, such as that in the US. Therefore, some background information about the Canadian context is useful. Because the vast majority of research on counselling psychology has been
conducted solely in the US, and readers are likely most familiar with it; comparisons to the US are provided to situate the Canadian context.

There are currently five nationally-accredited doctoral programme in counselling psychology in Canada (accredited by the Canadian Psychological Association [CPA]) and all are PhD programmes. There are currently an estimated 176 students1 enrolled in CPA-accredited doctoral programmes in counselling psychology at any one time. On average, each year, Canadian doctoral programmes in counselling psychology receive about 19 applications each (Bedi, 2016). Acceptance rates are about 28% for Canadian programmes, admitting about 26 students total per year (Bedi, 2016). Estimates of the attrition rate from accredited counselling psychology programmes in Canada range from 4.5% to 12% (Bedi, 2016; Bedi et al., 2012), which is substantially higher than the 2% estimated for American Psychological Association (APA) accredited programmes (APA, 2019). In addition, compared to both US counselling psychology and Canadian clinical psychology programmes, Canadian counselling psychology programmes demonstrate much lower Association of Psychology Postdoctoral and Internship Centers (APPIC) internship match rates (APA, 2019; Bedi, 2016; Bedi et al., 2012), and this could at least partially be a function of the particular students admitted under current selection procedures. Furthermore, in Canada, first-time Examination for Professional Practice in Psychology (EPPP) pass rates for doctoral counselling psychology students (75.90%) are significantly lower (with a large effect size) than doctoral clinical psychology students (91.4%; Bedi et al., 2012). Data (Bedi et al., 2012) also indicate that only about 80% of graduates of PhD programmes in counselling psychology in Canada go on to become licensed psychologists, despite graduating with eligible degrees (Bedi, 2016).

Based on the data presented, it appears that Canadian counselling psychology programmes in particular, at least compared to counselling psychology programmes in the US and clinical psychology programmes in Canada, have more room for improvement in selecting better fitting and higher performing applicants by the outcome metrics of attrition rates, APPIC match rates, and EPPP pass rates. Therefore, Canadian counselling psychology programmes may especially benefit from any data that could be used to further improve their application process and selection procedures, such as feedback from applicants, in order to select the ‘best’ applicants.

**METHOD**

**Participants**

Forty-nine individuals participated. Participants were counselling psychology doctoral students admitted to one of the five CPA-accredited PhD programmes in Canada (including the University of Toronto, which relatively recently became a combined counselling/clinical psychology doctoral programme but received initial accreditation as a counselling psychology doctoral programme and remained that way for about a decade). Through calling programme representatives, we determined that the population size at time of data collection was 176 students (37 at McGill University, 32 at University of Alberta, 40 at University of British Columbia, 32 at University of Calgary, and 35 at University of Toronto). This sample represents a 27.8% response rate of the entire population of doctoral students in counselling psychology in Canada at the time of data collection.

While 13 participants responded that they would not change anything about the application and admissions process that they experienced, 36 (73.4%) provided one or more pieces of feedback. The demographics of those who offered feedback on something they would prefer to be changed are provided below. These participants comprised 74.3% self-identified females, 22.9% males and 2.8% another gender (excluding one participant who chose not to answer this question). Excluding one participant who elected not to answer, 65.7% of the sample were married or partnered, and 34.3% were unpartnered. The average age was 30.37 (SD = 4.49) with a minimum of 24 and a maximum of 45. In terms of residence prior to enrolment in their doctoral programme, noting one participant chose not to answer, 34.3% were from Alberta, 28.6% from British Columbia, 17.1% from Ontario, 8.6% from Quebec, a total of 5.7% from all other provinces in Canada, and a total of 5.7% of individuals previously residing outside Canada (namely the US and China).

Sample representation was obtained from all counselling psychology programmes in Canada. In terms of their doctoral programme on enrolment for sampled participants, 36.1% were from the University of Alberta, 19.4% from the University of British Columbia, 16.7% from both the University of Calgary and the University of Toronto, and 11.1% were from McGill University (adding to 100.1% due to rounding). The median participant was in the second year of their doctoral programme with the mode being first year. Therefore,

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1 Calculated based on e-mail correspondence with staff from all five programmes.
most who self-selected to participate in this research study were those most recently admitted to doctoral programmes in counselling psychology in Canada, and therefore those who could speak best to contemporary practices in counselling psychology admissions and with the least natural memory decay.

**Questionnaire**

A face-valid, open-ended question was created and piloted with six current graduate counselling psychology students resulting in minor revisions to wording to improve clarity and conciseness. The final question used in the study read, ‘If you could change anything about the doctoral student admissions process for the counselling psychology program(s) in Canada to which you applied, what would you change?’ Applicants were provided an open-ended response box to answer with space to offer as much feedback as they wished (i.e., they could provide multiple answers).

**Procedure**

This study received behavioural research ethics approval from the institutional review board of the two authors. Access to the entire population of interest was available. The questionnaire was sent to every enrolled doctoral student in counselling psychology in Canada by e-mail three times within a four-month period. One or more individuals at each doctoral programme in counselling psychology in Canada who had access to the doctoral student listserv for their programme distributed an online survey request e-mail with a link to the questionnaire. The study was further advertised through (a) the listserv of the Section on Counselling Psychology of the CPA, (b) the student Facebook page of this Section, (c) the CPA’s online research recruitment portal, and (d) the newsletter of the Section on Counselling Psychology. Participant responses were anonymous. Informed consent involved an online informed consent form followed by the instructions that if the prospective participant hits ‘next’ to go onto the survey and completes it, then they are considered to have provided informed consent. This protects the anonymity of the participants as no personally-identifying information needs to be collected. Participants were entered in a draw to receive one of 14 gift cards to restaurants: one $35, five $15, and eight $10 gift cards.

**Data analysis**

Given the desire to list and quantify concrete feedback in order to increase practical value of the results for counselling psychology admissions committees, an inductive content analysis was used to analyse participant responses (Elo & Kyngäs, 2008; Hsieh & Shannon, 2005). Creating the category names through review of the text rather than using an a priori categorisation scheme (i.e., inductive content analysis) is recommended for situations where there are no previous studies dealing with the phenomenon (Elo & Kyngäs, 2008).

The primary analysis team was composed of the second author and a research assistant. Both were males of European descent. The second author has experience unsuccessfully applying to doctoral programmes in both counselling and clinical psychology in the US and the research assistant plans to soon apply to graduate programmes in counselling psychology in Canada. Both were motivated to join the research team to strengthen their graduate school applications, to gain deeper knowledge about graduate programmes they could potentially apply to, and to achieve deeper insight into the graduate school application process. Prior to data analysis, the two analysers discussed their initial impressions, assumptions, and experiences pertaining to applying to graduate programmes in counselling psychology. This was done to become better aware of each other’s potential biases that could unduly influence data analysis; and that could be brought up later during coding consensus meetings for examination of unwarranted influence or confirmation bias. After this, both coders independently read all the participant responses four times in order to become highly immersed in the data.

The primary units of analysis for coding were surface-level explicit semantic content (i.e., manifest content) in participants’ responses to the question. Each analyser first independently formulated an initial set of codes through open coding to assign as many codes as were deemed necessary for capturing the variety of responses. Next, the two coders met and compared their two sets of codes. When differences were found, they discussed how and why they coded as they did, critiqued the labels for each code, and came to a consensus through debate and discussion, resulting in one unified set of coded data. The analysers then sought to independently organise codes into categories based on interpretation of conceptual similarity between codes. After categorising independently, they compared categories and rationales, and came to a consensus on category composition, category names, and brief definitions. The analysers then engaged in negative case analysis, reading back over all the participant responses again and identifying responses that did not fit the category list/definitions very well, modifying category names, codes, and their assignment.
until both deemed the codes and categories to sufficiently fit the data. Exemplars for each category were then identified. Throughout this whole analysis process, both analysers reflexively journaled and shared how they believed their initial impressions, assumptions, and own experiences could be influencing their coding – a process that assists with bracketing, critical thinking, and remaining data-driven during coding (Fischer, 2009). For example, both coders were mindful about how they could unintentionally impose their own specific preferences as applicants onto the data and the second author was watchful about the possibility of over projecting his own extreme frustration with the doctoral programme application process onto the participants’ comments.

To further bolster the trustworthiness of the analysis, the analysers maintained an audit trail including the coded data of both analysers before seeking a consensus and a record of the reasoning for each decision that was made in coming to a consensus concerning codes and categories. At this point, the first author, a male associate professor of counselling psychology, who had remained unaware of participant answers and uninvolved in the data coding process, served as an auditor. Before providing feedback, the first author reviewed the participant responses to become familiar with the raw data; checked the audit trails for methodological integrity, coherence and reasonableness; and examined the categories and their codes for cohesiveness and representation of the original participant responses. In areas where the audit raised questions or required additional information, those steps in the analysis process were revisited and redone until the auditor was satisfied that the coding results comprehensively represented original responses in a legitimate and consistent manner.

RESULTS

Of the 49 participants, 26.5% (n = 13) explicitly stated that there was nothing that they wished to change (e.g., ‘I don’t think I would change anything about the admissions process’, ‘I thought it was reasonable and can’t think of anything I would change’, ‘I would not change a thing’, ‘Nothing, I thought it worked well’). In contrast, 73.5% (n = 36) offered feedback on at least one aspect of the admissions process that they wished was different. These 36 participants provided 46 different pieces of feedback (M = 1.28; SD = 0.51; min = 1, max = 3).

The 46 items were summarised into 19 different consensual content analysis codes (representing conceptually identical responses), which then were subsequently grouped into five higher-order consensual categories: (a) revise considerations for evaluating applicants, (b) introduce interaction with programme members, (c) streamline the admissions process, (d) improve clarity and communication, and (e) change financial policy. The categories, their definitions, codes included within each category, the percent of individuals who contributed a response to that category, and sample quotations are provided in Table I.
<table>
<thead>
<tr>
<th>Category: Definition</th>
<th>Codes within category (% of responses in category)</th>
<th>Proportion of participants</th>
<th>Example quotations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revise considerations for evaluating applicants</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Suggestion of a change in the basis or relative valuation of factors when selecting students to admit</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Do not use the GRE (46.2%)</td>
<td></td>
<td></td>
<td>'No GREs (I don't think it gives a stronger indication of student success in the programme).’</td>
</tr>
<tr>
<td>Better consideration of applicant counselling skills (15.4%)</td>
<td></td>
<td></td>
<td>'...there are individuals accepted in a practical-based programmes [sic] with no clinical/relational skills.'</td>
</tr>
<tr>
<td>Deeper vetting of applicants based on applicant goals and interests (7.7%)</td>
<td></td>
<td></td>
<td>'I would place a greater focus on ensuring that students are truly interested in research and the academic practice of psychology in addition to an interest in counselling practice.'</td>
</tr>
<tr>
<td>Add barriers to continuing to PhD at master’s institution (7.7%)</td>
<td>33.3%</td>
<td></td>
<td>'I would possibly disallow the continuation of students from master’s into PhD at the same institution without very good justification.'</td>
</tr>
<tr>
<td>More merit-based admissions process (7.7%)</td>
<td></td>
<td></td>
<td>'I found that &quot;being known&quot; by the supervisor was the most important element in being able to get in, and I was at a significant disadvantage... even though I was told I was more qualified. This should change.'</td>
</tr>
<tr>
<td>More weight on extracurricular activities (7.7%)</td>
<td></td>
<td></td>
<td>'I suggest giving more weight to the extracurricular experience the individual has and that pertains to mental health as well as other area [sic].’</td>
</tr>
<tr>
<td>More weight on research (7.7%)</td>
<td></td>
<td></td>
<td>'Put more emphasis on research.'</td>
</tr>
<tr>
<td><strong>Introduce interactions with programme members</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggestion that applicants and people in the programme have further personal interactions before concluding the admissions process.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Include interviews (75%)</td>
<td></td>
<td></td>
<td>'There should be an interview to help both sides assess fit.'</td>
</tr>
<tr>
<td>Meet professors before choosing lab (12.5%)</td>
<td>33.3%</td>
<td></td>
<td>'Open house with potential supervisors indicating what they are working on.'</td>
</tr>
<tr>
<td>Bidirectional expression of interest between faculty and students (12.5%)</td>
<td></td>
<td></td>
<td>'If faculty could express interest in working with you [not just the other way around].’</td>
</tr>
<tr>
<td><strong>Streamline the admissions process</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire that aspects of the admissions process be easier, quicker, or simplified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standardise admissions processes and materials across programmes (37.5%)</td>
<td></td>
<td></td>
<td>'Begin the centralise process [sic]. This may involve schools meeting and devising common admission criteria.’</td>
</tr>
<tr>
<td>Fewer barriers to pursuing PhD based on prior degree subject or location (25%)</td>
<td>22.2%</td>
<td></td>
<td>'Making it easier to transfer a master’s to a doctoral degree across different institutions.'</td>
</tr>
<tr>
<td>Make master's continuous with PhD programme (25%)</td>
<td></td>
<td></td>
<td>'I would prefer if we didn’t have to apply again from the MA to the PhD.’</td>
</tr>
<tr>
<td>Category: Definition</td>
<td>Codes within category</td>
<td>Proportion of participants</td>
<td>Example quotations</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Improve clarity and communication</strong></td>
<td></td>
<td></td>
<td>'Tighter application questions that aren’t repetitive and just get to the point.'</td>
</tr>
<tr>
<td>Desire for more effective or thorough communication of general information or</td>
<td>More information about programmes (55.6%)</td>
<td></td>
<td>'More readily accessible information for incoming students applying to programmes (particularly external applicants) – the process is basically shrouded in mystery.'</td>
</tr>
<tr>
<td>matters of personal pertinence</td>
<td>Improve communication with applicants (44.4%)</td>
<td>22.2%</td>
<td>'Clearer communication about what is expected to be completed before entering the programme in September, not only by my supervisor but by the administration.'</td>
</tr>
<tr>
<td><strong>Change financial policy</strong></td>
<td></td>
<td></td>
<td>'The fee associated with applying is a deterrent for some to applying to all the school they may hope to attend.'</td>
</tr>
<tr>
<td>Recommendation that programmes adopt different procedures concerning fees and</td>
<td>No application fee for anyone (50%)</td>
<td></td>
<td>'More funding opportunities...'</td>
</tr>
<tr>
<td>financial aid</td>
<td>More immediate funding (25%)</td>
<td>11.1%</td>
<td>'Do not make students pay an application fee to from MA to PhD in the same programme.'</td>
</tr>
<tr>
<td>recommendation</td>
<td>No application fee for internal applicants (25%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION

Given the high stakes involved for applicants, universities, and future clientele of counselling psychologists, and the many burdens associated with enrolling poorly fitting or failing students, it is surprising that a more inclusive investigation of the admissions process into counselling psychology programmes has not occurred. Virtually all the research specific to counselling psychology is from the faculty/programme perspective, whether explicitly or implicitly. The perspective of applicants on counselling psychology admissions is conspicuously absent. In the present study, a relatively large sample of applicants to doctoral counselling psychology programmes in Canada was asked, in completely open-ended manner, if there was anything they wished was different about the admissions process they experienced. Investigating the views of applicants not only contributes to the scarce pool of data available to make evidence-based decisions about counselling psychology admissions, but also offers a type of experiential data completely neglected in counselling psychology admissions research. Systematic cross-programme information about the views and experiences of counselling psychology applicants (the recipients of counselling psychology training) can yield useful information that needs to be carefully considered by admissions committees when contemplating changes to admissions processes.

It seems encouraging that nearly 25% of participants stated that there was nothing that they wished was different about their own counselling psychology doctoral programme admissions process. Therefore, there is much that doctoral programmes are currently doing that is satisfying to a sizeable minority of applicants. Nevertheless, the other approximately 75% found room for improvement. The ‘silver lining’ is that the majority of surveyed applicants only offered one or two points of feedback each; so perhaps programmes are not that far off from making changes that would leave most applicants pleased with the process of their application and admissions.

Participant feedback and suggestions for altering the admission process

Participant feedback on existing considerations for evaluating applicants was primarily focused on the perceived weight given to certain credentials and background. There was variability across participants in the specific changes in application evaluation criteria they desired (e.g., admission committees should more strongly consider applicant’s pre-existing counselling skills and extra-curricular activities, more consideration should be given to research background). While these answers could reflect a self-serving bias in that applicants wished that programmes focused more on areas of existing strength for the particular participant, these results can also be looked at, collectively, as an indication of what participants believe are the most important things to consider in admissions. Most commonly, participants commented on extracurricular life experiences, existing counselling competencies, and research achievements and abilities. Notably absent were comments that programmes should place greater weight on mainstay criteria usually relied upon such as grades, GRE scores, reference letters, specific psychology coursework, and the field of an applicant’s undergraduate degree. In the minds of some of the participants in this study, these latter elements should not be heavily weighted in admissions decisions and possibly even eliminated, while the former emphasised.

The greatest consensus (46.2%) on an objective application requirement pertained to questioning the relevance of the GRE as an application requirement and for predicting student success in counselling psychology programmes. These applicants may be uninformed about the well-replicated and longstanding high predictive ability of the GRE, at least for course grades and the acquisition of domain-specific knowledge, including with racial and ethnic minority individuals (Kuncel et al., 2001) and including the domain-specific knowledge that undergirds counselling (Smaby et al., 2005). Nonetheless, the GRE is not a good indicator of the development of counselling skills (Smaby et al., 2005), and that might be what these participants were focused on. However, it should go without question that mastery of knowledge and skills are both required in order to graduate and to obtain psychologist licensure. To increase the perceived credibility of the admissions process by applicants, programmes requiring the GRE should consider communicating to applicants, on their websites, the reasons for requiring and evaluating GRE scores, as well as the limits. Based on our findings, some applicants need reassurance that the GRE is not just an irrelevant bureaucratic hurdle to overcome.

This point could be applied to admissions requirements more broadly; programmes should consider presenting clear explanations to applicants about why each element is included in the application process, citing supporting evidence. This practice could not only dispel perceptions of arbitrary imposition on applicants (repeatedly mentioned by participants in this study), but also help socialise incoming students and the larger applicant pool to evidence-based practices and the scientist component of their professional
identity. It can further create a greater sense of accountability by programmes to use criteria consistent with the current evidence base.

Participants also wished for more interaction with faculty and other programme members prior to accepting an admission offer. They specifically mentioned a desire for interviews (which are not commonplace among Canadian programmes; Bedi, 2016), meeting professors they requested to work with in advance, and receiving direct expressions of interest from research supervisors wanting to work with them. What applicants valued about interviews was generally their relational components and helping applicants better assess perceived fit with the proposed supervisor, rather than their role as criteria to assess their abilities, skills, or aptitudes. However, the more cost- and time-efficient open-house should be considered as suitable replacements as interviews, especially if unstructured, have been shown to be highly susceptible to social-cognitive biases (Owen et al., 2014), so they may not be worth the time and labour intensity required. Mandatory in-person interviews can also involve substantial travel costs to applicants.

Participants also expressed frustration at the highly varied application requirements across programmes, which sometimes prevent applicants from applying (Bedi, 2016). For example, across doctoral programmes in Canada, only the University of British Columbia’s programme currently requires the GRE and a simulated recording of one’s counselling skills. As another example, while all require a master’s degree prior to admissions, not all PhD programmes require completion of a master’s thesis (Bedi, 2016).

For schools that offer the PhD, the curriculum and programme requirements of MEd/MA/MSc degrees in counselling psychology in Canada are currently geared towards meeting prerequisites for their own PhD programmes in counselling psychology (Wada et al., 2020). Otherwise, for the vast majority of master’s programmes, little consideration is given to preparing master’s students for PhD study as most master’s level counselling psychology programmes in Canada function as terminal master’s programmes, similar to all counsellor education master’s programmes in Canada (Bedi et al., 2012). This is a barrier that reduces individual programme applicant pools given the greatly incompatible application requirements across programmes throughout Canada (Bedi, 2016). Therefore, it is not surprising that some applicants felt that the transition from master’s to PhD should be more efficient. For example, one participant commented that differences in prerequisite credit requirements between this person’s master’s and PhD institutions caused difficulties for them as an external applicant.

Based on feedback provided by participants, given how few programmes there are (five) and thus how feasible alignment should therefore be, doctoral programmes in counselling psychology in Canada should seriously consider working together to standardise the application requirements, including course prerequisites and applicant background. This could not only reduce unnecessary burden on applicants but promote better interprovincial and cross-programme mobility of applicants across Canada: if an applicant met the background requirements for one doctoral programme they would meet the requirements for all others in Canada, which is definitely not the case at the present time. Standardizing admissions requirements nationally should also increase the number of applicants to each counselling psychology doctoral programme in Canada and perhaps increase the diversity of the applicant pool for all programmes.

Some participants desired improved clarity from programmes. They specifically mentioned the need for additional information about the programme to better inform decision-making. Our own review of the Canadian programme websites indicated notable variability in the type of information provided and extreme variability in the level of detail provided. For example, some programmes provide few, if any, information about student or faculty characteristics or application/admissions statistics on their website, while others list many more. Therefore, we recommend that programmes update their websites with additional and more detailed information about their programmes. In parallel, accreditation bodies (such as the CPA) should consider involving potential applicants in the process of updating and clarifying their requirements for public disclosure, as this is the demographic most interested in such information (Hausman et al., 2017).

Some participants also mentioned the need for improved communication from programmes. By this they meant, for example, improved notification about the admissions timeline and communication about their chances of getting into the programme. In terms of financial considerations, various participants recommended that application fees be non-existent for everyone, or at least internal applicants, and commented on the need for more funding to be tied to admissions. Programmes that do not already provide this information and level of responsiveness would be advised to consider doing so if they wished to maximise applicant satisfaction.

Limitations
First, one ostensible limitation is that the study only solicited the response of 49 students admitted to Canadian counselling psychology doctoral programmes, which seems like a small number. Although our response rate was high relative to research on programme selection in psychology and related fields (e.g., Hertlein & Lambert-Shute, 2007; McLivied et al., 2010) and our sample size was large relative to published studies surveying graduate students in counselling psychology in Canada (the current study now serves as the second largest survey study of doctoral students in counselling psychology in Canada, eclipsing Bedi et al. [2018a]; the largest is N = 64; Bedi et al., 2019), this study focused on a relatively small population (N = 176 at time of data collection). Therefore, any study of this type in Canada will be necessarily constrained to a maximum of 176 participants or so. This sample size problem will be an inevitable issue for most countries of the world because most countries have few training programmes for counselling psychologists. However, given the small number and student size of Canadian counselling psychology programmes, this results in a very reasonable representation of the entire population of admitted counselling psychology doctoral students in Canada at time of data collection. Based on the population estimate provided by the APA for US programmes (2019), achieving this response rate is equivalent in representation rate to a sample size of 737 students in doctoral programmes in counselling psychology in the US.

Second, formal sample representativeness is difficult to fully assess because no programmes in Canada publicly report details on the race and ethnicity of their doctoral students on their website and only two of the programmes provide any information about gender demographics of enrolled students (University of British Columbia, University of Alberta). In this latter regard, our gender distribution is quite comparable to the population gender distribution in these two particular doctoral programmes in counselling psychology. Although we cannot fully rule out that the sample size and response rate contributed to a possible selection bias in the participants used in this study, recruitment contact reached every single enrolled student, responses were obtained from students at all doctoral programmes in counselling psychology in Canada, and participants came mostly from the provinces with the largest populations as well as from the provinces that housed doctoral programmes in counselling psychology. This information should provide some degree of confidence in the potential representativeness of the results obtained. Nevertheless, given the varied representation across doctoral programmes among sample participants, we believe that the results of this study perhaps best speak to the University of Alberta’s counselling psychology doctoral programme and least to McGill University’s programme.

Third, it is important to critically appraise the data source and realise likely biases. The feedback is provided from the applicant’s perspective and primarily considers the needs and desires of applicants. Applicants may be uninformed about the value of some application criteria (e.g., GRE) from the programme standpoint. They were not necessarily considering desired outcomes from the programme perspective, but mainly focused on their own personal outcomes or the plight of similar applicants. In addition, we were unable to locate any evidence from psychology or another discipline as to whether revising admissions requirements on the basis of applicant feedback directly results in better student and professional outcomes. It may very well do so, but this is an empirical research question for future research. Nevertheless, student satisfaction seems like a promising mediating variable and there is some past research support for the impact of student satisfaction on programme success (Hatcher et al., 1992). It can also be argued that applicants, who have not entered the field and may have inaccurate or incomplete understandings of counselling psychology as a psychology specialization and profession, may not fully know what is best for the programme, the field, or even themselves (e.g., how well will they fit with counselling psychology versus other psychology specializations). Therefore, although investigating the student perspective is interesting and inclusive, future research should better establish its incremental validity, that is, whether acting on applicant feedback will actually improve the outcomes of a counselling psychology programme above what they are currently at based on faculty understandings. Therefore, we do not advocate for uncritically accepting participant answers and making requisite changes without cross-referencing them with the perspective of other stakeholders and other research evidence. With this said, the applicants who responded to this survey provided some innovative considerations for revising the admissions process. This information should at least be carefully considered by admissions committees if they have the goals of increasing the applicant pool size and hosting more inclusive programmes.

Fourth, in surveying current students, we could only access the perspective of the success stories: those applicants who were actually admitted to a doctoral programme in counselling psychology in Canada. The perspective of applicants not able to obtain admission is also a valuable one. However, accessing this population in any reasonably representative manner and accurately estimating the population size of applicants (in order to determine a response rate) seems virtually impossible, which is why this research is not being done, not only in psychology but also in other disciplines (we only found one small-scale study that was able to compare successful applicants to unsuccessful applicants: Bersola et al., 2014, which did this for all doctoral admissions at one particular university during one application cycle).
Finally, there could be questions about the extent to which these results from Canada will generalise to programmes in other countries. It is quite easy to peruse the admissions criteria for the five Canadian programmes online and it seems pretty clear that they rely on similar application/admissions credentials and processes to those in the US, England, and other Western countries (also see Bedi, 2016 and Littleford et al., 2018). Given the high similarity in doctoral training in counselling psychology across the US and Canada and their accreditation reciprocity agreement (CPA & APA, 2017), as well as documented similarities in the manifestation of counselling psychology in Canada and the UK (Bedi et al., 2018b), we expect that many results of this study will have reasonable generalizability to the admissions situation in the US, the UK, and other Western countries, at least.

Despite these limitations, this study provided the first systematic investigation of the experience and understandings specifically of counselling psychology programme applicants. Applicant understandings about the admissions process to counselling psychology programmes has not been systematically investigated and reported in a peer-reviewed, published, cross-programme aggregate manner until this study. Therefore, this study can provide foundational background and direction for opening up this important and promising avenue of future research.

**Future research**

It would be useful for future research to replicate this study, especially with a bigger sample size, both in the near future, to increase confidence in the results of the current study, and in the distant future, to track changes over time. A future study that samples across Canada and other countries will also be useful to better determine what results are specific to Canada (and highlight sociopolitical/cultural national influences) and what results truly generalise to the broader counselling psychology specialization globally.

Because the research design employed does not definitively provide for causal relationships, future research can also investigate some of the innovative ideas mentioned by participants in prospective and more controlled research. For example, experimental investigations could examine the influence of receiving written expressions of interest to applicants from prospective supervisors on variables like on applicant satisfaction, enrolled student outcomes, and programme outcomes. Assessing the extracurricular life experiences of applicants as a formally evaluated admissions criteria, perhaps in the manner recommended by Sternberg et al. (2012; focusing on actual and potential community leadership and contributions) might be an especially promising avenue to explore in prospective research in order to promote equity and inclusion of those from commonly marginalised backgrounds.

In addition, future research could complement the current study with the perspective of four other relevant populations. While extremely difficult to obtain, novel feedback and a more thorough understanding of the experience of the applicant admissions process will likely be obtained by also sampling unsuccessful applicants who did not gain admission and those who were dissuaded from even applying in the first place. This could be achieved in at least two ways. Applicants can be sent an invitation to participate in a study directly from programmes they applied to, but care would have to be taken to protect participant confidentiality, by, for example, having the data collected and analysed by an external party. Study recruitment could also occur from students in typical feeder programmes to doctoral programmes in counselling psychology who are in their final year before graduation (who potentially could be applying to programmes in counselling psychology). A study soliciting the perspective of international applicants specifically should also prove to be valuable in informing modifications that could result in the programme admissions process being more welcoming for international students and helping meet any diversity goals related to nationality of students. Finally, utilising samples of just applicants who have a minority or marginalised status, can further identify valuable alterations to admissions processes that could prove to be more inclusive and promote social justice.

**CONCLUSION**

Due to the absolute absence of systematic research on the admissions process in counselling psychology programme specifically that examines the perspective of applicants, this study should be seen as a valuable, albeit small step forward, and one that can catalyse important progress in future research on admissions processes and practices. In supporting the quest for greater validity in admissions decisions, information such as that which is provided in this study not only contributes to the scarce pool of data available to make evidence-based decisions about counselling psychology admissions but offers a type of experiential data completely neglected in counselling psychology programme admissions research. In other words, the results of this study hold great relevance for informing academic programmes about a neglected perspective that
they can consider as they seek to review and hopefully update their application and selection procedures to be more evidence-based and research-informed. Given the apparent stagnancy in counselling psychology admissions processes, the time for change is now. Although the evidence provided in this study is limited, some evidence is better than no evidence in pursuit of the goal of evidence-based, research-informed decision-making in counselling psychology admissions, particularly when the evidence comes from a never-before-investigated but essential stakeholder: the applicant and future student.

REFERENCES


Selective mutism: A case study on the use of expressive techniques in assessment and management

Susmita Halder¹ & Akash Kumar Mahato²
¹St Xavier University (India)
²Amity University (India)

Correspondence: susmitahalder@gmail.com

Selective mutism is a relatively lesser-seen psychiatric disorder. In children, the condition might be misdiagnosed as defiant and problem behaviour, putting the child at risk of unwanted and inappropriate management, mostly in school conditions. The present article presented a case of a six-year-old girl diagnosed with selective mutism and associated behavioural problems and intervened with an eclectic approach involving expressive therapy techniques, behavioural therapy, and cognitive behaviour therapy. Structured and non-structured projective techniques were used extensively for rapport building and assessment in the client, who characteristically was mute and non-cooperative in initial sessions. After 12 sessions, a significant change in the client's mute and non-verbal behaviour and problem behaviours were reported. The client was maintaining the progress in subsequent follow-ups.

Keywords: assessment; cognitive behavioural therapy; expressive therapy; psychosocial intervention; selective mutism
Selective mutism is a psychiatric disorder that is usually diagnosed in childhood. According to the latest edition of the Diagnostic and Statistical Manual (DSM-5), selective mutism can be manifested as a consistent failure to communicate verbally in specific social situations where it is required (American Psychiatric Association, 2013). Most symptoms of selective mutism can be seen in the school situation. Selective mutism cannot be attributed to disturbances in language production. Previously, selective mutism used to be categorised under speech disturbances, hysteria, or another neurosis (Kussmaul, 1877) and also as catatonia like impression (Tramer, 1934). The association between anxiety and selective mutism has been taken into account in recent times (Muris & Ollendick, 2015). It has also been seen that selective mutism and anxiety tend to overlap in symptomatology, aetiology, and treatment. Selective mutism can also be demonstrated as the clinically significant presence of features of social anxiety (Cohan et al., 2008).

After latest revisions in DSM-5 criterion of selective mutism, there is a major shift from including anxiety as a symptom in selective mutism to the disorder itself been reclassified as an anxiety disorder as around 80% of individual with selective mutism has co-morbid anxiety symptoms as well (Driessen et al. 2020). Literature suggests that most children with selective mutism also meet the criteria of other anxiety disorders, including lifelong co-morbid anxiety disorder, social phobia, separation anxiety disorder, and generalised anxiety disorder (Oerbeck et al. 2014).

The aetiology of selective mutism involved various factors, including genetics, environmental, temperamental, neurodevelopmental, and avoidance. In the case of anxiety spectrum disorders, the origin of symptom manifestation also includes the factors mentioned above, which encouraged the conceptualisation of selective mutism as a disorder of the anxiety spectrum (Muris 2007).

In accordance with the developmental psychopathology framework, the symptomatology of selective mutism and anxiety disorders could be coincided (Cohan et al. 2006; Viana et al. 2009). A complex interaction between various vulnerability factors increases the risk of selective mutism, among which behavioural inhibition, oppositionality, parental control, and neurological anomalies could concur with selective mutism with anxiety disorders.

Psychosocial intervention for selective mutism aims to decrease conditioned anxiety symptoms and speech difficulties in specific situations. Pieces of evidence suggest that the most effective therapeutic intervention could be done through behavioural and cognitive therapy along with expressive measures. Considering the inclusion of selective mutism in anxiety spectrum disorders, it could be considered the treatment of choice. But the non-anxiety part of the selective mutism, i.e., oppositionality, language difficulties, and other developmental problems, might be neglected and receive less clinical attention. The physiological component of selective mutism includes bodily anxiety symptoms, and expressive therapies encourage children with selective mutism by active physical participation in therapy (Bautista et al., 2018; Fernandez, 2010).

The present article presents psychotherapeutic management of a six-year-old child with features of selective mutism, social anxiety, and behavioural problems.

**Case introduction**

Index client SP is a six-year-old female, the only child of her parents studying in class 1, belonging to middle socioeconomic status, and hails from an urban locality. At the time of consultation, SP was staying with her mother at her maternal grandparents' place.

**Presenting complaints and history**

SP was brought for consultation after complaints from school teachers regarding SP's not responding in the class. She had stopped talking with her peers or responding to teachers to the extent that she was not even asking to go for toilet breaks if required. They were not responding to teachers after repeated attempts were gradually construed as defiance, disobedience, and stubborn behaviour, and eventually, her academic performance was getting affected. She was also not mixing with her peers and mostly staying alone in school. The symptoms had a gradual onset in the last six months and had deteriorating progress. Parents reported that they were unaware of this behaviour at school, but she had been avoiding visiting unfamiliar places, getting extremely anxious in social situations with unfamiliar people around. Parents also reported that SP was very capable of speaking and used to speak fluently at home with family members. At home, SP was gradually becoming more irritable, demanding in nature, spending more time watching television and
particular about her food. She was also showing certain defiance if she tried to be disciplined by her mother. The symptoms had a gradual onset in the last six months with deteriorating progress.

**Assessment**

The child did not speak a single word in the initial sessions and was not cooperative. Initial impressions in the case were based on parental reports and behavioural observation of the child. Rapport establishment was done by inviting the child for games and drawing. A qualitative approach was adopted to understand the underlying issues, and the child could perform the Draw a Person Test. Analysis of the drawing revealed underlying aggression, conflict with parental figures and a high need for succouring. Further assessments ruled out any issues of learning or intellectual disability, or attention deficit.

Even after SP was comfortable enough to sit with the therapist during the initial assessment sessions, the interaction was completely non-verbal as she did not speak a single word if asked. However, with gradually developing rapport, she could respond to queries by making pictures on a sheet, e.g., when asked for ‘who are in the family’, she drew different figures for self, mother and father. The interpersonal relationship in family and marital discord among parents was expressed only during these non-verbal expressions through drawings and written statements. Further enquiry from parents revealed significant marital discord among parents. Parents never mentioned these issues before unless they were asked specifically and had reported the complaints regarding SP purely as a behavioural and academic problem at school.

**Case conceptualisation**

SP is a six-year-old only child of her parents. An increasingly growing conflict between the parents had led her mother to shift to her grandparents’ place along with SP, where SP's father used to visit her on weekends. She had been witnessing the fights between her parents frequently. SP's parents, especially their father, have modelled being aloof and suppressive of crises and displaying inappropriately irritable and aggressive expressions. The looming threat of separation between parents has led to feelings of insecurity and anxiety in SP, who otherwise had been a cheerful kid. Specific barring from family to not discuss any familial issue outside home led to the development of inhibitory behaviour and gradual withdrawal behaviour from her environment outside the home, i.e., school and friends. Shifting to her maternal grandparents’ home and mother made SP more anxious about her parent's separation, and she became more silent outside the home, particularly at school. Repeated reminders from her mother to not discuss the issues outside and her unresolved anxieties appear to have generalised her inhibitions and mute behaviour in school situations and other social situations to avoid the fear of teasing. Finding no one to share her concerns has led to helplessness and suppressed anger, as evident from her projective assessments. The manifestations are becoming mute in front of outsiders and increased defiant and demanding behaviour at home, further reinforced by submission to those demands by mother who was already in a challenging situation. The anxiety of losing the togetherness of their parents had been so intense that she has stopped asking for washroom breaks from teachers. Considering the overall manifestation, an eclectic therapy plan was conceptualised with the following treatment goals: (a) to help SP vent out her anxieties and resume her previous communication and response patterns with people outside the home; (b) to counsel SP's parents to amicably resolve their marital issues, which was having an impact on SP’s mental health i.e., plan out this report; and (c) to modify the new-onset behavioural problems of SP.

**Course of treatment and assessment of progress**

SP was engaged in 12 sessions, excluding the assessment sessions spread across six months. The therapy focused on the selective non-verbal behaviour of SP, her associated excessive anxieties in unfamiliar places and among unfamiliar people, increasing behavioural problems at home and her familial relationship. The therapeutic intervention was emphasised improving SP’s communication outside the home along with decreasing her behavioural problems. The mode of psychotherapeutic intervention was primarily expressive in nature through drawings, story-making and writing, and behavioural management.

**Rapport establishment.** In the primary therapeutic sessions, SP was very shy and resistant to interact with the therapist. After taking a history from their parents, SP was engaged in games which she did after much hesitation without speaking a word. Considering her prior academic performance, block design and colour progressive matrices were presented as game activities to build rapport and estimate the client’s intellectual capabilities. Though rapport was established gradually through games, the client was non-verbal throughout the sessions. She became interested in the sessions and was cooperating progressively with the therapist.

**Engagement in the activities.** The client was engaged in the sessions through verbal and non-verbal information and vocabulary games. Through this process, she became verbally communicative with the
therapist than before. Games were given to her, and she participated in all these activities as well. She became interested and encouraged to perform the tasks which were given to her. Verbal encouragement and reinforcement were given to her throughout the sessions. Tasks like playing and drawing were introduced to her, which increased her overall engagement in the sessions.

Exploring underlying issues and venting out. SP was having difficulties expressing her emotional reactions in unfamiliar situations. The drawing and writing activities helped her vent out her emotional responses in the sessions. Along with unstructured drawing and question answers in writing, projective assessments like the Draw a Person Test and Children’s Apperception Test were administered. The tests were administered in a very neutral environment without giving a hint of evaluation to the client. Apart from gaining insight into SP’s underlying needs, desires and conflicts, the drawings were also used to understand her neutral and threatening situations. Thus, in this particular case, the expressive techniques had a dual role and a much larger role in rapport building with the client.

Channelling emotions. Cognitive behavioural therapy was used to channel her emotions; and the child’s anxieties were explored and desensitised. Rewarding and encouraging were involved in each session. Emotional regulation strategies were used to channel negative emotions, and it had been seen that emotional regulation was improved through sessions. Underlying aggression and anxiety of the child were channelled to more adaptive behaviours.

Reducing behavioural problems. Behaviour therapy techniques were used to decrease behavioural problems in terms of stubbornness and disobedience of the child. Shaping and chaining were used effectively to reduce behavioural problems relative to the recent onset. As the child was gradually developing trust over the therapist, she was in a better accepting mode and amenable to behavioural interventions to schedule and limit her television and mobile screen time, adhering to daily activity scheduling and was better in managing her academic works. Mother was also counselled to accept her demands and ignore unreasonable ones judicially. Positive changes in behaviour were duly reinforced with verbal praise, timed and assured small gifts like colouring books and crayons.

Targeting familial relationship. A conflicting relationship between parents was conceptualised as a major issue in aetiology of the symptoms; family counselling was involved in the therapeutic sessions to psycho-educate the parents and improve overall disharmony parents. It was also found that the emotional involvement of the mother encouraged the discord. Parents were engaged in different counselling sessions.

Social interaction skills training. Social interaction skills training improved the societal functioning of the child. The child started to interact more in school than before. She was assured that her parents are working on their issues, and they cared for her. She was asked about her favourite activities at school and why did she stop them. She was assured that it was perfectly fine to play with her friends and talk with them all. Gradually she resumed her communications initially with her previous close friends as well as her teachers. Initially, she started replying in a hushing tone but gradually was able to speak coherently in mildly low volume. Productivity of speech was lesser, however. She also started communicating her needs in school, and she started involving in peer plays as well.

At the end of 12 sessions, there was a significant change in the client’s reported symptoms. SP was much better at verbally communicating outside the home environment and at her school. She was engaging well with her friends and was responding to her teachers though not at a pre-morbid level. She was also expressing her needs with teachers in a much better way. She was still a bit shy in large social gatherings, but better than before. A non-structured rating of change in presenting complaints pre and post-intervention are summarised below:

Complicating factors. The lack of insight on the part of parents, who failed to judge the impact of their behaviour on the child and thought of the behaviour of the child as problem behaviour related to school, was a major issue. While both agreed on the need of addressing their marital discords, there was certain resistance initially to accept this, and they failed to mention it at the very beginning. However, they agreed for undergoing counselling for their marital discord, which is still in process with an uncertain outcome, though expected with a positive prognosis.

Access and barriers to care. The major resistance or blocks experienced in the therapy process were extreme non-cooperation on the part of the child for rapport building. Characteristically to the symptom pattern of her diagnosis, the child was completely mute in initial sessions and started crying if separated from her mother during the session. It was not easy to get engaged. To counter this, interest areas of the child were explored and accordingly, she was invited to solve puzzles, play block games and time-bound
games. Verbal appreciation and praise on performance motivated her to further engage in the activities and break the ice.

Follow up. She had been under follow up once every month for the next four months. After enforcement of lockdown due to the COVID-19 pandemic, follow-up sessions were done through video calls.

Treatment implications of the case

Presentation and assessment. The presentation of the symptoms in selective mutism in children is often misconstrued as wilful problem behaviour and conduct problem as in the present case. Family members might present their concerns differently, while the underlying issues might be something different (Halder & Mahato, 2019; Srinath et al., 2019). Thus, it is of paramount importance to explore every aspect of the clinical history. Family members might be unknowingly secretive of certain familial issues that impact the symptom manifestation, thus needing to be explored thoroughly. The symptom presentation in the present case is in line with existing literature on selective mutism. In the case of the present child, the social anxiety and the avoidance of unfamiliar situations appeared to be prevalent among children with selective mutism, and indeed researchers suggest that Selective Mutism could be explained as a symptom manifestation of social phobia (Black & Uhde, 1995) or anxiety disorder (Anstendig, 1999). The index child had symptoms of disobedience, uncooperativeness and stubbornness, which are common among selective mutism (Kristensen, 2001). Externalising symptoms are reported twice as frequent among children with selective mutism, and avoidant behaviour of the child may be misinterpreted as manipulative or controlling where it is a more symptomatic manifestation of shyness or anxiety (Kristensen, 2000).

The aetiology of selective mutism is quite heterogenous, and multiple factors are implied. Psychodynamic theories are one of the oldest theories implied in the aetiology of selective mutism. Although, recent literature, (e.g., Wong, 2010) cast doubt on the validity of the model; in the present case, the perceptible relation between the client's anxieties and the onset of her symptoms emphasises the role of unresolved conflicts and possible lack of coping strategies of the child to deal with her anger and anxiety. The case background also supports family system theorists, who often view SP as a product of conflicting familial relationships (Anstendig, 1998).

As the primary symptom itself make the clients relatively non-responsive compared to clients of other disorders, use of expressive techniques and structured as well as unstructured projective techniques for rapport building and assessment is suggested in the literature (Bhide & Chakraborty, 2020; Capobianco & Cerniglia, 2018), and was effectively used in the present case. It was evident from this case that in selective mutism, assessments may not be strictly very structured and, depending on cooperativeness, can be timed afterwards.

Considering the heterogeneity of the symptoms, an eclectic approach in selective mutism is often recommended. Recommended therapies include psychodynamic therapy, behavioural therapy, cognitive behaviour therapy, pharmacotherapy, and multi-method treatment (Wong, 2010). The eclectic psychotherapeutic treatment of selective mutism, including psychodynamic play therapy, behavioural modification, and cognitive-behavioural approaches, appears to be most effective for children with selective mutism (Cohan et al., 2006). The therapeutic approach adopted for the present case included components from expressive therapy, behavioural and cognitive behavioural therapy and family counselling, and asserting the need for customised therapy plans for every case of selective mutism.

It was perceptible that parenting strategies, parental adjustment, and general family environment could lead to a different spectrum of psychological issues in children. Through an integrative approach to the child’s symptomatology, the presenting complaints, including mutism, social anxiety and avoidance, interaction, uncooperativeness, behavioural problems and social relationship of the client, were improved.

Recommendations to clinicians and students. Selective mutism is a unique disorder, and the heterogeneity of underlying causes warrants a thorough understanding of familial interpersonal relationships, anxiety and conflicts of the client. The underlying anxieties and fear witnessed by the client; in this case, support the overlapping of anxiety disorders and selective mutism symptoms. A multi-model and eclectic approach for the treatment of selective mutism is recommended. Rapport building is vital in dealing with clients with selective mutism, and expressive and non-verbal techniques could be vital in psychological assessment and therapy.

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Previous research exists on AMBER alerts in helping to locate missing children, but there is a lack of research on public alerts for missing older adults. Silver Alerts (SA) are similar to AMBER alerts except that they are intended for elderly individuals who are considered to be in danger. In two studies, we presented university student participants with a mock SA and home video of a Caucasian couple in their 80’s. We explored factors related to ability to recognise the two individuals, including individual difference variables and whether the couple appeared together or separately in the SA. In Study 1 ($N = 85$), we found that a measure of participants’ attitudes towards the elderly (ATOA) was associated with recognition of the missing woman. Further, recognition was relatively low for a vehicle associated with the missing couple. In Study 2 ($N = 1,627$), we found that ATOA scores were associated with recognition of the missing man and woman. Presenting the missing couple separately did not result in a difference in recognition compared to presenting them together. In both studies, recognition levels were higher for the missing man than for the missing woman and higher for the missing persons than for a vehicle shown with them. Attitudes towards the elderly appears to be an important individual difference variable associated with ability to recognise missing elderly persons. Additional research is needed on Silver Alerts with a more diverse range of missing individuals and more diverse samples of participants.

Keywords: face identification; metacognition; missing persons; older adults; public alert systems
Face identification research includes studies on visual perception (e.g., Devue & Barsics, 2016); forensic psychology (e.g., Lee & Wilkinson, 2016; Royer et al., 2015); and neuroscience (e.g., Wang, et al., 2019). In the present study, we investigate face identification in the context of public alert systems intended to help locate individuals who have gone missing. In these situations, individuals may attempt to recognise a person they may have seen presented earlier in a missing person’s alert.

Research on face identification helps locate missing individuals who may be at risk. AMBER alerts, for example, are used for children under the age 18 or for individuals who have physical or psychological disabilities. AMBER alerts were created to help find kidnapped children and impose tougher penalties on child abusers, kidnappers, and pornographers (Associated Press, 2003). Silver Alerts are intended to help locate missing individuals over the age of 65 who may have a physical or psychological disability and who are thought to be in immediate danger. Alerts may occur on billboards, via cellphone alerts, or social media (Carr, 2010). Both programmes rely on the public’s ability to identify the missing person if they should see the missing person in public.

Silver Alerts are particularly important due to a predicted exponential increase in the number of adults over the age of 65. According to the Population Reference Bureau, the number of Americans ages 65 and older is projected to nearly double from 52 million in 2018 to 95 million by 2060, and the 65-and-older age group’s share of the total population will rise from 16% to 23% (US Census Bureau, 2019, para. 3). One important consideration in preparing for this demographic shift is understanding our ability to identify faces of elderly individuals in case they are missing.

Research on face identification for older adults is crucial as this population is at higher risk of individuals going missing for various reasons. Older individuals may exhibit severe physical limitations such as poor vision, lack of coordination (e.g., while attempting to walk), and in some cases may be diagnosed with severe memory deficits, resulting the possibility of becoming confused and lost, possibly wandering away from their living facilities.

In addition to the increasing age population, another contributing factor for the number of increasing SA is the predicted number of older adults with dementia that has a side effect of wandering away from their place of residence. Alzheimer disease (AD) is the leading form of dementia contributing to older adults going missing (Relojio, 2015). The Alzheimer’s Association Report (2020) has noted an increase in dementia, including Alzheimer’s disease (AD). Those suffering from dementia may show wandering behaviours (leaving their place of residence, usually with a purpose such as returning to their former home), or elopement. Elopement has been defined as ‘the act of wandering away from a safe residence’ (Aud, 2004, p. 362) and can put eloping persons at risk through getting lost or injured, primarily because of their impaired judgement and problem-solving ability. Wanderers are more likely to elope and/or wander away (Aud, 2004; Ballard et al., 1991). Elderly individuals may be missing for a variety of reasons in addition to dementia. For example, Logsdon (1998) found that patients with psychological disorders, such as those suffering from anxiety and depression, as well as those who sit alone a lot, tended to wander.

Research on face identification as it applies specifically to missing older adults is sparse. Only a few published articles have focused on this vulnerable population (Gier et al., 2016; Gier, 2019; Gier & Kreiner, 2019; Gier & Kreiner, 2020a; 2020b). Gier et al. (2016) conducted a study with the target individual (e.g., ‘missing person’) being a woman in her late 70s. She was shown in a video wandering in a park, dressed in either her nightgown or casual clothes. This study showed no difference in ability to recognise the missing person according to participant race, gender, or age. Three additional studies on Silver Alerts (Gier & Kreiner, 2019; 2020a; 2020b; Gier, 2019) investigated the effect of viewing an educational video on the importance of SAs prior to participants viewing a Mock SA and a short video of the missing person in her home. These studies examined associations of target recognition with several individual difference variables, such as Attitudes Towards Older Adults (ATOA), empathy, conscientiousness, and contact with older adults. The researchers found an advantage in recognition after priming participants about the importance of Silver Alerts via an educational video. The researchers also found that females outperformed males in recognising the missing person, and Caucasians outperformed African American participants, consistent with Own-Race-Bias (ORB) (Gier & Kreiner, 2019).

Gier (2019) explored target recognition based on a mock SA in relation to individual differences. The procedure included the presentation of an educational video on the importance of Silver Alerts, and a video of the target male (65 years old) walking around his pool outside. The researcher experimentally manipulated whether participants viewed the educational video or not. Participants then viewed a Mock SA of the ‘missing’ target male followed by taking the Attitudes Towards Older Adults (ATOA) scale, Basic Empathy Scale (BES), the IPIP...
conscientiousness scale, as well as a short questionnaire on contact and experience with older adults, then the recognition phase. Participants who recognised the target scored higher in empathy, conscientiousness, and metacognitive ratings (e.g., confidence levels). However, unlike Gier and Kreiner (2019), the researchers found no significant benefit to recognition of viewing the educational video. Although the Gier (2019) and Gier and Kreiner (2020) studies were conducted in a laboratory setting, their results suggest SA can be effective under certain conditions.

Factors related to face identification

The literature on face identification accuracy reveals several common issues that may be relevant to the ability to recognise older adults. First, recognition accuracy may differ according to demographic characteristics of research participants in relation to the target individuals; these differences are often described as biases in face identification. Own-Age Bias (OAB) is the ability to recognise and respond more accurately to a person close to the participant’s age (Anastasi & Rhodes, 2005). Researchers have found an Own-Gender Bias (OGB), meaning that face identification is superior for one’s own gender relative to the other gender (McKelvie, 1987). Although female participants have been consistently found to be better at recognising female faces than male faces (e.g., Cross et al., 1971; Lewin & Herlitz, 2002; Rehnman & Herlitz, 2006, 2007; Wright & Sladden, 2003), the results for male participants vary. For example, Herlitz and Lovén (2013) found that girls and women outperform boys and men if only male faces are presented and not paired with a female face. He et al. (2011) ‘found that Younger and older adults’ visual scan patterns were examined as they passively viewed younger and older neutral faces’ (p. 97), and found support for the idea that participants’ age cohort were more likely to look at those people of their own-age versus faces of people from other age groups. Macchi et al. (2015) found that teachers who had more experience with young children showed a reduced OAB. Their study also found that experience with people of different ages (e.g., young children) was related to increased recognition due to experience with that age group.

Own-Race Bias (ORB) was first studied by Feingold (1914), who found that people were more accurate when identifying faces of people from their own race than someone from another race group. Research on ORB over the past four decades has been demonstrated in multiple research paradigms and groups. Studies have found that even when exposure to the own group versus other group experience was brief, the ORB prevailed (Bernstein et al., 2007). Although ORB in relation to eyewitness testimony has been studied extensively, participant race as it pertains to Silver Alerts has only been investigated in two published studies (Gier et al., 2016; Gier, 2019). In both studies, participant race was not related to target recognition; however, in both studies the ‘missing’ older adult in a Silver Alert was Caucasian.

Another individual difference factor which may be important is attitudes towards older individuals. An overall negative attitude towards older adults could interfere with face identification. One way such attitudes can be measured is via the Attitudes Towards Older Adults (ATOA) scale (Kogan, 1961). Several studies (Brown et al., 1999; Harwood et al., 2005) reported that positive experiences with older adults resulted in increased positive attitudes towards the older adults. These studies found that, prior to contact with older adults, the participants had more negative attitudes towards older adults, but after spending time with older adults, scores indicated more positive attitudes. Attitudes towards older adults could be a factor in the extent to which people pay attention to older adults who may be missing; therefore, we believe a measure participants’ attitudes about older adults may be related to participants’ ability to recognise missing couple in the mock SA in the present studies.

Own-Race Bias research studies (Brigham et al., 1985; Valentine et al., 1995) led to research on the effect of contact and experience with older adults and the resulting attitude towards older adults. Knowledge of the elderly contributes to more positive attitudes towards older adults as well as reducing anxiety about ageing (Allan & Johnson, 2008). The amount of contact with older adults may relate to face identification ability of older adults by young participants. For example, Gorelik et al. (2010, p. 263) found that, in undergraduate students, amount of contact with older adults was positively related with the participants’ interest in ageing. The researchers further stated that, ‘Interest in aging proceeds along a continuum, from preceding factors to initial interest in ageing and then to substantial interest in ageing. Aging courses and opportunities for interaction with older adults should be offered at the undergraduate level.’
When an older adult suffering from a form of dementia has access to a vehicle, the driver may become confused and lost. When a Silver Alert is posted for a couple who has access to a vehicle it is suggested to report where they were last seen, and the make, model, colour, and number plate of the couple’s vehicle. For example, the Mississippi Department of Public Safety (n.d., para. 2) states on their website that ‘If the person missing is believed to be in a vehicle, information and photos can be sent to statewide communication systems, news media and other public communication resources’. The California Highway Patrol government website (n.d., para. 3) under ‘What Should the Public Do’ states that ‘If you locate a person who has been identified as missing, call 911 immediately to report their location. Be sure to make note of their location, the direction of travel, and make, model, color, and license plate number (if possible) of any vehicle involved.’ Public information in a Silver Alert may consist of the name and description of the missing person and a description of the missing person’s vehicle and license plate (Carson et al., 2015). In 2019 a couple from Wisconsin disappeared on Thanksgiving Day after leaving a family gathering in Black Earth at about 3 pm that day. Family members reported them missing after they failed to arrive at their destination. A Silver Alert was posted for the missing couple through Friday and Saturday until authorities found their vehicle on Saturday morning. According to the Wisconsin Department of Justice, the black dodge calibre was found on a remote trail outside community of Vermont which is only five miles from where they had spent Thanksgiving Day. Although this couple’s story ended tragically, the information about they make, model, and year of their vehicle helped in locating the couple. In the present study, we included information about the vehicle associated with the missing couple and asked participants to attempt to identify it.

The present research

A limited amount of previous research on recognition of missing older individuals has investigated recognition for individual missing persons. Our goal was to extend this research to situations in which an elderly couple is reported as missing. The focus of the current research was to investigate the ability of participants to recognise faces of an elderly, Caucasian couple, a male and a female (in their 80s) who were presented in both a Silver Alert and shown in a short home video. In addition to measuring recognition rates for an elderly couple, we were interested in whether recognition would be related to individual differences (participant gender, race, attitudes toward the elderly, and contact with the elderly). Further, previous research on face identification has indicated that participants’ metacognition is an important factor, such as their confidence that they have made a correct decision about having seen the missing person or not. Thus, we included the metacognitive measures of Prediction of Knowing (POK) – how likely participants feel they would be able to later recognise the missing individual – and their confidence ratings during the recognition phase of the study.

Study 1

We explored recognition of the target individuals in relation to participant gender, race, attitudes towards older adults, and contact with older adults. We predicted that female participants would be more likely than male participants to recognise the target woman, based on past research studies supporting females’ superior face identification ability. We did not predict a difference in accuracy related to participant race, consistent with previous Silver Alert studies. We predicted that recognition of the target individuals would be related to scores on the ATOA instrument, such that those who recognised the targets would tend to have more positive attitudes. We also predicted that participants who recognised the targets would tend to report greater levels of contact with older adults.

The video of the missing couple that we presented to participants provided an opportunity to test recognition for a vehicle. Ability to recognise a vehicle connected with a missing older adult (or couple) could be important, as identification of the vehicle could be of assistance in locating the missing individuals. We predicted that recognition rate for the target vehicle would be relatively low compared to recognition of the missing woman and man, based on research that faces are typically recognised faster and more accurately than objects (Ryan & Gauthier, 2016). In the present study, the vehicle was shown parked on a street behind the two targets in the study, with the two individuals shown up close; thus we expected that participants would attend less to the vehicle and be less likely to recognise it.

METHOD

Participants
The participants were recruited from a Southeastern US university using SONA, a research management system that allows students to sign up for research studies online and to obtain credit for participation. Of the 93 individuals who responded, we eliminated data from five who reported being unable to view the video in addition to deleting data from three individuals who indicated they had prior familiarity with someone shown in the study. Of the 85 remaining participants, 57 identified as female and 28 as male, and participants identified their race or ethnicity as follows: 62 Caucasian, 13 African-American, 8 Hispanic, 1 African-American/Caucasian, and 1 not responding. Mean age in years was 19.70 (SD = 3.08).

Materials

We administered the study using Qualtrics, an online survey/experiment platform. Participants could access the study by clicking on a link created by the researchers.

A home video was made of the target couple by their daughter. The video was 42 seconds in duration and showed the couple returning from a walk and greeting their daughter, who was visiting them for the day. Both of her parents had equal speaking time in the video. In the background, there was a vehicle clearly in view. This was important because the mock Silver Alert stated that the couple was said to have been last seen in the vehicle.

We created a mock Silver Alert using a typical missing person’s poster seen on television. The Silver Alert was created in a PowerPoint slide with voice-over and automatic progression, saved into an mp4 video and uploaded into Qualtrics. The Silver Alert showed the couple together, then separately with the targets’ descriptions (name, age, height, weight, last place seen; see Appendices A & B).

To measure participants’ attitudes regarding older adults, we used the Attitudes Toward Older Adults scale (ATOA; Kogan, 1961). The scale consisted of 34 questions on a six-point response scale with choices ranging from ‘strongly agree’ to ‘strongly disagree’, with higher total scores indicating more negative attitudes. This instrument is intended to measure stereotypes of the aged and people’s image of older adults. It has 17 positively worded items and 17 negative items. The scale consists of three domains: personal appearance, resemblance, and the nature of interpersonal relations across age generations. In the original study, Kogan tested his instrument with students in psychology classes, which included 314 subjects from Northeastern University and 168 subjects from Boston University. The overall Cronbach’s alpha reliability for the ATOA (Kogan, 1961) was reported to be .81. Content and construct validity for the ATOA have been supported in more recent studies, such as a Chinese study with a reported construct validity of .92 (Yen et al., 2009) and a Turkish version of the scale at .94 (Erdemir et al., 2011).

We measured participants’ experience with older adults using a four-point response scale. Participants provided ratings for each of four age groups (adults 50–59, 60–69, 70–79, and 80 and older). The prompt indicated, ‘Below is a list of different age groups. We would like to know about your experiences with members of those groups. For each group, indicate how much experience you have interacting with those age groups in the past five years. I have ______ experience interacting with adults this age,’ with the four options being ‘no/very little/moderate amount of/great deal of’. Participants also self-reported contact with older adults, categorised as none, 1–3, 4–8, or over 9 hours per week. Demographic questions were asked at the end of the study that included the participant’s age, race, and whether they received AMBER or Silver alerts on their cell phones. We also used a Prediction of Knowing (POK) scale from 0 = ‘I am positive I will not recognise the male/female in the Silver Alert,’ to, 100 = ‘I am 100% certain I will be able to recognise the missing couple from the Silver Alert.’

A total of 30 photographs were used in the recognition phase of the study. Twenty-six were foils (meaning not the target male and female in the study) who were about the same age as the target male and female. Additionally, two different photographs of the targets (with and without glasses) were used. Most of the foils looked like the older adults (e.g., same colour of hair or eye colour, similar face shape and complexion colour, and some of the foils looked noticeably different (e.g., different colour of hair, eye colour, skin complexion). Examples of the similar and dissimilar foils can be found in Appendix E. Similarity was evaluated by a separate sample of 40 undergraduate students who separately ranked the photos from most to least similarity with the target. Ten photos were eliminated that did not fit the criteria or had specific characteristics that could stand out (such as a noticeable mole, or unusually large ears). The remaining 30 photos were re-ranked from most like to least similar to the target. Four photos of SUV’s were shown to participants at the end of the study, one being the SUV parked in front of the senior citizen’s home (see Appendix B).
Procedures

After the participants agreed to participate, they saw the following message: 'You are now going to see a Silver Alert Poster. You may take your time to study the poster.' The next screen showed a photo of the couple (see Appendix A). Immediately following the photo of the missing senior citizen, the participants saw a slide of the description of the couple including age, hair colour, eye colour, height, and weight. A phone number was also provided to make the poster appear as realistic to a Silver Alert as possible (see Appendix B). Next, a message was presented to the participants which stated: 'You are going to be watching a short video that lasts approximately 42 seconds. Please make sure the volume is turned down so as not to distract others (e.g., if you are in a computer lab or library participating in the study). The video showed the participants returning from a walk and walking up to their daughter in front of their house. Equal time was given to the couple to speak to the daughter about activities they had planned for their week.

After viewing the video, participants providing a Prediction of Knowing (POK) on a scale from 0 = 'I am positive I will not recognise the male/female in the Silver Alert, to, 100 = 'I am 100% certain I will be able to recognise the missing couple from the Silver Alert.' After participants answered the POK following the video of the couple, they were asked to respond to a demographics scale including age, race, and gender, followed by the amount of contact with elderly individuals (hours per week). Participants were then asked to respond to the ATOA scale.

Next participants responded to demographic questions including gender, age, and race or ethnicity and questions about their amount of experience with different age groups (little, moderate, great deal). We then asked questions relating to SA: Do you receive Silver Alerts on your cell phone? (yes’ or ‘no’). Do you receive AMBER alerts on your cell phone? Do you look at missing persons posters when you are in Wal-Mart (a food and department store)? Do you think Silver Alerts help to find missing older adults? If you had an older adult in your life who went missing would you want a Silver Alert posted of them? Did you know that SA also include individuals aged 18 and older who are missing with psychological and physical disabilities? Do you have any suggestions for improving older adult alerts when they are missing, such as cell phones, social media, and SA posters?

Additional questions included: Do you enjoy doing activities with older adults (e.g., cooking, scrapbooking, playing checkers, or going to cinema)? We then asked who the participants lived with: mother, father, grandparents, other. Next, we asked how much time during the week they cared for an older adult who is not a family member: none, 1–4 hours, 5–10 hours, 11–15 hours, over 15 hours per week.

We then presented four photographs of the same type of SUV that was seen in the background of home video. We presented a blue, white, burgundy, and grey SUV. The photographs of the SUVs were presented in random order. After viewing each of the photographs of the SUVs the participants were asked if this type of SUV was seen in the video, then, to rate their confidence level over their response on a scale of 0 = not confident at all to 100 = absolutely positive the SUV was in the video.

Lastly, we presented the 30 photographs, 15 females and 15 males all about the same age of the target male and female (84 and 86 years of age). Twenty-six photographs were foils and four of the photos were of the targets in the study (two photos of the male and two photos of the female). The 30 photos were in random order. Each photo appeared sequentially on the screen and the participants were asked to respond ‘yes’ or ‘no’ to the question: ‘Was this male (or female) in the Silver Alert?’ The participants, unknowingly, were being timed during their decision. Next, the participants were asked to rate how confident they were in their decision of whether the person was in the Silver alert or not on a scale of 0–100.

RESULTS

Overall, 47 participants (55.3%) correctly identified the missing female senior citizen and 72 (84.7%) correctly identified the missing male senior citizen. A McNemar test for dependent proportions indicated that the difference in recognition rate was significant, $\chi^2 (1, N = 85) = 16.45, p < .001$. Thirty participants (35.3%) correctly identified the target vehicle. False alarm rates were 8.3% in responding to female distractor photos, 6.8% in responding to male distractor photos, and 26.7% in responding to distractor vehicle photos.
Participant gender was not significantly related to recognition of the female target, $c^2 (1, N = 85) = 0.50, p = .481$, or the male target, $c^2 (1, N = 85) = 0.21, p = .645$. Similarly, when comparing Caucasian participants to participants of other ethnicities, there was no relationship with recognition of the female target, $c^2 (1, N = 85) = 0.12, p = .725$, or male target, $c^2 (1, N = 85) = 0.11, p = .744$. Self-reported contact with older adults, categorised as none, 1–3, 4–8, or over 9 hours per week, was not associated with recognition of either the female target, $c^2 (1, N = 85) = 2.48, p = .478$, or the male target, $c^2 (1, N = 85) = 4.18, p = .243$.

We conducted a logistic regression analysis to predict whether or not participants recognised the female target (‘yes’ response to her target photo) from metacognitive measures (POK, target confidence, and mean female distractor confidence ratings), participant age, score on the ATOA, and response time to the target photo. Response time was measured as the amount of time the page showing the target photo was viewed prior to the participant choosing a response. We used the backward stepwise Wald method. The final model included only ATOA scores as a predictor (odds ratio of .95, $p = .006$), with higher ATOA scores (representing more negative attitudes) predicting lower likelihood of recognising the female target. This model was significant, $c^2 (1, N = 85) = 8.90, p = .003$, Nagelkerke $R^2 = .133$.

Similarly, we conducted a logistic regression analysis to predict recognition of the male target. The final model included ATOA scores (odds ratio of .96, $p = .058$), with higher ATOA scores (representing more negative attitudes) predicting lower likelihood of recognizing the target, and target confidence rating (odds ratio of 1.03, $p = .010$), with higher confidence ratings predicting increased likelihood of recognizing the target. This model was significant, $c^2 (2, N=85) = 10.33, p = .006$, Nagelkerke $R^2 = .199$.

Finally, we conducted a logistic regression analysis predicting recognition of the target vehicle from target confidence rating, distractor vehicle confidence rating, and participant age. The final model included only distractor confidence rating as a predictor (odds ratio of 1.04, $p < .001$), with higher confidence ratings predicting increased likelihood of recognizing the target vehicle. This model was significant, $c^2 (2, N = 85) = 22.45, p < .001$, Nagelkerke $R^2 = .319$.

**DISCUSSION**

In study 1, participants viewed an elderly couple in their mid-80s in a typical Silver Alert format as seen on television or on a poster distributed in public, as well as in a home-made video of the couple returning from a walk and greeting their daughter. Study 1 included several measures that we believed could be related to face identification of an elderly couple in a Silver Alert.

We had predicted females would outperform males on recognizing the female target in particular, based on past studies showing females demonstrating superior face identification for their own gender (OGB) (McKelvie, 1987). Although female participants have been consistently found to be better at recognizing female faces than male faces (e.g., Cross et al., 1971; Lewin & Herlitz, 2002; Rehman & Herlitz, 2006, 2007; Wright & Sladden, 2003), the results for male participants in some studies have been mixed. For example, Herlitz and Lovén (2013) found that girls and women outperform boys and men if only male faces are presented. Our results did not indicate a gender difference in recognising either target individual, supporting previous findings that there is not a female advantage for accurately recognising the target male when presenting both male and female faces. The results did not indicate a difference in target recognition related to participant race, consistent with previous Silver Alert studies (Gier, 2019; Gier & Kreiner, 2020a; 2020b).

We predicted that recognition of the target individuals would be related to lower scores on the ATOA instrument, reflecting fewer negative attitudes toward older adults. This hypothesis was supported for recognition of both the male and female targets, with ATOA scores emerging as a significant predictor.

Additionally, we also predicted that greater levels of reported contact with older adults would predict recognition of the target. Contact was not significantly associated with the recognition of either of the targets. Contact and experience with older adults in past studies have shown positive effects regarding attitudes towards the elderly (Angiulli et al., 1996). The measure of contact in the present study was based on the participant selecting an option for a range of hours of contact per week. This type of measure may be limited in precision and reliability. It may be helpful to provide participants with examples of explicit positive and negative experiences with older adults and ask participants to report those experiences.
An interesting finding was that confidence ratings were predictive of target recognition for the male target, but this relationship did not occur for recognition of the female target. Given that the study included only the two target individuals, it is difficult to determine whether this difference in metacognitive performance relates to the gender of the 'missing' person or to some other difference between the two targets. It is possible that the relationship between confidence and recognition is stronger in general as target recognition increases, as confidence may not be a good metacognitive indicator when recognition rates are lower.

We hypothesised that recognition of the target vehicle would be relatively low, and indeed it was substantially lower than recognition rates of the male or female targets. This was despite the fact that only four vehicles were shown in the recognition phase, whereas 15 male and 15 female target photos were shown. However, the vehicle was in the background when shown in the video, so this result is perhaps not surprising. Recognition of the vehicle was predicted by confidence ratings for the distractor vehicles, indicating that metacognitive judgements related to recognition of an associated vehicle may have some value.

Study 2

To our knowledge, these are the first studies on recognition of a missing couple shown in a Silver Alert-style missing person's announcement. Thus, we felt it was important to replicate the study with a larger sample. Further, we wondered whether the way the couple is presented in the video might affect recognition. In study 1, missing woman and man were presented together, in the same video that participants watched after seeing the Silver Alert. It is possible that presenting the two individuals separately could encourage people to focus more on their individual features than a situation in which the individuals appear to together, resulting in a higher likelihood of recognition.

When a SA of a missing couple is shown on the news as a special alert, the couples are typically first shown together, then sometimes, viewed separately. Although the SA context is not the same as conducting an eyewitness line-up, the number of individuals shown to participants may be an important factor in both contexts. Studies of eyewitnesses asked to pick a perpetrator from a line-up have shown that sequential presentation appears to be the superior method, possibly because simultaneous presentation of the possible perpetrators tends to lead victims to compare the faces presented, often ending in false alarms when non-perpetrators are identified from the line-up (Patterson & Baddeley, 1977). In Study 2, we manipulated whether participants saw the couple together, as in Study 1, or in separate videos, and also included a control condition in which a different couple was presented in the video than the target couple shown in the Silver Alert.

METHOD

Participants

The participants were recruited from a Southeastern U.S. university using SONA, as in Study 1. Of the 1,654 individuals who responded, we eliminated data from 27 who reported being unable to view the video and from three individuals who indicated they had prior familiarity with someone shown in the study. Of the 1,627 remaining participants, 1,132 (69.7%) identified as female, 482 (29.7%) as male, and 10 (0.6%) as other, with 3 participants not responding. Participants identified their race or ethnicity as follows: 1,258 (77.3%) Caucasian, 229 (14.1%) African American, 50 (3.1%) Hispanic, 21 (1.3%) Native American, 21 (1.3%) Asian, 42 (2.6%) other, and 6 not responding. Mean age in years was 19.66 (SD = 5.12).

Materials

The same materials were used as in Study 1 with the following exceptions. Separate videos and Silver Alerts of each of the two senior citizens were made. In order to ensure that the videos would be the exact length as when participants viewed the couple together, the videos were edited so that each of the 'separate' videos (male and female) were 21 seconds long, half the time of the video of the couple together. The videos were recorded at the same location. The conversation with the daughter took place separately with the female or male senior citizen alone instead of being in the video together. (Appendix A shows screenshots of the couple together; Appendix B shows screen shots of the couple in separate videos). Additionally, we added a video of a control couple (neither were in the mock Silver Alert; see Appendix C).
Procedures

The procedure was the same as in Study 1 with the following exceptions. The two senior citizens were shown in separate Silver Alerts as well as separate home videos. We added a control condition in which videos of another older adult couple was shown in place of the missing senior citizens from the Silver Alert. Each participant was randomly assigned to one of three conditions: couple together (as in Study 1), couple separate, control condition. In the couple separate condition, we counterbalanced the order of photos and videos of the missing woman and man.

RESULTS

Overall, 921 (56.7%) of 1625 participants responding to the photo of the missing female correctly recognized her from the Silver Alert, while 1218 (75.0%) participants responding to the photo of the missing male recognized him from the Silver Alert. The number of participants recognizing the target vehicle was 652 (40.4%). False alarm rates were as follows: female distractors (7.2%); male distractors (7.7%), distractor vehicles (21.1%).

We conducted chi-square tests of independence to determine whether the three conditions differed significantly in recognition of the target female or the target male, with z-tests for proportions to specifically compare each condition to the others. The conditions did not differ significantly in recognition of the target female, $c^2 (2, N=1625) = 0.74, p = .690$. There was a significant difference in recognition of the target male, $c^2 (2, N=1625) = 7.42, p = .024$, with significantly greater recognition in both the Couple Together condition (78.0%) and the Couple Separate condition (75.4%) as compared to the Control condition (70.9%), with no significant difference between the Couple Together and Couple Separate conditions.

We compared the three conditions of the following dependent variables with regard to both the target female and target male: Prediction of Knowing (POK), target photo confidence rating, mean confidence rating to the five most similar distractors (MSD), false alarm rate, and false alarm rate to the five most similar distractors. Table 1 shows descriptive statistics, p-values, and effect sizes. We also conducted two planned contrasts for each dependent variable: (1) a comparison of the Couple Together vs Couple Separate conditions; and (2) a comparison of the Couple Together and Separate conditions vs the control condition.

We found significant differences across the three conditions on POK for the target female and for the target male as well as on mean confidence ratings to the most similar distractors for both the female and male (see Table 1). For all four of these dependent variables, the second but not the first planned contrast was significant ($p < .001$ for POK female and male; $p = .002$ for mean confidence MSD female and $p < .001$ for mean confidence MSD male). This pattern of results indicated that participants who watched a video of the missing couple as compared to those who watched a control video were more confident they would later recognize the target individuals and were also more confident in responding to photos of the most similar distractors during the recognition phase. Differences between the Couple Together and Couple Separate conditions were not significant. However, participants in the Couple Separate condition were more confident than those in the Couple Together in their response to the target female ($p = .015$) photo, while confidence ratings for the target male photo were lower in the control condition as compared to the other two conditions ($p = .021$). False alarm rates to MSD for the male were significantly higher in the control condition than in the other two conditions ($p = .009$). Remaining planned contrasts were not significant.

We conducted a logistic regression analysis to predict whether or not participants recognized the female target (‘yes’ response to her ATOA) from metacognitive measures (POK, target confidence, and mean female distractor confidence ratings), participant age, score on the ATOA, and response time to the target photo. We used the backward stepwise Wald method. The final model included ATOA scores (odds ratio of .99, $p = .39)$, with higher ATOA scores (representing more negative attitudes) predicting lower likelihood of recognizing the female target, and confidence ratings to distractors (odds ratio of 1.01, $p < .001$), with higher confidence ratings predicting increased likelihood of target recognition. This model was significant, $c^2 (2, N=85) = 30.91, p < .001$, Nagelkerke $R^2 = .25$.

When predicting recognition of the male target, the final logistic regression model included ATOA scores (odds ratio of .98, $p < .001$), with higher ATOA scores predicting lower likelihood of recognizing the target, and target confidence rating (odds ratio of 1.02, $p < .001$), with higher confidence ratings predicting increased likelihood of recognizing the target. This model was significant, $c^2 (2, N=85) = 117.67, p < .001$, Nagelkerke $R^2 = .104$. A
logistic regression analysis predicted recognition of the target vehicle from target confidence rating, distractor vehicle confidence rating, and participant age. The final model included only target confidence rating as a predictor (odds ratio of 1.02, \( p < .001 \)), with higher confidence ratings predicting increased likelihood of recognizing the target vehicle. This model was significant, \( c^2 (1, N = 85) = 106.63, p < .001 \), Nagelkerke \( R^2 = .087 \).

Self-reported hours per week spent with older adults, recognized as none, 1–3, 4–8, or over 9 hours per week, was not associated with recognition of either the female target, \( c^2 (1, N = 1619) = 5.57, p = .134 \), or the male target, \( c^2 (1, N = 1619) = 1.86, p = .602 \).

A comparison of Caucasian participants to participants of other ethnicities indicated no significant difference in recognition of the target female, \( c^2 (1, N = 1625) = 0.92, p = .338 \), but the relationship between ethnicity and recognition of the target male was significant, \( c^2 (1, N = 1625) = 8.33, p = .004 \), with 76.6% of Caucasian participants and 69.2% of participants of other ethnicities recognizing the (Caucasian) target male. Participants identifying as female and male did not differ on recognition of the target female, \( c^2 (1, N = 1612) = 0.97, p = .324 \), or on recognition of the target male, \( c^2 (1, N = 1625) = 1.67, p = .196 \).
Table 1
Study 2 Comparison of the Couple Together, Couple Separate and Control Conditions on Prediction of Knowing (POK), Target Confidence, False Alarm Rate (FAR) in Percent and False Alarm Rate to Most Similar Distractors (FAR MSD)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Control</th>
<th>Couple Separate</th>
<th>Couple Together</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>POK Female</td>
<td>63.95</td>
<td>23.10</td>
<td>71.12</td>
</tr>
<tr>
<td>Confidence Female</td>
<td>72.53</td>
<td>26.33</td>
<td>75.84</td>
</tr>
<tr>
<td>Confidence MSD Female</td>
<td>79.54</td>
<td>20.92</td>
<td>83.99</td>
</tr>
<tr>
<td>FAR Female</td>
<td>7.76</td>
<td>12.14</td>
<td>6.39</td>
</tr>
<tr>
<td>FAR MSD Female</td>
<td>11.60</td>
<td>17.17</td>
<td>10.08</td>
</tr>
<tr>
<td>POK Male</td>
<td>64.69</td>
<td>23.34</td>
<td>72.15</td>
</tr>
<tr>
<td>Confidence Male</td>
<td>79.28</td>
<td>25.1</td>
<td>83.62</td>
</tr>
<tr>
<td>Confidence MSD Male</td>
<td>79.58</td>
<td>21.95</td>
<td>83.99</td>
</tr>
<tr>
<td>FAR Male</td>
<td>8.40</td>
<td>11.76</td>
<td>6.99</td>
</tr>
<tr>
<td>FAR MSD Male</td>
<td>10.17</td>
<td>16.59</td>
<td>7.61</td>
</tr>
</tbody>
</table>

*Significant with Bonferroni correction

DISCUSSION

In study 2 we replicated study 1 with a larger sample while also manipulating whether the couple appeared together, separately, or did not appear in the alert (control condition, Appendix C). We found no differences in accuracy for either the male or female target depending on whether the target individuals had appeared separately or together. For the male but not for the female target, there was significantly greater recognition in both the Couple Together condition and the Couple Separate condition as compared to the control condition, suggesting that participants were recognizing the male target at an above chance level but may have been essentially guessing in their attempts to identify the missing female.

Study 2 results showed that recognition of the targets was associated with more positive attitudes about the elderly, similar to the findings in Study 1 ATOA was a significant predictor in the logistic regression model for both males and females in study 2, with a much larger sample size.

Similar to Study 1, we did not find evidence of an advantage in recognition for female participants, although previous research has indicated superior face identification ability for females (Bate et al., 2019; Herlitz & Lovén, 2013; Hills et al., 2018; Lovén et al., 2011). As in Study 1, the lack of gender differences in Study 2 may be due to the inclusion of both male and female faces in the recognition phase. However, recognition was substantially greater for the missing man than for the missing woman in both studies. This result should not be generalised to men and women in general as the present studies included only two specific individuals as targets for recognition. However, the difference in recognition rates implies that we should not assume uniform levels of recognition for the two members of a missing couple.

Also similar to Study 1, we did not find evidence supporting the hypothesis that participants who recognized the targets would tend to report greater levels of contact with older adults. As noted for the Study 1 results, it may be worthwhile to explore ways of measuring contact that are more specific and varied. Further, recognition of the vehicle associated with the missing couple was relatively low compared to recognition of the missing man and woman.

GENERAL DISCUSSION

There were several findings that were consistent across the two studies. Participants were more likely to recognise the man than the woman in both studies. Past studies have repeatedly shown a strong OGB, especially women recognising other women more than males. It may be useful in future research to explore the role of target attractiveness in recognition, as it is possible that the differences in recognition we observed could be
related to perceived ‘cuteness’ of the targets. Targets perceived as more attractive may elicit additional attention, making it more likely that the individual could later recognize the person. It would be necessary to collect data on participants’ perceptions of target attractiveness level to explore that possibility.

Another important finding across both studies was the association of more positive attitudes about the elderly with likelihood of recognizing the missing person. This is an important finding related to face identification of older adults in Silver Alerts. If attitudes are related to better face identification of the elderly, perhaps increasing exposure to positive older adults may change attitudes towards older adults for those who have had more negative experiences with the elderly or otherwise hold negative age-related stereotypes. Research with people entering nursing degree programmes has shown that nursing students with higher ATOA scores (meaning they have negative attitudes towards older adults), but are later exposed to older adults whom they have positive experiences with, show a decrease in their negative attitudes towards older adults as well as their own fear of aging (Gibbs & Kulig, 2017). Gibbs and Kulig (2017) showed that when instructors of a nursing program demonstrated characteristics such as caring, enthusiasm, and critical thinking, students in the nursing programme learned respect and more caring towards the elderly residents. ‘As role models, instructors also supported students through fostering confidence, creating a safe environment, and helping students to diversify their knowledge’ (p. 74). Having positive role models to promote positive rather than negative attitudes towards older adults could contribute to more of the population paying closer attention when an older adult is gone missing.

Research on Silver Alerts is particularly important at this time in our history, as over the next three decades those over 65 years of age are predicted to be an increasing proportion of the population. Aspects of research on AMBER Alert can be seen as analogous with issues in Silver Alerts. For example, Lampinen et al. (2009) sought to determine how many customers in a supermarket would take the time stop and look at AMBER alert photos of real missing children that were both posted in plain sight of everyone entering and exiting the store. Their results were sobering as ‘most customers reported either not looking at the posters or only briefly looking at the posters’ (p. 404). If people have become complacent about looking at photos of missing children, the same could be predicted for Silver Alert posters placed in public places.

We believe it is necessary to point out that local and national TV stations show photos of people wanted by law enforcement, as well as AMBER alerts for missing and/or abducted children; however, Silver Alerts do not appear to be used as widely. Perhaps we see fewer Silver Alerts on television because by the evening news the elderly missing person was found; however, tragically, many older adults who wander away from home fatal endings to their lives. A question for researchers is how can we prepare the public for better recognition in a future where the elderly population outnumber all other age groups. We believe one solution could be exposing younger age groups to older adults, such as the Adopt a Grandparent Program. An article on the Good Morning America’s (GMA) website showed that when 67,000 volunteers signed up virtually during the international Covid-19 pandemic for an “Adopt a Grandparent” program, the program became so popular that now there is a waiting list for adoptees (McLellan, 2020). McLellan, based in the United Kingdom, stated the programme began as an alternative to the in-person Adopt a Grandparent programme due to COVID-19. She stated that an ‘Adopt a Grandparent’ virtual programme has received an influx of virtual volunteers amid the COVID-19 pandemic. This is one way of introducing older adults to younger people. It would be interesting to conduct a study in which college students sponsor an ‘Adopt a Grandparent’ to determine whether their ability to recognize faces of older adults improves over the course of the programme. More research will be needed in order to implement programmes based whether these programs help new generations of young adults to better recognize a missing senior citizen. It is important to note that the results of the current studies did not support a relationship between contact with older adults and target recognition; however, further research is needed to determine whether this was a result of the particular measure that we used.

Further, longitudinal studies are needed to better understand the effect of attitudes toward older adults on face identification as a result of participation in community programmes, as well as to test the validity of whether community implemented programmes improve recognition of older adult faces. Based on studies looking at contact with older adults, those who reported spending time with the elderly and having positive experiences reported fewer negative attitudes towards older adults. According to Tovel et al. (2019), adults who are over the age of 50 tend to show more positive attitudes towards older adults when the older adults appear to be in better physical condition and displaying positive cognitive functioning versus those with physical or psychological diseases (Sargent-Cox et al., 2012); therefore, exposing more people to those with dementia in a positive setting may help to change negative attitudes towards older adults.
A unique aspect of the present studies was that we both presented a Silver Alert and a home video showing the couple. This may have resulted in increased levels of recognition of the missing seniors compared to situations in which only a Silver Alert is shown. In a 2016 study, Gier et al. presented an elderly woman who was seen by participants either walking around a playground with children playing in casual clothes, or in her nightgown. A control senior was also used in a third video. The researchers had predicted that participants would recognize the woman in her nightgown more than when she had been seen wearing casual clothing or the control senior; however, participants recognised the woman dressed in casual clothes more than in the other two conditions. What makes this study important in relation to the current studies is that only about 10% of their participants who had seen the woman in the video recognised the woman, whereas the recognition rates were substantially higher in the present studies.

An important limitation of the present research is that both studies included the same older adult couple in the Silver Alert (Caucasian couple) so the results may not generalise to other missing couples. We suggest replicating our study including multiple couples from different races and ethnicities to increase ecological validity. It will be necessary in future research to replicate the present findings with different individuals to ensure that any differences are not the result of specific characteristics of the couple.

A second limitation is that the present samples consisted of college students who were mainly young adults. Thus, it is important to extend research on recognition of missing elderly couples to different age groups as well as comparing age groups on recognition levels. Silver Alert (or AMBER alert) including a teen, their parent, and a grandparent would be interesting to see if an age effect would appear. According to the OAB, participants would be predicted to identify the person closer to their age compared to a middle aged or an older adult (Anastasi, & Rhodes, 2005).

We should also note the limitation of collecting data online as opposed to in person. As the researchers were not physically present during data collection, it is difficult to determine whether all participants followed all instructions or whether they had distractions in their environments. However, this mode of data collection may also increase ecological validity as individuals typically see missing person alerts in their own environments rather than in laboratory settings.

CONCLUSION

Although demographic trends predict both increasing numbers of elderly individuals and increasing numbers of elderly individuals who may go missing, there are only a few studies in addition to the present research that examine how well people can identify missing elderly persons based on a missing person announcement (Silver Alert). The present two studies are the first to investigate recognition based on an alert in which a missing couple, rather than a missing individual, is shown.

One factor that may be important is individual differences, and the present study provided support for the hypothesis that recognition tends to be higher by individuals with more positive attitudes toward the elderly. Future research should explore whether educational programmes could both change attitudes toward the elderly and increase the likelihood of recognising missing elderly persons.

In both studies, we found that the missing elderly man was more likely to be recognized than the missing elderly woman. Because these results are limited to two studies using the same two target individuals, we cannot conclude that the difference reflects a general disadvantage for recognizing elderly females compared to males. However, this pattern of results does suggest that we should not assume equal recognition by the public of both individuals in a missing couple. Further research is needed with more diversity in the missing individuals as well as more diversity (especially in ethnicity and age) in the participants.

Continued research on recognition of missing individuals shown in Silver Alerts is important due to the enormous number of older adults predicted in the next three decades. As the projected demographic trend of increases of the elderly population will likely result in an immense strain on the younger generations in caring for the elderly, we believe it is important to have effective systems in place for locating missing older adults. Every family member of a missing older adult’s worst nightmare is their loved one aimlessly wandering away from and never return home safely.
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Appendix A

Study 1
The missing couples and description of the missing couple in a Silver Alert were presented simultaneously

Missing couple in the Silver Alert

Photo Clip from home video

Information presented in Silver Alert
Appendix B

Study 2
The missing couples and description of the missing couple in a Silver Alert presented sequentially

Photos of the missing targets in a Silver Alert presented sequentially

Female Target in Video
Target Vehicle
Male Target in Video

Target Vehicle
Similar make, model, and year of the Target Vehicle
Appendix C

Study 2
Control condition of a couple together but not presented in the Recognition Phase

Screenshot of control older adult in video
Appendix D

Examples of photos used in the study that were either similar or dissimilar to the target female

Target Female in Recognition Phase

Similar Foil  Similar Foil  Similar Foil  Similar Foil

Dissimilar Foil  Dissimilar Foil  Dissimilar Foil  Dissimilar Foil
Appendix E

Examples of photos used in the study that were either similar or dissimilar to the target male.
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CONTACT

dennis@psychreg.org

Psychreg Ltd
2nd Floor College House
17 King Edwards Road
Ruislip, London
HA4 7AE
United Kingdom