HUMILITY PREDICTS EUDAIMONIC WELL-BEING AND COMPASSIONATE ACTION IN A DAILY EXPERIENCE SAMPLING STUDY

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Abstract

Humility predicts greater psychological well-being and prosocial behaviour (Exline & Hill, 2012; Worthington et al., 2017). However, research is largely cross-sectional, and mechanisms underlying these relationships remain unexplored. Further, few studies explore nuances in the relationship between humility and compassion (e.g., motivations for acting compassionately), and none have empirically examined whether humility predicts received compassion. Using the Daily Reconstruction Method (Kahneman et al., 2004), the current study examines the relationship between humility and the following outcome variables: eudaimonic well-being, given compassion, received compassion, and how freely chosen or externally pressured participants felt their compassionate actions were over one week. Multilevel modelling demonstrated that on average, humble individuals report greater well-being, give and receive more compassion, and report more autonomous compassion. Compassion did not mediate the relationship between humility and well-being. These findings suggest humility may be an important individual difference variable with intrapersonal and interpersonal benefits, and implications are discussed.

Keywords: humility, eudaimonic well-being, compassion, autonomous motivation

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Humility Predicts Eudaimonic Well-Being and Compassionate Action in a Daily Experience Sampling Study

Popular culture and media propagate the importance of individuality, self-love, and self-promotion (Peterson & Seligman, 2004). Normative egocentrism is particularly prevalent in western societies, with individuals often encouraged to be "full of pride and brimming with self-esteem and self-importance" (Peterson & Seligman, 2004, p. 436). From the self-centred nature of social media to the proliferation of self-help books and podcasts, there is an increasing tendency towards elevating and focusing on the self. Personality and social psychologists are now seeing sub-clinical levels of narcissism in normal populations (Konrath & Bonadonna, 2014), with most noticing two core dimensions of the personality trait: low empathy and excessive self-focus.

Paradoxically, greater self-absorption and self-focus have been associated with negative affect, and contribute to depression and anxiety (Mor & Winquist, 2002), with some research suggesting that self-focus is central to the emergence and maintenance of certain disorders (e.g., social anxiety disorder; Gregory & Peters, 2017). Consistent with this research, Haidt (2024) has more recently underscored the global link between the use of social media – a platform that facilitates self-promotion, comparison and self-focus – and increasing rates of depression and anxiety. Using data from 11 million U.S. participants, Twenge (2014) suggests that self-absorption negatively impacts relationships, and is linked to a greater number of personal, mental, social, educational, and communal problems. Evidently, the cultural shift towards normative egocentrism is not yielding desirable outcomes. If excessive self-focus is damaging to our well-being, it follows that decreasing self-focus would promote well-being.

Defining and Measuring Humility

The antithesis of self-focus is self-forgetting, a key feature of humility (Worthington et al., 2017). Although humility has long been emphasized in various world religions such as Buddhism, Taoism, Christianity, Islam, and Judaism, it has only recently been acknowledged in scholarly literature over the past two decades and is now regarded as a core aspect of personality. Before the 2000s, personality was conceptualized as five main factors: openness to experiences, conscientiousness, extraversion, agreeableness, and neuroticism (Fiske, 1949; McCrae & Costa, 1987). Established through lexical studies of personality conducted in English, these factors have become a staple in personality psychology. However, when similar studies were conducted in several other languages including English (e.g., Dutch, Greek, Filipino, Italian etc.), a sixth factor, termed the honesty-humility factor, emerged (Lee & Ashton, 2004). Part of the HEXACO model of personality (Ashton & Lee, 2001), the honesty-humility factor encompasses four distinct facets: fairness, sincerity, modesty and greed avoidance. Since the development of the HEXACO, several other scales have been established to measure both trait-like and state-like features of humility. The Rosemead Humility Scale (Bollinger et al., 2006), Dispositional Humility Scale (Landrum, 2011), and Brief State Humility Scale (Kruse et al., 2017) are just a few examples. An analysis of content themes across 14 humility measures (Davis & Hook, 2014) suggests that there are seven main themes in the literature on humility: other oriented/unselfish; openness/lack of superiority; interpersonal modesty; accurate view of oneself; willing to admit mistakes/teachable; regulation of need for status; and spiritual or existential humility.

The “other-oriented/unselfish” theme is of particular interest in the current study as it directly counters self-focus, a key contributor to the deteriorating well-being of normal populations (Mor & Winquist, 2002). Self-forgetting, the antithesis of self-focus, is synonymous

with being unselfish (Merriam-Webster, n.d.). Recently, researchers such as Tangney (2009), Roberts and Wood (2003), Garcia (2006), and Robinson and Alfano (2016) have endorsed the idea that humility is largely dependent on self-forgetting, supporting the view that the humble man is one who has found freedom from the often-enslaving preoccupation with oneself. In her definition of humility, Tangney (2000) describes the psychological construct as complex and multifaceted, encompassing an accurate and honest assessment of oneself, the ability to acknowledge and accept one's limitations, and self-forgetting. Some researchers go beyond the idea of self-forgetting, and suggest that humility requires both a low self-focus and a high other-focus, and that these two aspects of humility are separate (Wright et al., 2017). That is, to be unselfish and to be other-oriented are two distinct dimensions of humility. In similar fashion, Nadelhoffer et al. (2016) have adopted a "decentered and devoted" view of humility. They describe the humble individual as being both decentred (i.e., not focused on oneself) and devoted to others, clarifying that a high other-focus in this context does not reflect mere attention to others but a posture of care and genuine concern versus one of criticism or judgement (Nadelhoffer et al., 2016). Supporting this definition and expanding it further, Kruse et al. (2014) define humility as encompassing "low self-focus, secure sense of self, and increased valuation of others" (p. 805), highlighting that a secure sense of self is central to humility. In other words, humility does not imply low self-esteem, self-deprecation or a lack of self-regard, but rather an internalized sense of worth that liberates people from the need to constantly prove their worth and value to others and themselves (Kruse et al., 2014; Tangney, 2000).

Given that the "other-oriented/unselfish" theme in the literature directly counters excessive self-focus, which is of particular interest in the current study, we adopted a measure of humility that closely aligns with this theme, namely the Experiences of Humility Scale (EHS;

Davis et al., 2017). Originally developed as a state measure of humility, the EHS includes the following subscales: Other-Orientation, Awareness of Selfishness, Awareness of Egotism, and Transcendence, with the first three subscales reflecting the theme of interest (Davis & Hook, 2014; McElroy, 2017). It is this operationalization of humility that will be used in our current study and analyses. Specifically, consistent with Davis et al. (2017), we define humility as having a general orientation towards others versus towards the self, experiencing greater transcendence, and being less selfish and egotistic.

Humility and Well-Being

If excessive self-focus and preoccupation with the self are detrimental to well-being, would humility promote well-being? Multiple studies suggest that humility is positively correlated with mental health (Jankowski et al., 2013; Kesebir, 2014; Krause, 2014; Quiros, 2008; Rowatt et al., 2006). More specifically, several studies have demonstrated that humility is consistently and negatively associated with depressive symptoms (rs = −0.13 to −0.46), as well as anxiety (r = −0.24; Jankowski et al., 2013; Krause, 2014; Quiros, 2008). A study conducted by Krause (2014) demonstrated that humility buffers the link between negative interactions participants had with members of their church, and their depressive affect, providing preliminary evidence of the relationship between humility and well-being. However, while Krause (2014) provides theoretical explanations as to how humility may be mitigating the effect of negative interaction on depressed affect (e.g., through willingness to accept blame, compassion, forgiveness etc.), no mechanisms were explored empirically. Further, no stressors apart from negative interaction with a fellow church member were explored. More recently, Krause et al. (2016) explored a broader list of different stressors and undesirable life events taken from Moos et al. (1984) and demonstrated that humility offsets the negative impact of stress on four well-

being measures: life satisfaction, generalized anxiety disorder, depressed affect, and happiness. Notably, this research suggests that stress' negative impact becomes progressively weaker as humility increases, and that humility is stress responsive, meaning that the benefits of being humble are more apparent with increased amounts of stress (Krause et al., 2016). Although interesting, this study looks at data at a single point in time, and does not explore how or why humility acts as a buffer for the detrimental effects of stress (i.e., what is it about humility that facilitates greater well-being?). Research adopting longitudinal designs are needed, alongside an exploration of the mechanisms driving the potential relationship between humility and well-being.

While these findings support the link between humility and well-being, several studies highlight important nuances in this relationship (Park et al., 2004; Pollock et al., 2016; Temiz, 2020; Tong et al., 2019), suggesting that the relationship varies depending on the specific dimensions of well-being examined (e.g., eudaimonic versus hedonic well-being). Eudaimonic well-being, with a focus on meaning, purpose and self-realization, is related to but conceptually and empirically distinct from hedonic well-being, which focuses more on pleasure attainment and pain avoidance (Joshanloo, 2018; Ryan & Deci, 2001). Measures that reflect a more hedonic approach often focus on emotional well-being (e.g., positive and negative affect; Watson et al., 1988) or on broader constructs like subjective well-being, which includes both emotional well-being and life satisfaction (Diener, 1984; Lucas et al.,1996). In contrast, measures that reflect a more eudaimonic approach often incorporate constructs such as meaning in life or personal growth (Ryff et al., 2021). For example, Ryff's (1989) model of psychological well-being consists of purpose in life, personal growth, self-acceptance, autonomy, positive relations and environmental mastery and is often used in research as a more comprehensive measure of

eudaimonic well-being (Joshanloo, 2018), while some studies adopt shorter ecological momentary assessments of meaning in life and vitality (e.g., Naragon-Gainey et al., 2023).

Research suggests that eudaimonic well-being is more stable than hedonic well-being, and that efforts to increase eudaimonic well-being may also be more fruitful (Joshanloo, 2018; Sheldon et al., 2019). When comparing hedonic and eudaimonic measures of well-being over a 20-year period, Joshanloo (2018) found that eudaimonic well-being was more stable over time than hedonic well-being. Further, while eudaimonic well-being predicted increases in hedonic well-being over time, the effects of hedonic well-being on future eudaimonic well-being were inconsistent (Joshanloo, 2018). Another study by Sheldon et al. (2019) demonstrated that goals to increase hedonic well-being were negatively associated with concurrent hedonic well-being, but goals to increase eudaimonic well-being were positively associated with concurrent eudaimonic well-being. Moreover, goals to increase eudaimonic well-being predicted increased eudaimonic well-being six and twelve weeks later, whereas goals to increase hedonic well-being did not affect future hedonic well-being (Sheldon et al., 2019). Given this, the current study focuses on humility's relationship to eudaimonic well-being in particular, using a brief measure of meaning in life and vitality (Naragon-Gainey et al., 2023).

In their research, Tong et al. (2019) measured humility, psychological well-being and emotional well-being twice, six weeks apart. Within the study, psychological well-being was reflective of a more eudaimonic approach and used Ryff's (1989) model, while emotional well-being reflected a more hedonic approach and used the Positive and Negative Affect Schedule (Watson et al., 1988). Humility was positively correlated with psychological well-being at both data collection points, but was only positively correlated with emotional well-being at one time point. In addition, after structural equation modeling and cross-lagged panel analyses were

carried out, the research team found that humility was not predictive of changes in psychological well-being long-term, but that psychological well-being was predictive of changes in humility long-term. Further, no cross-lagged associations were found between humility and emotional well-being. In a study by Park et al. (2004), the Values in Action (VIA) humility subscale was used to explore the relationship between humility and life satisfaction, and associations were negligible (|*r*s| = .00–.05). Similarly, Pollock et al. (2016) discovered small and nonsignificant correlations (|*r*s| = .02–.13) between the HEXACO's honesty-humility subscale, and mood and life satisfaction. These studies highlight important nuances in how we define and measure well-being, suggesting that humility may be more strongly correlated with measures of eudaimonic well-being than hedonic well-being.

In the same vein, four studies conducted by Aghababaei and his research team yielded mixed results. Two of these demonstrated that the honesty-humility subscale of the HEXACO was strongly and positively correlated to subjective well-being (Aghababaei, 2014), and to happiness and prosociality, respectively (Aghababaei et al., 2014). In the third study, the honesty-humility subscale of the HEXACO was unrelated to subjective well-being, and while it was positively associated with Ryff's (1989) model of psychological well-being, Aghababaei and Arji (2014) note that it was the honesty sub-factor driving this association. In this third study, the honesty-humility subscale was also unrelated to measures of life satisfaction and happiness. The fourth study conducted by Aghababaei et al. (2015) showed that the honesty-humility subscale was related to both subjective and psychological well-being, but the relationship to psychological well-being was stronger than to subjective well-being. Based on this, Aghababaei et al. (2015) suggest that honesty-humility may be more helpful in the pursuit of a fully functioning, virtuous life than for the pursuit of one marked by pain avoidance and pleasure attainment. In support of

Aghababaei et al. (2015), Temiz (2020) found that humility is positively associated with mental health but is more strongly related to measures of psychological well-being that reflect a eudaimonic approach (i.e., Ryff & Keyes, 1995), than to subjective well-being. The relationship between humility and psychological well-being has also been supported by Dangi and Nagle (2015), and a study by Wright et al. (2016) has demonstrated that humility is correlated with several measures of psychological well-being, including hope, positive life-regard, comfort with ambiguity, optimism, achievement values, secure attachment, personal relationships, positive growth, decisiveness, and openness to experience. Evidently, while the literature generally seems to support a positive relationship between humility and well-being more broadly (Worthington et al., 2017), these studies suggest that humility may be more strongly linked to eudaimonic measures than hedonic measures of well-being. However, these results are largely correlational, and warrant research employing longitudinal designs. Further, while these studies examine the correlations between humility and well-being, additional research is needed to explore the mechanisms underlying the link between these two variables and better understand how the relationship between them unfolds.

How Does Humility Promote Well-being?

Given Compassion

One potential mechanism driving the link between humility and well-being is given compassion. There is extensive research suggesting that given compassion is strongly associated with greater well-being. Broadly, studies have demonstrated that acts of kindness boost the mood of the actor, even when they are directed towards strangers (Marsh 2017; Martela & Ryan 2016; Mongrain et al. 2011), and that volunteer work decreases symptoms of depression (Lyubomirsky 2008). Similarly, research has demonstrated both cross-sectionally and longitudinally that

spending money on others predicts greater happiness when compared to spending money on oneself (Dunn et al. 2008). More specifically, there is extensive research demonstrating that compassion increases emotional well-being in the actor (Keltner 2009), as well as life satisfaction (Saarinen et al. 2019). Notably, most of these studies adopt measures of subjective well-being, taking a more hedonic versus eudaimonic approach to the study of these variables. Research examining the link between compassion and eudaimonic measures of well-being are sparse – another reason we chose to focus on eudaimonic well-being in the current study.

Theoretically, humility and given compassion are connected. Exline and Hill (2012) suggest that humble individuals, by virtue of their capacity to transcend self-interest and self-centredness, are more likely to be open to the idea of helping others. When compared to those with a greater sense of entitlement (e.g., Campbell et al., 2004; Raskin & Terry, 1988), humble individuals do not perceive themselves deserving special treatment or as superior to others, making them therefore unlikely to prioritize their own needs and rights over those of others (Exline & Hill, 2012). Based on Nadelhoffer et al. (2016)'s "decentered and devoted" view of humility, humble individuals are more devoted to others; that is, they think of those around them more than non-humble individuals and are therefore more likely to act in a prosocial and compassionate manner. According to Tangney (2009), humble individuals are also able to recognize others' strengths. They are therefore more likely to view others in a positive light, as being worthy of their attention and care (Exline & Hill, 2012). In keeping with this logic, Ashton and Lee (2005) list 'greed-avoidance' as one of the facets of honesty/humility.

The relationship between humility and compassion is also supported empirically. Studies have demonstrated that humility predicts more self-reported helpful behaviours, as well as greater readiness to help a struggling or injured peer (LaBouff et al., 2011). Humility also

predicts charitable donations and is associated with greater self-reported motivation to act kindly to loved ones, strangers and enemies alike (Exline & Hill, 2012). However, these studies have explored the relationship between humility and compassion at a single point in time, whether through cross-sectional research or through laboratory studies that suffer from low ecological validity. Longitudinal studies that offer insight into compassionate actions as they occur in the natural environment are scarce. The current study will therefore assess whether higher humility is predictive of greater given compassion over time, through a naturalistic daily sampling research design (Kahneman et al., 2004). Because compassion is related to both humility and well-being, it is also plausible that compassion mediates the relationship between these two variables. Given the limited research on mechanisms underlying the association between humility and well-being, the current research will test given compassion as a mechanism.

Received Compassion

A second potential mechanism driving the relationship between humility and well-being is the experience of receiving compassion from others. First, there is extensive research suggesting that receiving compassion promotes both hedonic and eudaimonic well-being. Broadly, kindness interventions have consistently demonstrated positive outcomes for receiver well-being with regards to affect (Pressman et al., 2015). Being a recipient of social support and prosocial behaviour has similar benefits for both subjective and psychological well-being (Chancellor et al., 2018; Dungan et al., 2022; Stallman et al., 2018), with recipients reporting improvements in well-being that persist both short-term and long-term (i.e., 2 months post-intervention; Chancellor et al., 2018). More specifically, Matos et al. (2022) demonstrated that across 21 countries, compassion from others was associated with lower psychological distress.

Theoretically, humility and received compassion are connected, such that individuals higher in humility receive more compassion from others (Exline, 2012; Krause et al., 2016; Krause & Hayward, 2015; Tangney, 2009). Several reasons for this have been suggested. For example, humble individuals tend to more easily recognize and appreciate the strengths of others (Exline, 2012; Tangney, 2009), and are thus more likely to ask for support when needed, and accept support from others when it is offered. Humble individuals are more likely to accept and acknowledge their own limitations (Krause & Hayward, 2015), and be less embarrassed or ashamed when they need others' help (Eckenrode & Wethington, 1990; Krause et al., 2016). One study found that those higher in humility experienced more positive emotion (e.g., feeling loved, gratitude) and less negative emotion (e.g., mistrust, weakness/shame) when recalling their experiences as recipients of acts of kindness (Exline, 2012). While this suggests humble individuals may have more positive experiences when they do receive compassion, research has yet to directly examine whether being humble increases the likelihood of receiving compassion, or whether the effect of received compassion explains the relationship between humility and well-being. This current study aims to address this gap in the literature by examining whether humility predicts received compassion over time, and whether received compassion mediates the relationship between humility and well-being.

Freely Chosen versus Externally Pressured Compassion

While research consistently supports using compassionate action as a way of promoting well-being (Hui et al., 2020; Kirby et al., 2017), researchers have only recently begun to explore the nuances in this relationship. For example, a study conducted by Rootenberg (2021) demonstrates that doing good predicts subsequent positive affect when it is freely chosen, but predicts subsequent negative affect when the individual is externally pressured to do good. This

suggests that compassion's relationship to well-being may rely on the individual's sense of choice and control (i.e., the individual's perceived autonomy). Considering autonomy, one of the pillars of self-determination theory (SDT), is strongly linked to eudaimonic measures of well-being (Deci & Ryan, 2000), it is reasonable to expect that freely chosen compassion would lead to greater well-being than externally pressured compassion, and that an absence of autonomy would lead to diminishing well-being. However, Rootenberg (2021) explores well-being using hedonic measures (e.g., positive and negative affect), and so little is known about how autonomy in the context of compassionate actions is connected to measures of eudaimonia – another reason we chose to focus on eudaimonic well-being in the current study.

Empirically, humility and autonomy are related, with humble individuals reporting a greater sense of autonomy more generally (Ross & Wright, 2021; Wright et al., 2017). However, it is unclear whether this relationship extends to compassionate action (i.e., whether humble people would report compassionate action that is more freely chosen, and less externally pressured when compared to less humble people). Research carried out by Konrath and Tian (2017) suggests that those higher in narcissism (i.e., higher levels of self-focus, and lower levels of other-focus) are less intrinsically motivated to act prosocially, but research has yet to explore the link between humility and autonomous compassion more directly. Since humility is associated with both autonomy and well-being, and autonomy itself promotes well-being, the current study looks at whether humble people show more autonomous (i.e., more freely chosen and less externally pressured) compassion, and whether this helps explain why humility is linked to well-being. Given the scarcity of research examining the mechanisms underlying the link between humility and well-being, this research would allow us to better understand whether

humility is an important individual difference variable that enhances well-being through self-driven compassionate action.

The Current Study

First, while the relationship between humility and eudaimonic well-being has been explored, previous research is largely cross-sectional and correlational, and as such, there is a need for studies examining data collected over time. Similarly, the relationship between humility and given compassion has been explored at a single point in time, whether through cross-sectional surveys or through laboratory studies that standardize opportunities to show compassion but suffer from low ecological validity. Longitudinal research that employs a naturalistic methodology (e.g., experience sampling) is needed to better understand how humility is related to compassion in everyday contexts.

Next, the relationship between humility and received compassion, as well as humility and freely chosen compassionate action, has yet to be tested empirically. Offering more support for naturalistic methodologies such as experience sampling, the nature of autonomous help provided without external prompts or pressure (as it would be in artificial environments like laboratory settings) requires more study. Lastly, no research to the best of our knowledge has empirically tested the mechanisms underlying the link between humility and well-being. With this said, the current study aims to address these gaps in the literature through several means. First, this study will examine whether humility predicts eudaimonic well-being over time. Next, we will examine whether humility predicts higher levels of given compassion, received compassion, and more autonomous (i.e., more freely chosen and less externally pressured) compassion over time. Lastly, we will test whether given compassion, received compassion, and autonomous compassion mediate the relationship between humility and eudaimonic well-being.

To study humility, eudaimonic well-being, and compassion in daily life – free of researcher-imposed manipulation – the current study will adopt a naturalistic methodology. Experience sampling, originally developed by Larson and Csikszentmihalyi (2014), is widely regarded as one of the most reliable ways to study phenomena as they occur in everyday life (Scollon et al., 2003). It involves prompting participants to complete short surveys throughout the day, as they engage in daily activities. Participants report on their thoughts, feelings and behaviours as they occur, providing data that is rich and unaffected by recollection biases and other distortions found in retrospective self-reports (Kahneman et al., 2004; Killingsworth & Gilbert, 2010; Moskowitz, 1994). However, while offering accurate descriptions of participants' daily experiences, experience sampling is likely to miss brief events such as spontaneous acts of compassion, which may not coincide with scheduled prompts. The current study therefore adopts a hybrid approach known as the Day Reconstruction Method (DRM; Kahneman et al., 2004), prompting participants to report on their daily experiences twice each day (once at noon, and again at 7pm their time). By combining real-time experience sampling and structured daily reconstruction, this method allows for a more comprehensive and representative account of participants' daily lives while minimizing recollection biases.

Participants were drawn from a large community sample across Canada and the United States. They first completed baseline measures of humility (i.e., the EHS; Davis et al., 2017). For correlational analyses, they also completed three baseline measures of well-being (i.e., measures of mental health, depressive symptoms, and meaning in life). Next, participants engaged in DRM and completed daily surveys through a smartphone application. These surveys asked about their well-being, whether they engaged in compassionate action towards others (yes/no), and whether they received compassion from others (yes/no). They also reported on how freely chosen and

externally pressured their compassionate actions towards others were. To increase compliance and feasibility, as well as decrease participant burden, these daily surveys were completed twice per day for seven days, consistent with previous studies adopting similar methodologies (Christensen et al., 2003; Van Berkel et al., 2017).

To examine whether humility predicts well-being, compassionate action, received compassion, more freely chosen and less externally pressured compassionate action, as well as explore whether the compassion variables could account for the relationship between humility and well-being, multilevel models were used in statistical analyses. Specifically, linear mixed-effects models were used for continuous outcomes (i.e., well-being, and extent of freely chosen and eternally pressured compassionate action), and generalized linear mixed-effects models were used for binary outcomes (i.e., whether the participant had experiences of given and received compassion). When examining whether the compassion variables could mediate the relationship between humility and well-being, we grouped the compassion variables into two different models: one assessing participants' behavioural experiences of compassion (i.e., whether they had experiences of given and received compassion, reported as either yes/no), and one assessing the underlying motivation of given compassion (i.e., the extent to which participants felt their given compassion was freely chosen or externally pressured, measured using Likert scales). This was done to explore the relative strengths of the different measurement methods for compassion, as well as to maximize the amount of data used in each model, since the models examining underlying motivation for given compassion could only include data from time points when compassion was in fact given by participants.

Hypotheses

1. Humility and Well-being
    a. Humility will predict eudaimonic well-being, such that individuals reporting higher humility at baseline will also report higher daily well-being over the one-week period.
2. Humility and Compassion
    a. Humility will predict given compassion, such that individuals reporting higher humility at baseline will also be significantly more likely to report engaging in compassionate action over the one-week period.
    b. Humility will predict received compassion, such that individuals reporting higher humility at baseline will also be significantly more likely to report receiving compassion from others over the one-week period.
    c. Humility will predict more autonomous compassionate action, such that individuals higher in humility will describe their compassionate action as more freely chosen, and less externally pressured over the one-week period.
3. Compassion as a Mechanism
    a. Compassion (both given and received) will mediate the relationship between humility and eudaimonic well-being.
    b. Autonomous given compassion (i.e., compassionate action that is freely chosen, and less externally pressured) will mediate the relationship between humility and eudaimonic well-being.
4. Additional Correlational Hypotheses

a. Humility will be positively correlated with other baseline measures of well-being collected in the current project, including mental health and meaning in life, and negatively correlated with measures of depressive symptoms.

Methods

Participants and Procedure

Our study consisted of two components. First, participants completed a baseline questionnaire collecting demographic information and measuring humility, along with additional measures used in correlational analyses (i.e., measures of mental health, depressive symptoms, and meaning in life). Second, participants completed daily surveys through a smartphone application. These daily surveys assessed participants' well-being, their compassionate actions toward others, their experiences of receiving compassion, and the extent to which they perceived their own compassionate actions as freely chosen and externally pressured. To increase compliance and feasibility, as well as decrease participant burden, these daily surveys were completed twice per day for seven days, consistent with previous studies adopting similar methodologies (Christensen et al., 2003; Van Berkel et al., 2017).

Participants were recruited using Prolific, a crowdsourcing and participant recruitment platform. Eligibility criteria included being at least 18 years of age, residing in either Canada or the Unites States, and speaking English. A total of 759 individuals participated in our study. Following the guidelines set by Marjanovic et al. (2014), participants who scored 3/5 or higher on the instructional items of the Conscientious Responders Scale (CRS) were considered conscientious responders and retained. Three participants were flagged as random responders (i.e., scored 2/5 or lower) and were removed. Next, 29 duplicate entries were identified and removed, one participant under 18 years old and one participant who reported a 10-digit number

for their age was omitted, and 60 participants who completed the baseline measures without engaging in the daily surveys were excluded from further analysis. The final sample consisted of 665 participants.

MetricWire, a research platform designed to support mobile-based data collection**,** was used for completion of the daily surveys. On Prolific, participants were asked to download the MetricWire application on their smartphones and register an account. Once the application was downloaded, participants were asked to complete the baseline questionnaires on a MetricWire webpage after pressing the "Yes" button on the consent form (see Appendix A). The baseline questionnaires consisted of demographic questions and measures of humility, mental health, depression symptoms, and meaning in life (see Appendix B). These baseline measures were designed to take approximately15-20 minutes to complete. After completing the baseline questionnaire, participants were asked to create an account with Metric Wire from which they received notifications on their smartphones twice per day (at 12pm and 7pm their time) for one week, prompting the completion of the study's daily surveys (see Appendix B). The daily surveys were open for 4 hours to allow participants to respond at a convenient time and were designed to take approximately two minutes to complete. Participants were compensated for their completion of the baseline survey and were given additional compensation for each daily survey, for a total of up to $10.46 CAD throughout the study. All study procedures received ethics approval from York University's Research Ethics Board.

Measures

Baseline Measures

Demographic Questionnaire. Participants were asked to select their age, gender, ethnic background, religious orientation, highest level of education completed, employment status and

marital status from a list of available options (e.g., for employment status: “employed full-time (30-40+ hours a week)”, “employed part-time (less than 30 hours a week)”, “Student”, “Student with a part-time job”, “Student with a full-time job”, “Unemployed”, “Retired”, “At-home caregiver”, “Other”, and “Decline to answer”). Participants were given the option of declining to answer for all demographic questions asked.

Humility. The Experiences of Humility Scale (EHS; Davis et al., 2017) is a self-report measure consisting of 12 items and encompassing four subscales: Other-Orientation (e.g., “More attentive to the needs of others”), Awareness of Selfishness (e.g., “Obsessed with my needs”), Transcendence (e.g., “Feel “small” in a good way”), and Awareness of Egotism (e.g., “Feel like my perceptions of myself are overblown”). The Awareness of Selfishness and Awareness of Egotism items are reverse coded before an average score is taken. According to McElroy (2017), three of the four subscales in the EHS (i.e., the Other-Orientation, Awareness of Selfishness, and Awareness of Egotism subscales) target the theme “other-oriented/unselfish” (Davis & Hook, 2014). Because this theme is a primary focus of the current study relative to the other content themes of humility measures in the literature, the EHS was decidedly the best fit. The prompt was adapted to reflect trait humility (“In general, I...”). The scale uses a 5-point Likert scale, with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The scale has displayed both convergent and external validity (McElroy, 2017), and Cronbach’s alpha for the EHS’ subscales varied between .79 and .85 across three different samples (Davis et al., 2017).

Meaning in Life. The Meaning in Life Questionnaire – Presence of Meaning (MLQ-P) is a subscale in the Meaning in Life Questionnaire developed by Steger et al. (2006). This subscale consists of 5 items, and captures how strongly participants feel their lives carry meaning and purpose (e.g., “I have a good sense of what makes my life meaningful” and “My life has no clear

purpose"). It uses a 7-point scale, with responses ranging from 1 = "Absolutely untrue" to 7 = "Absolutely true". The subscale displays good internal consistency, with coefficient alpha values between .82 and .86 being reported (Steger et al., 2006).

Mental Health. The Mental Health Continuum – Short Form (MHC-SF; Keyes et al., 2008) is a self-report measure consisting of 14 items, encompassing emotional well-being (e.g., "happy"), psychological well-being (e.g., "that your life has a sense of direction and meaning to it"), and social well-being (e.g., "that you belonged to a community (like a social group, or your neighbourhood)"). The scale asks about participant feelings during the past month, and employs a 6-point scale, with responses ranging from 1 = "Never" to 6 = "Every day". The scale has demonstrated high internal and moderate test-retest reliability, as well as both convergent and discriminant validity (Lamers et al., 2011).

Depression. The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) is a self-report measure consisting of 20 items, and encompasses positive and negative affect (e.g., "I was happy" for positive affect, and "I felt sad" for negative affect), interpersonal problems (e.g., "I felt that people disliked me"), and somatic symptoms (e.g., "my sleep was restless"). The scale asks about participant feelings/behaviours during the past week, and uses a 4-point Likert scale with responses ranging from "Rarely or none of the time (less than 1 day)" to "Most or all of the time (5-7 days)". Designed for use in the general populations, the scale has exhibited strong internal consistency and sufficient test-retest repeatability (Radloff, 1977).

Daily Measures

Well-being. Inspired by Naragon-Gainey et al. (2023), two items were used to measure well-being on the daily surveys: "To what extent do you currently feel meaning in your life?"

and “To what extent do you currently feel alive and vital?” Response options were displayed as a 5-point Likert scale, ranging from 1 (“Very slightly or not at all”) to 5 (“Extremely”).

Compassion. The Compassionate Engagement and Action Scales (CEAS) developed by Gilbert et al. (2017) include measures of both given and received compassion. These scales were adapted for the current study to measure the compassionate actions participants engaged in, as well as their experiences of receiving compassion:

Compassionate Action. Participants were asked the following item, “Were you able to make a positive difference to someone since the last survey?” and were given the option to respond either yes/no.

Received Compassion. Participants were asked the following item, “Was someone compassionate towards you since the last survey?” and were given the option to respond either yes/no.

Autonomous and Controlled Motivation. In order to examine the extent to which participants perceived their compassionate actions to be autonomous and controlled, they were asked two questions. The item “To what extent was your compassionate behaviour freely chosen?” assessed autonomous motivation, while “To what extent did you feel externally pressured to act compassionately?” measured controlled motivation. For both items, response options ranged from 1 = “Not at all” to 5 = “Extremely”. Both of these items were adapted from the Basic Psychological Need Satisfaction Scale (Deci & Ryan, 2000; Gagné, 2003) with the aim of providing a brief, face-valid assessment of perceived autonomy. Even though multi-item scales are often preferred over single items because of increased psychometric strength, these two items demonstrated good construct validity, being negatively correlated, $r(2676) = -0.37$, $p =$

< .001. Given the moderate correlation, the items were treated as separate indicators of autonomous motivation and controlled motivation.

Statistical Analysis

Multilevel modelling, specifically linear mixed-effects models (LMMs) and generalized linear mixed-effects models (GLMMs), were used to account for the nested structure of the data (i.e., daily ratings nested within participants). All analyses were conducted using R (4.4.1; R Core Team, 2024) using RStudio (Version 2024.9.0; Posit, PBC, 2024). LMMs applied for continuous outcomes (i.e., well-being and perceived autonomy) used the nlme package (Pinheiro et al., 2023), and GLMMs applied for binary outcomes (i.e., whether the participant had experiences of given and received compassion) used the glmmTMB package (Brooks et al., 2017). Fixed effects were estimated using restricted maximum likelihood (REML) in LMMs and maximum likelihood estimation in GLMMs. For each set of hypotheses, a likelihood ratio test was used to compare a random intercept-only model with one using both random intercepts and slopes, and the model with better fit was retained. Humility was grand-mean centred in all models to facilitate interpretation. To determine whether any demographic variables should be controlled for, analyses of variance (ANOVAs) were conducted to examine whether humility significantly differed across the following categories: gender, ethnicity, level of education, and religious orientation. Because there were no significant differences in humility across groups within each of these categories, they were not included as control variables in the current study. Given that age (in years) was positively correlated to both humility and well-being in our sample, it was controlled for in all models to ensure that any observed effects were not confounded or driven by age-related factors. Similarly, time (i.e., time elapsed since the beginning of the study, measured in days) was also included as a control variable to isolate the unique contribution of

humility from natural fluctuations in well-being over the week. Given the study incorporates some diary-like features (i.e., participants are asked about the events in their day, and how they feel), we also controlled for time to ensure that any trends in well-being observed were not simply a function of time spent in the study. To test for any mediating effects of the compassion variables (i.e., given and received compassion, as well as freely chosen and externally pressured compassion), we compared the model without the mediators to the models that included them, and assessed the extent to which the estimated coefficient for the humility measure decreased. To explore whether the strength of the relationship between humility and the outcome variables (i.e., well-being, given compassion, received compassion, perceived autonomy) varied with time, an interaction term (i.e., humility x time) was included in follow up models. All tests were two-tailed, with statistical significance evaluated at $p < .05$.

Results

Participant Characteristics

The final sample included 665 participants. The majority of participants resided in the United States (78.55%), with the remainder living in Canada (21.45%). The average age was 36.36 years (*SD* = 10.81), with ages ranging from 18 to 79 years. In terms of gender, approximately half of our sample identified as men (51.05%), followed by participants identifying as women (46.69%), non-binary (1.96%), other (0.15%), and 1 (0.15%) participant declining to answer. With regards to ethnicity, the majority of participants identified as White (58.95%), with other participants identifying as Black (9.77%), East Asian (7.82%), Latin American (6.62%), Mixed (5.56%), South Asian (4.06%), Southeast Asian (3.16%), South American (1.20%), Indigenous (0.90%), Middle Eastern (0.75%), Other (0.75%), and 3 (0.45%) participants declining to answer. Participants' highest level of education varied, with the largest

proportion holding a bachelor's degree (40.30%), followed by a high school diploma (20.30%), a college diploma or associate's degree (12.03%), a master's degree (12.33%), in progress/college education (10.08%), a doctoral degree (4.06%), and less than high school education (0.75%), as well as other (0.15%). Religious background also ranged from Christian (36.99%) to agnostic (22.26%), atheist (16.24%), spiritual but not religious (8.87%), non-observant (6.77%), other (1.95%), Muslim (1.80%), Buddhist (1.20%), Jewish (1.20%), Hindu (0.90%), and Sikh (0.15%), with 11 (1.65%) participants declining to answer. Relationship status also varied, with the largest proportion of participants being married (35.79%), then single (31.28%), in a committed/common law relationship (22.41%), separated/divorced (4.66%), in a casual relationship (4.21%), widowed (0.90%), or other (0.15%), with 4 (0.60%) participants declining to answer.

Descriptive Statistics and Correlations

A summary of descriptive statistics and bivariate correlations is presented in Table 1. Consistent with hypotheses, humility was moderately and positively correlated to meaning in life, mental health, and well-being, and moderately and negatively correlated to depression. These relationships suggest that more humble individuals rate their lives as more meaningful, and experience greater well-being, better mental health, and less depressive symptoms than less humble individuals. Humility also demonstrated weaker positive relationships with both given and received compassion aggregated over the 7-day monitoring period. This suggests that humble individuals also engage in more compassionate action and receive more compassion from others than less humble individuals on a day-to-day basis. Lastly, humility demonstrated a small but positive correlation with age, suggesting that older participants report greater levels of humility than younger individuals on average.

Table 1

Descriptive Statistics and Bivariate Correlations

Measures	M	SD	1	2	3	4	5	6	7	8
1. EHS	3.33	.58	—							
2. MLQ-P	4.62	1.58	.42***	—						
3. CES-D	1.86	.65	–.40***	–.57***	—					
4. MHC-SF	3.82	1.11	.44***	.70***	–.74***	—				
5. Given Compassion	.44	.36	.15***	.23***	–.06	.19***	—			
6. Received Compassion	.39	.35	.12**	.22***	-.08*	.21***	.76***	—		
7. Well-being	2.90	1.08	.35***	.69***	–.60***	.71***	.30***	.30***	—	
8. Age	36.36	10.81	.19***	.16***	–.18***	.21***	.04	–.01	.15***	—

Note. EHS = Experiences of Humility Scale; MLQ-P = Meaning in Life Questionnaire – Presence of Meaning Subscale; CES-D = Center for Epidemiologic Studies Depression Scale; MHC-SF = Mental Health Continuum – Short Form; Given Compassion and Received Compassion = two items adapted from the Compassionate Engagement and Action Scales (CEAS; Gilbert et al., 2017); Well-being = average of two items inspired by Naragon-Gainey et al. (2023). Because given compassion, received compassion, and well-being were measured on a daily basis, the correlations above utilize aggregates over the daily sampling week for each participant.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Multilevel Models

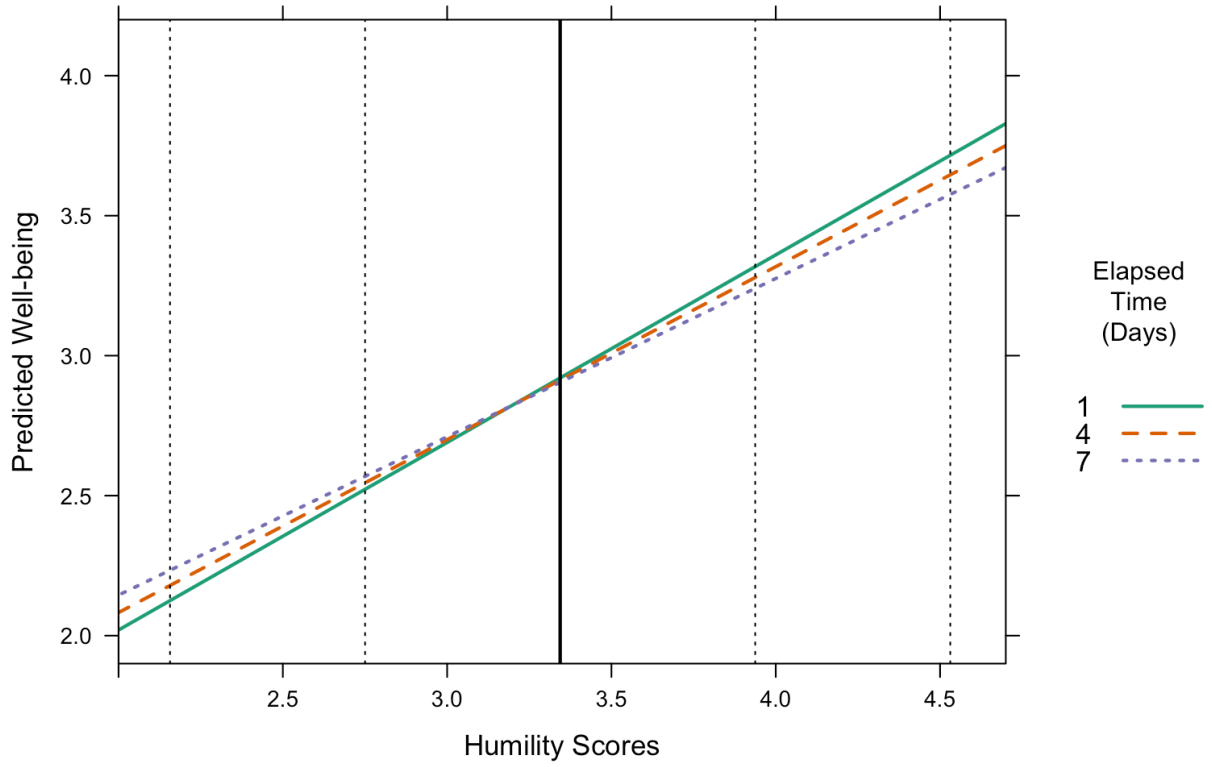
Humility Predicting Well-Being

To examine whether higher levels of humility predicted greater eudaimonic well-being, a linear mixed effects model was estimated. Participant age and time (i.e., time elapsed since the beginning of the study) were included as control variables, and humility was grand-mean centred to facilitate interpretability. We compared a random intercept-only model to a model with both random intercepts and slopes using a likelihood ratio test, and results supported the inclusion of random slopes, $\chi^2(2) = 102.31$, $p < .001$. As such, our final model included random intercepts to account for the varying baseline levels of well-being in participants as well as random slopes for time, to permit individual variation in the rate of change in well-being over time. Results demonstrated that humility scores significantly predicted well-being scores even after controlling for age and time, $b = 0.66$, $SE = 0.07$, $t(659) = 9.64$, $p < .001$, 95% CI [0.52, 0.79]. In other words, individuals reporting higher humility also reported higher daily well-being on average, with every one-unit increase in humility scores predicting a 0.66-unit increase in well-being scores. Among the control variables, age significantly and positively predicted well-being, with older participants reporting higher daily levels, $b = 0.009$, $SE = 0.004$, $t(659) = 2.57$, $p = .01$, 95% CI [0.002, 0.02], whereas time was not a significant predictor of well-being, $b = –0.003$, $SE = 0.004$, $t(5744) = –0.57$, $p = .57$, 95% CI [-0.01, 0.01].

To explore whether the relationship between humility and eudaimonic well-being varied over time, we estimated a second model that included an interaction term between humility and time. The interaction term was significant, $b = –0.02$, $SE = 0.008$, $t(5743) = –2.32$, $p = .02$, 95% CI [-0.03, -0.003], demonstrating that the strength of the relationship between humility and well-being slightly declined over the course of the study (see Figure 1).

Figure 1

Humility and Well-Being Over Time



Note. The solid, vertical black line represents the mean humility score in our sample. The dotted vertical lines represent the mean score ± 1 SD and ± 2 SD.

Humility Predicting Given Compassion

To examine whether higher levels of humility predicted given compassion, a generalized linear mixed-effects model (GLMM) with a binomial distribution and logit link was estimated, to assess the likelihood of engaging in a compassionate action (yes = 1, no = 0). As with our previous models, age and time were entered as control variables, and humility scores were grand-mean centered. We compared a random intercept-only model to a model with both random intercepts and slopes using a likelihood ratio test, and results supported the inclusion of random

slopes, $\chi^2(2) = 50.25$, $p < .001$. As such, both random intercepts and slopes were included to account for between-person differences in baseline compassion as well as between-person variability in within-person effects. Results demonstrated that even after controlling for age and time, higher scores on the EHS were significantly associated with a higher likelihood of engaging in compassionate action, $b = 0.63$, $SE = 0.14$, $z = 4.51$, $p < .001$, 95% CI [0.35, 0.90]. There was a significant negative association between time and compassionate action, $b = –0.15$, $SE = 0.02$, $z = –7.77$, $p < .001$, 95% CI [-0.19, -0.11], suggesting that as the study progressed, participants were less likely to report their compassionate action. Age did not significantly predict compassionate action, $b = 0.001$, $SE = 0.007$, $z = 0.20$, $p = .84$, 95% CI [-0.01, 0.02].

To facilitate interpretation of these results, we exponentiated the model coefficients and obtained odds ratios (OR). A one-unit increase in humility scores corresponded to 1.87 times greater odds of engaging in compassionate action, 95% CI [1.43, 2.46], $p < .001$. With regards to elapsed time, each additional day since the start of the study was associated with 14% lower odds of reporting compassionate action, OR = 0.86, 95% CI [0.83, 0.89], $p < .001$. Age was not significantly associated with the likelihood of engaging in compassionate action, OR = 1.00, 95% CI [0.99, 1.02], $p = .84$.

To explore whether the relationship between humility and given compassion varied over time, we estimated a second model including an interaction term between humility and time. The interaction term was not significant, $b = 0.004$, $SE = 0.03$, $z = 0.11$, $p = .91$, 95% CI [-0.06, 0.07], suggesting that over the course of the study, the strength of the association between humility and compassionate action did not vary in any meaningful way.

Humility Predicting Received Compassion

Next, to examine whether higher levels of humility predicted received compassion, a generalized linear mixed-effects model (GLMM) with a binomial distribution and logit link was estimated, to assess the likelihood of receiving compassion from others (yes = 1, no = 0). Consistent with previous models, a likelihood ratio test supported the inclusion of random slopes, $\chi^2(2) = 60.32$, $p < .001$. Humility was grand-mean centred, and age and time were entered as control variables. Results demonstrated that higher humility scores were significantly associated with increased likelihood of receiving compassion from others, $b = 0.55$, $SE = 0.15$, $z = 3.70$, $p < .001$, 95% CI [0.26, 0.84]. There was a significant negative association between time and received compassion, $b = –0.18$, $SE = 0.02$, $z = –8.15$, $p < .001$, 95% CI [-0.23, -0.14], suggesting that as the study progressed, participants were less likely to report received compassion. Age did not significantly predict received compassion, $b = –0.01$, $SE = 0.01$, $z = –1.36$, $p = .17$, 95% CI [-0.03, 0.005]. Odds ratios indicated that a one-unit increase in humility scores corresponded to 1.73 times greater odds of receiving compassion from others, 95% CI [1.29, 2.31], $p < .001$. With regards to elapsed time, each additional day since the start of the study corresponded to 17% lower odds of reporting received compassion from others, OR = 0.83, 95% CI [0.80, 0.87], $p < .001$. Age was not significantly associated with the likelihood of receiving compassion, OR = 0.99, 95% CI [0.97, 1.00], p = .17.

To explore whether the relationship between humility and received compassion varied over time, we estimated a second model including an interaction term between humility and time. The interaction term was non-significant, $b = 0.03$, $SE = 0.04$, $z = 0.81$, $p = .42$, 95% CI [-0.04, 0.10], suggesting that the relationship between humility and received compassion did not vary across the study period.

Humility Predicting Freely Chosen Compassion

Next, we wanted to examine whether humility could predict freely chosen compassion. With this goal in mind, we estimated a linear mixed-effects model with grand-mean centred humility as the predictor, and the extent to which participants described their compassionate actions as freely chosen as our outcome. As with our other models, age and time were entered as control variables. A likelihood ratio test supported the inclusion of random slopes, $\chi^2(2) = 11.77$, $p = .003$. Results demonstrated that humility significantly predicted perceiving given compassion as freely chosen, $b = 0.32$, $SE = 0.05$, $t(540) = 6.28$, $p < .001$, 95% CI [0.22, 0.42]. This suggests that humility was related to a greater sense of autonomy in terms of compassion provided to others. More specifically, every one-unit increase in humility scores corresponded to a 0.32-unit increase in autonomous motivation scores. Time was also significantly associated with freely chosen compassion, $b = 0.02$, $SE = 0.01$, $t(2162) = 2.39$, $p = .02$, 95% CI [0.003, 0.03], suggesting that over the seven-day period, participants increasingly reported perceiving their compassionate actions as freely chosen and autonomous. Age had a small but significant association with freely chosen compassion, $b = 0.006$, $SE = 0.003$, $t(540) = 2.19$, $p = .03$, 95% CI [0.0006, 0.01].

To understand whether the link between humility scores and freely chosen compassion varied over time, we estimated a second model with an interaction term between humility and time. The interaction term was not significant, $b = 0.0007$, $SE = 0.01$, $t(2161) = 0.06$, $p = .95$, 95% CI [-0.02, 0.02], suggesting that the strength of the relationship between humility and autonomy did not vary over time.

Humility Predicting Less Externally Pressured Compassion

Similarly, we wanted to examine whether humility could predict the extent to which individuals felt externally pressured to engage in compassionate action. Consistent with our other models, humility was grand-mean centred, age and time were entered as control variables, and a likelihood ratio test supported the inclusion of random slopes, $\chi^2(2) = 30.47$, $p < .001$. Results demonstrated that humility significantly predicted lower perceived external pressure, $b = –0.40$, $SE = 0.06$, $t(533) = –6.41$, $p < .001$, 95% CI [-0.52, -0.28], suggesting that humility is associated with a greater sense of autonomy in terms of compassion provided to others. More specifically, every one-unit increase in humility scores corresponded to a 0.40-unit decrease in controlled motivation scores. Age and time were both non-significant predictors of perceived external pressure, with $b = –0.006$, $SE = 0.003$, $t(533) = –1.71$, $p = .09$, 95% CI [-0.01, 0.0009] for age, and $b = –0.01$, $SE = 0.01$, $t(2138) = –1.19$, $p = .23$, 95% CI [-0.03, 0.008] for time.

To explore whether the relationship between humility and perceived external pressure varied across the study period, we estimated a second model that included an interaction between humility and time. The interaction term was not significant, $b = –0.02$, $SE = 0.02$, $t(2137) = –1.34$, $p = .18$, 95% CI [-0.05, 0.01], reinforcing the stability of the relationship between humility and compassionate actions that were not perceived as externally pressured.

Do Given and Received Compassion Explain the Link Between Humility and Well-Being?

A linear mixed-effects model was estimated to assess whether the relationship between humility and well-being could be partially explained by the extent to which individuals engaged in compassionate action, and received it from others. Consistent with our previous models, humility was grand-mean centred, age and time were entered as control variables, and a likelihood ratio test supported the inclusion of random slopes, $\chi^2(2) = 101.71$, $p < .001$. Results

demonstrated that given compassion significantly predicted well-being, $b = 0.14$, $SE = 0.02$, $t(5739) = 6.53$, $p < .001$, 95% CI [0.10, 0.19], as did received compassion, $b = 0.07$, $SE = 0.02$, $t(5739) = 2.96$, $p = .003$, 95% CI [0.02, 0.11]. In other words, participants reported greater well-being on days where compassion was either given or received by them. With this said, higher humility scores continued to significantly predict greater well-being scores even after accounting for any mediating effect of given and received compassion, $b = 0.64$, $SE = 0.07$, $t(659) = 9.49$, $p < .001$, 95% CI [0.50, 0.77], suggesting that compassion does not fully capture the means by which humility influences well-being. In this model, age was significantly related to well-being, $b = 0.009$, $SE = 0.004$, $t(659) = 2.64$, $p = .009$, 95% CI [0.002, 0.02], whereas time was not, $b = 0.001$, $SE = 0.004$, $t(5739) = 0.31$, $p = .75$, 95% CI [-0.007, 0.01].

Similar to our other models, we then included an interaction term between humility and time, while keeping both given and received compassion in as mediators, and age and time in as control variables. The interaction term was statistically significant, $b = –0.02$, $SE = 0.01$, $t(5738) = –2.19$, $p = .03$, 95% CI [-0.03, -0.002], suggesting a slight decline in the strength of the relationship between humility and well-being over the course of the study period.

Does Autonomy Explain the Link Between Humility and Well-Being?

A linear mixed-effects model was also estimated to examine whether the relationship between humility and well-being could be partially explained by the perceived autonomy in participants' compassionate actions towards others (i.e., how freely chosen, and how externally pressured they felt their compassionate actions were). As with our previous models, humility was grand-mean centred, age and time were entered as control variables, and a likelihood ratio test supported the inclusion of random slopes, $\chi^2(2) = 45.29$, $p < .001$. Consistent with other models, higher humility scores were still significantly associated with higher daily well-being scores even

after accounting for the influence of autonomy, age and time, $b = 0.58$, $SE = 0.08$, $t(533) = 7.61$, $p < .001$, 95% CI [0.43, 0.73]. The extent to which participants perceived their compassionate actions as freely chosen was a significant predictor of well-being, $b = 0.13$, $SE = 0.02$, $t(2134) = 7.30$, $p < .001$, 95% CI [0.10, 0.17]. In other words, individuals reported greater well-being on days when their compassionate action felt more freely chosen. Conversely, perceived external pressure to engage in compassionate action was not significantly associated with well-being, $b = –0.01$, $SE = 0.01$, $t(2134) = –0.44$, $p = .66$, 95% CI [-0.03, 0.02]. Age was significantly associated with well-being ($b = 0.008$, $SE = 0.004$, $t(533) = 2.02$, $p = .04$, 95% CI [0.0002, 0.02]), whereas time was not significantly associated with well-being ($b = –0.0009$, $SE = 0.007$, $t(2134) = –0.14$, $p = .89$, 95% CI [-0.01, 0.01]).

To explore whether the relationship between humility and well-being varied across the study period, we estimated a second model with an interaction term between humility and time while continuing to account for the effects of perceived autonomy, age and time. In contrast to previous models examining well-being as the outcome, the interaction between humility and time in this model was nonsignificant, $b = –0.02$, $SE = 0.01$, $t(2133) = –1.76$, $p = .08$, 95% CI [-0.04, 0.002], suggesting that the strength of the relationship between humility and well-being did not vary meaningfully over time.

Overall, humility predicted greater daily well-being, as well as a higher likelihood of both giving compassion and receiving it. Next, individuals higher in humility described their compassionate actions towards others as more freely chosen and less externally pressured. Finally, the given and received compassion variables were not sufficient to account for the relationship between humility and well-being, and neither were the variables assessing the extent

to which participants' compassionate actions felt freely chosen and externally pressured. Simply put, compassion does not explain the relationship between humility and well-being.

Discussion

The current study had two overarching aims. The first aim was to examine whether humility predicted greater eudaimonic well-being over time, and through what mechanisms; the second aim was to examine whether humility predicted a higher likelihood of both giving and receiving compassion, including giving more freely chosen and less externally pressured compassion. Consistent with our first hypothesis, humility significantly predicted well-being over the course of the week, such that individuals reporting higher humility also reported higher daily well-being on average. These findings are consistent with several cross-sectional studies (Jankowski et al., 2013; Kesebir, 2014; Krause, 2014; Quiros, 2008; Rowatt et al., 2006), and advance existing literature by using longitudinal data, with measures of daily well-being collected over the course of one week. Given that well-being was measured through vitality and meaning in life, the current study contributes to the literature by providing the felt experience of humble individuals – namely, that they feel more alive and vital on a daily basis, and feel that their lives are more meaningful than less humble individuals.

Given the prevalence of cultural narratives around self-love and self-promotion, particularly in Western societies (Peterson & Seligman, 2004), this research contributes to a growing evidence base challenging normative egocentrism. Whereas higher levels of self-absorption and self-focus have been linked to negative affect and contribute to depression and anxiety (Gregory & Peters, 2017; Mor & Winquist, 2002), these results offer support to studies promoting humility as a potential avenue for improving well-being, given its emphasis on low self-focus and high other-focus. Additionally, as psychologists continue to observe subclinical

levels of narcissism in normal populations (Konrath & Bonadonna, 2014), characterized largely by excessive self-focus, humility may serve as an important counterbalance.

In our sample, time did not significantly predict well-being, suggesting that participants' well-being remained relatively stable across the study period. However, the relationship between humility and eudaimonic well-being did vary over time in two of our models, with the strength of the relationship decreasing slightly over the course of the study. This suggests that baseline humility may have less predictive power with time. One potential reason for this is that daily well-being is also shaped by more immediate situational factors which may sometimes outweigh the influence of stable trait-like characteristics over the week. Another reason may be that humility has both trait-like and state-like qualities, making it susceptible to slight changes with time and changing circumstances. This view is supported by several researchers (Davis & Hook, 2013; Lavelock et al., 2014; Narvaez, 2019; Ross & Wright, 2021), who assert that while humility is relatively stable in individuals, it can be strengthened or weakened. This state-like nature of humility is what allows it to be deliberately practiced (Lavelock et al., 2014; Ross & Wright, 2021). With this said, individuals wishing to pursue humility may need to do so regularly and purposefully, in the same way a muscle needs to be continuously exerted so that it does not grow weaker over time (Davis & Hook, 2013). However, given that the interaction between humility and time was only significant in two of our three models (i.e., the last model suggested that the relationship between humility and well-being does not vary meaningfully with time), these results should be interpreted with caution. More research is needed to clarify and better understand how the relationship between humility and well-being varies over time.

Consistent with our next hypothesis, as well as both theory and empirical research (Exline & Hill, 2012; LaBouff et al., 2011; Nadelhoffer et al., 2016; Tangney, 2009), humility

was significantly associated with a higher likelihood of engaging in compassionate action throughout the week. Previous studies have either examined this relationship through cross-sectional designs or through laboratory settings where opportunities to show compassion were standardized, but ecological validity was low as a product of the methodological design. The current study addresses these limitations by collecting data on compassionate action over time, as it occurs in the natural environment (Kahneman et al., 2004). These findings extend the literature and offer support to the growing body of research underscoring the importance of humility, and its potential as a target for interventions promoting compassionate action and prosocial behaviour (Exline & Hill, 2012; LaBouff et al., 2011; Worthington et al., 2017). Currently, there is research demonstrating the efficacy of a humility intervention – namely, a workbook intervention developed by Lavelock et al. (2014) – in promoting humility (Worthington et al., 2017). Whether humility interventions could also foster prosocial behaviour requires further study, and is worth exploring in future research.

Of note, there was a significant negative association between time and compassionate action, suggesting that as the study progressed, participants were less likely to report their compassionate actions. One possible explanation for this could be participant fatigue or declining engagement with the study over the seven days, which is not uncommon in longitudinal research (Costello et al., 2020; Goldstein, 2009). Participants that reported not engaging in compassionate action still got compensated the same amount of money but would have had a few less questions to answer (e.g., they would not have been asked to also report on how freely chosen, or externally pressured those compassionate actions were). Alternatively, there may have been a genuine decline in compassionate action due to situational factors such as increasing life demands or less opportunity to help others. Age did not significantly predict compassionate

action, suggesting that the likelihood of engaging in compassionate action may be consistent across the lifespan.

Humility was also significantly associated with the increased likelihood of receiving compassion from others, offering empirical support for existing theory (Exline, 2012; Krause et al., 2016; Krause & Hayward, 2015; Tangney, 2009). This novel finding suggests that humility may not only be important for extending compassion to others, but may also position individuals to receive compassion themselves. Humility's dual role in predicting both given and received compassion offers support to research highlighting its value as a relational strength (Worthington et al., 2017). Given that research has consistently demonstrated the link between received compassion and greater well-being (Chancellor et al., 2018; Dungan et al., 2022; Matos et al., 2022; Pressman et al., 2015; Stallman et al., 2018), the current study highlights humility as an important individual difference variable and predictor of received compassion, laying the groundwork for future research to explore whether increasing someone's humility levels would also increase the compassion and support received from others.

Similarly to given compassion, there was a significant negative association between time and received compassion, suggesting that as the study progressed, participants were less likely to report received compassion. Reasons for this may include participant fatigue or declining engagement over time that led to decreased reporting, common in longitudinal research (Costello et al., 2020; Goldstein, 2009), or a genuine decline in received compassion from others. Consistent with findings for given compassion, age did not significantly predict received compassion, suggesting that the likelihood of receiving support from others may be consistent across the lifespan.

Next, humility significantly predicted compassionate action that was reported to be freely chosen and less externally pressured. To the best of our knowledge, this is the first study to go beyond examining whether humility predicts more compassionate action, by also exploring whether it could predict the quality and motivation underlying this compassionate action. Given previous research linking higher levels of humility to greater autonomy more generally (Ross & Wright, 2021; Wright et al., 2017), these findings extend this research to the context of compassion and suggest that humble individuals are not only more likely to act compassionately but also tend to report doing it out of their own free will (autonomously chosen) and less based on external pressure. In other words, their compassionate action is more commonly experienced as authentic and reflective of their values and interests, rather than as a means of fulfilling obligations, pleasing people, or seeking praise and rewards, amongst other things (deCharms, 1968; Ryan & Connell, 1989). The importance of autonomy more generally (i.e., not specific to compassion) for well-being are well-established (Deci & Ryan, 2000), and research has linked both autonomous compassionate action to positive affect, and controlled compassionate action to negative affect (Rootenberg, 2021). This study extends these findings by linking more autonomous and less controlled compassion to eudaimonia. Overall, these results grant us a better understanding of humility as a valuable individual difference variable predicting autonomous compassionate action, providing the basis for future research to explore whether increasing levels of humility would also increase freely chosen and less externally pressured compassion and prosocial behaviour.

Age had a small but significant association with freely chosen compassion, suggesting that older participants more commonly described their compassionate action as freely chosen when compared to younger participants. This finding is consistent with previous research

demonstrating positive correlations between age and autonomy, in the context of both daily tasks and personal goals (Job et al., 2018; Sheldon et al., 2006). Time was also significantly associated with freely chosen compassion, suggesting that over the seven days, participants increasingly reported perceiving their compassionate actions as freely chosen and autonomous. While we do not know the reason behind this, it may be possible that participants had more opportunity for freely chosen compassion as the week progressed, or may have been increasingly primed by the study to perceive their compassionate actions as freely chosen.

In contrast to the results above, the relationship between age and externally pressured compassion was non-significant, suggesting that the experience of externally pressured compassionate action may not vary meaningfully with age. In the same vein, time and externally pressured compassion were not meaningfully related in the current study, suggesting that participants' perceptions of their compassionate actions as externally pressured did not meaningfully vary across the seven days. Although it may have been expected that externally pressured compassionate action would display a trend opposite to that of freely chosen compassion, the two items were only moderately negatively correlated in our sample, which had informed our decision of keeping them separate instead of reverse coding externally pressured compassion and forming a composite score of the two items. Other studies using the same items (e.g., Rootenberg, 2021) similarly treated the items as separate indictors due to a modest correlation in their sample. This may potentially explain why freely chosen compassionate action was significantly related to age and time, but externally pressured compassionate action was not. The moderate negative correlation between freely chosen compassion and externally pressured compassion, as well as the fact that the items did not display inverse patterns with age and time in our multilevel models, suggest that autonomous and controlled motivation may be related but

do not operate dependently or as opposite ends of a single continuum. The moderate negative correlation implies that while autonomous and controlled motivation tend to be related, such that higher levels of one corresponds to lower levels of the other, you can still be both autonomously motivated and externally pressured at once (e.g., if you want to help someone, and they explicitly ask you to help).

To understand whether the relationship between humility and our compassion variables (i.e., given compassion, received compassion, freely chosen compassion, and externally pressured compassion) shifted over the study period, we tested for interaction effects between humility and time. The relationship between humility and given compassion did not vary across the study period, suggesting stability in the link between humility and compassion over time. In other words, the relationship between how humble someone is and how much compassion they offer others, may not be easily disrupted by everyday situational factors or time, further reinforcing the potential value in targeting humility as a means of promoting compassionate action long-term.

Next, the relationship between humility and received compassion also did not vary across the study period, suggesting stability in the link between humility and received compassion over time. In tandem with the results above, these findings suggest that not only do more humble people consistently offer more compassion, but they also consistently receive more of it from others. This offers a promising foundation for future research to expand and assess whether humility could offer a reliable means of attracting support and care from others.

Similarly, the strength of the relationship between humility and freely chosen compassionate action did not vary over time, nor did the strength of the relationship between humility and externally pressured compassionate action. The stability of these associations

reinforces humility's role as a dependable predictor of more autonomous and less controlled compassionate action. Simply stated, more humble people consistently feel that their compassionate actions towards others are more freely chosen and less externally pressured than less humble individuals. Overall, more humble individuals continued to report more given and received compassion over time, and continued to perceive their compassionate action as more freely chosen and less externally pressured.

Given that the mechanisms linking humility and eudaimonic well-being had not yet been empirically tested prior to this study, this was our next aim. We first hypothesized that the relationship between humility and well-being could be accounted for by the extent to which individuals engaged in compassionate action, as well as received it from others. After including given and received compassion in our multilevel model, results demonstrated that given compassion significantly predicted well-being, as did received compassion. In other words, participants reported greater well-being on days where compassion was either given or received by them. This is consistent with previous research outlining the psychological benefits of both engaging in compassionate action and being on the receiving end (Chancellor et al., 2018; Dungan et al., 2022; Dunn et al. 2008; Mongrain et al. 2011; Pressman et al., 2015; Saarinen et al. 2019; Stallman et al., 2018). With this said, humility continued to significantly predict greater well-being even after accounting for the mediating effect of given and received compassion, suggesting that compassion does not fully capture how humility may be promoting well-being. In fact, a comparison of beta estimates between models with and without compassion demonstrates that compassion captured very little of the relationship between humility and well-being. In his research, Krause (2014) provided theoretical support for other mechanisms such as forgiveness

and the willingness to accept blame, without testing them empirically. The results of the current study suggest that these mechanisms may be worth exploring.

We additionally hypothesized that the relationship between humility and eudaimonic well-being could be accounted for by the perceived autonomy in participants' compassionate actions towards others (i.e., how freely chosen, and how externally pressured they felt their compassionate actions were). In this model, the extent to which participants perceived their compassionate actions as freely chosen was a significant predictor of well-being. In other words, individuals reported greater well-being on days when their compassionate action felt more freely chosen. This is consistent with Self-Determination Theory and research examining the influence of autonomy on well-being more generally (Deci & Ryan, 2000), as well as research examining the influence of autonomous compassionate action on daily affect (Rootenberg, 2021). These findings offer support for research suggesting that the benefits of compassionate action may not be limited to whether someone engages in them but also include how someone engages in them (Rootenberg, 2021), highlighting the importance of motivation and autonomy in both real-life contexts and compassion-based interventions.

On the other hand, perceived external pressure to engage in compassionate action was not significantly associated with well-being, suggesting that compassionate action stemming from controlled motivation (e.g., external conditions or controls) is not meaningfully negatively related to daily well-being. While reasons for this are unknown, it may be possible that eudaimonic well-being as measured in our study is more responsive to positive, freely chosen experiences of helping others than being pressured to help. In this model, time continued to be non-significantly related to well-being, suggesting that participants' well-being remained relatively stable across the seven days.

Once the influence of perceived autonomy, age and time were accounted for, humility still significantly predicted daily well-being such that those with higher levels of humility reported greater daily well-being on average, across the study period. These findings suggest that the extent to which people perceive their compassionate actions as freely chosen and less externally pressured does not fully capture how humility may be promoting well-being. In fact, a comparison of beta estimates between models demonstrates that perceived autonomy captured very little of the relationship between humility and well-being. In other words, there may be other intrapersonal and interpersonal variables responsible for the greater levels of eudaimonic well-being associated with humility. These variables could include self-transcendence, forgiveness, worldview, all of which could be explored empirically.

Interestingly, age was modestly correlated with humility in our sample, such that older participants reported higher levels of humility on average. Age also significantly predicted well-being in our sample, such that older participants reported greater well-being than younger participants on average. These findings suggest that as people get older, they may be less self-focused, more other-focused, and experience more vitality and meaning in life.

Limitations and Future Directions

As with all self-report studies, responses in the current study may be subject to social desirability bias. To address this limitation, future studies could explore peer ratings and informant reports to complement self-reported data. Next, to increase compliance and feasibility, as well as decrease participant burden, the study was designed to be seven days, consistent with previous studies adopting similar methodologies (Christensen et al., 2003; Van Berkel et al., 2017). However, the duration of the current study limits our ability to assess how variables shift with seasonal and contextual changes, and future studies that track changes over longer periods of time (e.g., months) could address this limitation.

Next, humility was only measured at baseline, and we were thus unable to examine within-person changes in humility over time or infer directionality between variables. Measuring humility daily would allow us to understand how this variable fluctuates if at all, and would offer the ability to conduct time-lagged analyses to see if higher levels of humility preceded or followed higher reports of well-being on an individual level, as well as more compassionate action and more perceived autonomy in the context of compassionate action. Because measuring daily humility levels would increase survey length and participant burden, future research can also explore how to shorten the Experiences of Humility Scale developed by Davis et al. (2017) while preserving its validity and reliability.

Next, given that we wanted to examine autonomy and compassionate actions as they occur naturally, we decided to adopt a methodology that would grant us this access into people's everyday thoughts, feelings and behaviours (i.e., DRM; Kahneman et al., 2004). While maximizing ecological validity of our findings, we are unable to infer causation between the variables studied. Future research could explore longitudinal designs that incorporate DMR alongside time-lagged mixed models to gain a better understanding of the variables' directionality. In other words, does feeling good lead to more compassionate action among humble individuals?

In terms of future directions, research could also employ a deeper level of analysis in the phenomenology of humble individuals. For example, what prompts greater generosity in terms of compassion? Is it the high other-focus, or a special attunement to expressions of suffering? Finally, the fact that humility is also related to received compassion points to a warm and supportive interpersonal environment. It may be worth exploring whether humble individuals

attract support, or whether they start that dance by offering compassion to others and initiate a pattern of mutual support.

Conclusion

Overall, this study contributes new findings to the literature and advances the existing body of work on humility, well-being, compassion and autonomy, offering support to research that highlights the importance of humility on both an intrapersonal and interpersonal level. More humble individuals experienced greater eudaimonic well-being, were more likely to offer compassion to others as well as receive it, and perceived their compassionate actions as more freely chosen and less externally pressured. This points to a warm, supportive and deliberate interpersonal environment for humble individuals. Notably, given and received compassion did not fully account for the relationship between humility and well-being, and neither did perceived autonomy in the context of compassionate action. This points to the need for further research exploring the mechanisms underlying the link between humility and well-being, and of potential ways to increase humility. Given the prevalence of normative egocentrism and cultural narratives around self-love and self-promotion, this research contributes to a growing evidence base challenging our ideas of well-being and human flourishing.

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Appendix A

Consent Form

Warm welcome to The Daily Well-Being Project!

Researchers:
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By selecting to continue below, you indicate that you understand and agree with the following points:

Purpose of research: The goal of this study is to better understand the relationship between beliefs, daily experiences and behaviours, and well-being.

What you will be asked to do in the research: Participation takes place online and is completed in a few steps.

1) You will download an app called "MetricWire" through a software company called MetricWire, and register using any name and email. This app will be used for research purposes only. You will be provided a link to download the app on your phone and enroll in the study: https://metricwire.page.link/CpFm

2) You will then complete a set of baseline questionnaires online (https://my.metricwire.com/). These measure your beliefs, personality, and subjective well-being and will take approximately 18 minutes.

3) You will then be prompted on your phone twice a day (12 pm and 7 pm) for 7 days to answer brief questions about your mood and events. This should take 3-4 minutes per day to complete (i.e., ~2 minutes per survey).

Risks and Discomforts: Some of the questions about daily stressors and emotions may cause mild discomfort. As your participation is voluntary, you may skip any questions, and miss some morning or evening notifications. You can withdraw from the study at any time. If you wish for support for any emotional discomfort, please feel free to consult the mental health resources provided below:

24 Hour Support Line (Toronto): https://www.torontodistresscentre.com/ - (416) 408-4357

Canadian Mental Health Association (Canada):
https://cmha.ca/ - (416) 646-5557

Crisis Services Canada (Canada):
https://www.crisisservicescanada.ca/ - (1-833) 456-4566

Mental Health America (USA):
https://www.imalive.org/ - (1-800) 273-8255

Lifeline (USA):
https://suicidepreventionlifeline.org – (1-800) 273-8255

Befrienders Worldwide (Global/International): https://www.befrienders.org/ - Database of suicide crisis numbers by country

Suicide Stop (Global/International): https://www.suicidestop.com/call_a_hotline.html - Database of suicide crisis numbers by country

Benefits of the Research and Benefits to You: Completing this study may help you better understand yourself and may improve your understanding of psychological research. Following participation, you will receive approximately $10.46 CAD or $7.70 USD.

Voluntary Participation: Your participation in the study is completely voluntary. You may miss days during the week and may refrain from answering any questions or withdraw from the study at any time. Your decision to withdraw or to skip questions will not impact your relationship with any of the researchers, or with York University either now, or in the future.

Confidentiality: At the end of the study, anonymized data will be deposited in an account on the Open Science Framework (OSF). This platform is publicly accessible for researcher from around the world. These data are available through the OSF data sharing license. The account for the current Daily Well-Being Project (https://osf.io/3yjuc/) will not contain any identifying information, and the data will be retained indefinitely to comply with open science practices. The results of this research may be published in a scholarly publication and/or reported in a scientific presentation, in which case, the identity of all participants will remain fully confidential.

The data collected in this research project may be used, in an anonymized form, by members of the research team in subsequent research investigations exploring similar lines of inquiry. Such projects will still undergo ethics review by the Human Participants Review Committee (HPRC), our institutional Research Ethics Board (REB). Any secondary use of anonymized data by the research team will be treated with the same degree of confidentiality and anonymity as in the original research project.

The researcher(s) acknowledge that the host of the online survey (i.e., www.MetricWire.com) may automatically collect participant data without their knowledge (e.g., IP addresses). If provided to the researchers, it will not be used or saved. Further, because this project employs e-

based collection techniques, data may be subject to access by third parties because of various security legislation now in place in many countries. In this regard, the privacy of data cannot be guaranteed during web-based transmission.

Questions About the Research? This research has been reviewed and approved by the Human Participants Review Sub-Committee, York University's Ethics Review Board, and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process or about your rights as a participant in the study, please contact the Sr. Manager & Policy Advisor for the Office of Research Ethics (ORE), 5th Floor, York Research Tower, York University (telephone 416-736-5914 or e-mail ore@yorku.ca). You may also contact Dr. Myriam Mongrain at mongrain@yorku.ca, Callista Forchuk at cforchuk@yorku.ca, Jeremy Forsythe at jeremy08@yorku.ca, Alan Kian at akian@yorku.ca, or Sabrina Malouka Abdel Malak at malouka@yorku.ca. We will be happy to address any questions or concerns you may have that are related to the study.

Participant Consent: I consent to participate in the following study described herein conducted by Dr. Myriam Mongrain and her research team. I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by agreeing to the terms stipulated above.

YES, I consent to participate (by proceeding with the survey, you indicate your agreement with the terms and conditions of this study)

NO, I do NOT consent to participate (by not proceeding with the survey, you indicate that you DO NOT agree with the terms and conditions of this study and wish to not participate)

Appendix B

Measures

Demographic Questionnaire

Please answer the following questions honestly. This information will remain strictly confidential and will not be shared with any person or organization.

Username: [textbox]

Gender: Select One

- Man
- Woman
- Non-binary
- Other
- Decline to answer

Age: [in years]

What is your ethnic background?

- Mixed
- South Asian (Bangladeshi, Indian, Pakistani, etc.)
- Middle East (Afghani, Israel, Persian, etc.)
- Black (African-American, East/West African, Caribbean, Jamaican, etc.)
- White (Australian, European, Canadian, American, South African, etc.)
- Southeast Asian (Thai, Filipino, Vietnamese, etc.)
- East Asian (Chinese, Japanese, Korean, etc.)
- Indigenous (First Nations, Native Americans, etc.)
- Latin American (Mexican, Costa Rica, Panamanian, etc.)
- South American (Argentine, Brazilian, Colombian, etc.)
- Other
- Decline to answer

What is your religious orientation?

- Agnostic
- Atheist
- Christian (Protestant/Catholic/Orthodox/Other)
- Muslim
- Hindu
- Buddhist
- Sikh
- Jewish
- Other
- Decline to answer

What is the highest level of education you have completed?

- Less than high school
- High school
- In progress/college education
- College Diploma or Associate's Degree (AA)
- Bachelor's Degree (B.A., B.Sc., B.Ed.)
- Master's Degree (M.A., M.Sc., MPH)
- Doctoral Degree (Ph.D., M.D., J.D.)
- Other
- Decline to answer

What is your employment status?

- Employed full-time (30-40+ hours a week)
- Employed part-time (less than 30 hours a week)
- Student
- Student with a part-time job
- Student with a full-time job
- Unemployed
- Retired
- At-home caregiver
- Other
- Decline to answer

What is your marital status?

- Single
- Casual Relationship
- Committed Relationship/Common Law
- Married
- Separated/divorced
- Widowed
- Other
- Decline to answer

Experiences of Humility Scale (EHS)

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who is more focused on others? Please select a number for each statement to indicate the extent to which you agree or disagree with that statement.

1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly agree

In general, I...

1. Am more focused on others.
2. Am more attentive to the needs of others.
3. Am less focused on myself.
4. Am part of something much bigger than myself.
5. Feel deep reverence.
6. Feel "small" in a good way.
7. Am preoccupied.
8. Am obsessed with my needs.
9. Am needy.
10. Feel ashamed for being so self-focused.
11. Feel like I've been too concerned with myself.
12. Feel like my perceptions of myself are overblown.

Scoring: Items 1-3 are for *Other-orientation*, items 4-6 are for *Transcendence*, 7-9 are for *Awareness of Selfishness*, and 10-12 are for *Awareness of Egotism.*

Mental Health Continuum – Short Form (MHC-SF)

Please answer the following questions about how you have been feeling during the past month. Please answer each statement according to the scale provided:

1 = Never
2 = Once or twice
3 = About once a week
4 = About 2 or 3 times a week
5 = Almost every day
6 = Every day

During the past month, how often did you feel:

1. Happy.
2. Interested in life.
3. Satisfied with life.
4. That you had something important to contribute to society.
5. That you belonged to a community (like a social group, or your neighbourhood).
6. That our society is a good place, or is becoming a better place, for all people.
7. That people are basically good.
8. That the way our society works makes sense to you.
9. That you liked most parts of your personality.
10. Good at managing the responsibilities of your daily life.
11. That you had warm and trusting relationships with others.
12. That you had experiences that challenged you to grow and become a better person.
13. Confident to think or express your own ideas and opinions.
14. That your life has a sense of direction and meaning to it.

Center for Epidemiologic Studies Depression Scale (CES-D)

Using the scale below, indicate the response which best describes how often you felt or behaved this way, DURING THE PAST WEEK.

1 = Rarely or none of the time (less than 1 day)
2 = Some or a little of the time (1-2 days)
3 = Occasionally or a moderate amount of time (3-4 days)
4 = Most or all of the time (5-7 days)

During the past week:

1. I was bothered by things that usually don't bother me.
2. I did not feel like eating; my appetite was poor.
3. I felt that I could not shake off the blues even with the help from my family or friends.
4. I felt that I was just as good as other people. I
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. I felt hopeful about the future. I
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. I was happy. I
13. I talked less than usual.
14. I felt lonely.
15. People were unfriendly.

16. I enjoyed life. I
17. I had crying spells.
18. I felt sad.
19. I felt that people disliked me.
20. I could not get going.

Scoring: Reverse-score items 4, 8, 12, 16. Sum scores (16 or higher = possible depression). (Original coding 0-3).

The Meaning in Life Questionnaire (Presence of Meaning Subscale)

Please take a moment to think about what makes your life and existence feel important and significant to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below:

1 = Absolutely Untrue
2 = Mostly Untrue
3 = Somewhat Untrue
4 = Can't Say True / False
5 = Somewhat True
6 = Mostly True
7 = Absolutely True

1. I understand my life's meaning.
2. My life has a clear sense of purpose.
3. I have a good sense of what makes my life meaningful.
4. I have discovered a satisfying life purpose.
5. My life has no clear purpose.

Scoring: Item 5 is reverse scored.

Conscientious Responders Scale (CRS)

1. To answer this question, please choose option number four, "Can't Say True / False."
2. Choose the first option—"Strongly Disagree"—in answering this question.
3. To respond to this question, please choose option number five, "Very often or always true."
4. Please answer this question by choosing option number two, "Disagree Somewhat."
5. In response to this question, please choose option number three, "About once a week."

Scoring: participants who score 3/5 or more correct are retained.

Wellbeing

1. To what extent do you currently feel meaning in your life?
   Very slightly or not at all (1) (2) (3) (4) (5) Extremely

2. To what extent do you currently feel alive and vital?
   Very slightly or not at all (1) (2) (3) (4) (5) Extremely

Compassion

The next questions will reference compassion. Compassion refers to the ability to notice and attend to others when they are distressed. Furthermore, it is the ability to be helpful in such situations. When you receive compassion, your own suffering is reduced.

Received Compassion. Was someone compassionate towards you since the last survey?

Yes / No

Given Compassion. Were you able to make a positive difference to someone since the last survey?

Yes / No

Autonomous Motivation. To what extent was your compassionate behaviour freely chosen?

Not at all (1) (2) (3) (4) (5) Extremely

Controlled Motivation To what extent did you feel externally pressured to act compassionately?

Not at all (1) (2) (3) (4) (5) Extremely