Hope in the Face of Climate Change, Existential Meaning, and Social Connectedness

By
Jeannine Guenette

A Thesis Submitted to
Saint Mary's University, Halifax, Nova Scotia
in Partial Fulfillment of the Requirements for
the Degree of Certificate of Honours Equivalency,
Bachelor of Arts, Psychology.

April, 2020, Halifax, Nova Scotia

Approved: Dr. James Cameron

Associate Professor

Approved: Dr. Nicolas Roulin

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Abstract

This study approaches responses to the threat of climate change through a focus on hope concerning climate change as it relates to existential meaning, identification with environmental activism, and social connectedness. Hope is conceptualized in terms of personal and collective dimensions in line with Li and Monroe's (2018) Climate Change Hope Scale (CCHS), and existential meaning is conceptualized in terms of comprehension, purpose, and mattering according to George and Park's (2017) multidimensional view of meaning in life. Social connectedness is explored with regard to peer-age and intergenerational friendships, alongside quality of friendship function. While the literature on intergenerational friendships is limited, this study aims to explore how such relationships relate to social connectedness and contribute to well-being broadly, and more specifically how they may influence hope concerning climate change. A series of positive intercorrelations are found between hope, meaning in life, connectedness, quality of friendship function, and intergenerational friendships, but unique contributors to hope concerning climate change prove to be fairly elusive in this study. The paper concludes with a review of related variables that may impact hope concerning climate change and potential directions for future research.

Keywords: climate change, eco-anxiety, hope, social connectedness, meaning in life, existential meaning, friendship, intergenerational, social identification, climate change activism

Hope in the Face of Climate Change, Existential Meaning, and Social Connectedness

While levels of public concern about the diverse impacts of climate change have fluctuated over the past few decades, in recent years the threat has become more widely acknowledged as evident and imminent (Chu & Yang, 2019). From changes in weather patterns, rising sea levels, increased frequency and severity of natural disasters, and potentially catastrophic shifts in the delicate balance of global ecosystems, to population displacement on a massive scale and dramatic increases in socioeconomic inequalities, the predicted global impacts of climate change are wide-ranging and ominous. Yet, despite the increased clarity around the extent of the issue, it remains challenging for most people to fully grasp.

This difficulty in truly comprehending the scope of the threat posed by climate change may be due in part to the uniqueness of the threat—as Reser and Swim (2011) explain, global climate change is both a natural and a technological disaster; it "straddles" those classifications (p. 281). While natural disasters are "sudden, cataclysmic, uncontrollable, and acute," technological disasters are less familiar to us, often invisible, less predictable and typically occur without warning—and above all else, they are attributed to human behaviour (p. 281). Climate change thus resists clear classification because the acceleration of naturally occurring changes in climate is clearly caused by human technological production, but the consequences of that activity manifest as environmental phenomena like natural disasters (Reser & Swim, 2011). Moreover, the currently observed and potential future impacts of climate change are multifaceted and differential across the globe and are predicted to unfold over a time frame that spans generations and even centuries (Reser & Swim, 2011). All of these facets contribute to

shaping our understanding of the threat as simultaneously critical and inevitable, immediate and distant, discrete and continuous.

As much as climate change is a geophysical phenomenon, it is undeniably a social and psychological phenomenon that threatens mental health and well-being in diverse and simultaneous ways (Doherty & Clayton, 2011; Reser & Swim, 2011; Pihkala, 2018; Usher et al., 2019; Ojala, 2012). Recently, indications of growing concern about climate change among the general public have surged in contexts such as political discourse, organized public action and protest, and the expanding body of research on the diverse effects of climate change across a wide range of disciplines, including psychology (Chu & Yang, 2019; Weissbecker, 2011). Media coverage of climate change is arguably the most salient realm in which public perceptions of climate change are represented, which has strong impacts on how individuals understand and respond to the threat (Fritze et al., 2008; Reser & Swim, 2011; Pihkala, 2018; Verplanken & Roy, 2013). Furthermore, the vast majority of people who worry about climate change have not been directly affected—instead, they experience it "vicariously through media exposure to information about risks, devastating events elsewhere, or debates about negative future consequences" (Verplanken & Roy, 2013, p. 1).

This kind of vicarious exposure is increasingly being understood as having deleterious effects on well-being. In their review of recent research on climate change and mental health, Doherty and Clayton (2011) summarize numerous reports of "subclinical depressive emotions" among people expressing concerns about climate change (p. 269). Feelings of disgust, helplessness, sadness, fear, and guilt were common, alongside the sense of a loss of security punctuated by feelings of grief and despair (Doherty & Clayton, 2011). Indeed, as Reser and

Swim (2011) note, a perceived lack of control over one's environment is "one of the most ubiquitous determinants" of anxiety and distress (p. 283). For instance, when people feel too unsettled or overwhelmed by the threat of climate change, they may become "desensitized, resigned, cynical, or fed up with the topic" (Fritze et al., 2008, p. 6). Overall, the emotional response to climate change is complex and multilayered—even apathy may not necessarily signal a lack of concern, as it can "mask" profound distress (Pihkala, 2018, p. 563).

One way to conceptualize this mental health impact is through what Pihkala (2018) calls the "half-hidden phenomena of eco-anxiety," which he defines as encompassing "various difficult emotions and mental states arising from environmental conditions and knowledge about them" (pp. 544, 546). Media reports on this emergent form of anxiety describe symptoms such as panic attacks, sleeplessness, irritability, loss of appetite, and other symptoms that are "likely to have a genesis in autonomic stress responses" (Doherty & Clayton, 2011, p. 269). The impact of eco-anxiety is often indirect and likely interwoven with other anxieties, existing in the "background" of other life challenges (Pihkala, 2018, p. 546). Much like other forms of anxiety, uncertainty about the future is a central component of eco-anxiety (Verlie, 2019). Indeed, people experiencing eco-anxiety must negotiate the irresolvable tension inherent in recognizing climate change as both an individual and a collective challenge—while individual actions and lifestyle choices contribute to the problem, they alone cannot solve the problem (Ojala, 2012). This duality may complicate one's motivation toward personal engagement, thereby making one's sense of efficacy more tenuous. Overall, how people cope with the stressor of climate change is as likely to determine their well-being as their level of engagement (Ojala, 2012).

Hope, Engagement, and Well-being

While a considerable amount of research on the emotional impact of climate change exhibits a concern over whether despair may be a barrier to active engagement with climate change mitigation actions on an individual level, there is evidence in support of worry as preceding or complementing adaptive coping (Li & Monroe, 2019; Doherty & Clayton, 2011). Eco-anxiety may not always lead to despair and apathy; it can also galvanize problem-solving perspectives and actions, which can in turn foster a sense of efficacy and positive emotions (Doherty & Clayton, 2011). Indeed, as Verplanken and Roy (2013) found in their research, even high levels of worry over environmental issues are correlated with action and are distinct from maladaptive types of anxiety. Moreover, research has shown that this kind of constructive worry (as opposed to pathological worry) was associated with mental health and adaptive behaviours like planning and problem-solving (Verplanken & Roy, 2013). Overall, worry may be an adaptive process involved in the cultivation of hope, in that it enables us to anticipate and prepare for potential scenarios in order to mitigate expected risks (Verplanken & Roy, 2013).

Similarly, research on hope related to climate change attests to the positive association between hope and environmental concern as well as the role of hope in counteracting despair and helplessness, remaining engaged with a desired future outcome, and motivating action toward that outcome (Li & Monroe, 2018, 2019; Chu & Yang, 2019; Ojala, 2012). These relationships are ostensibly reciprocal—paraphrasing theologian Daniel Day Williams, Pihkala (2018) states “hope not only expresses itself in environmental action, but such action upholds hope itself” (p. 557). Hope, then, is more than a positive feeling; it can be a motivational force.

Our understanding of hope often gets tangled with optimism and self-efficacy, so it is worthwhile here to make some conceptual distinctions. Optimism is characterized by feeling certain about or at least expecting a positive outcome, whereas self-efficacy is characterized by faith in one's capacities (Li and Monroe, 2018). Hope is more of a process of managing uncertainty, and as such, it is intimately related to anxiety—indeed, we often oscillate between hope and anxiety concerning the same topic (Folkman, 2010; Verlie, 2019; Chu & Yang, 2019). In other words, hope emerges from "the same conditions as anxiety: uncertainty and contingency" (Verlie, 2019, p. 757). Alongside uncertainty, future-orientation is a central component of hope, in that 'being hopeful' involves simultaneously holding conflicting expectations for future outcomes (Chu & Yang, 2019; Folkman, 2010). In terms of mental health benefits, hope is broadly related to overall well-being, happiness, achievement, well-developed coping skills, and recovery from depression (Hedayati & Khazaei, 2014; Li & Monroe, 2019). Existing research also shows a positive association between hope and meaning in life, as well as perceptions of social support (Ojala, 2012; Hedayati & Khazaei, 2014).

Eco-Anxiety and Existential Meaning

Many emotional responses to the threat of climate change can also signal existential suffering, overlapping with or seeding the hopelessness, futility, disappointment, and death anxiety that are associated with existential angst (Bruce et al., 2011). The characterization of existential suffering as a form of anxiety that begins with a sense of "groundlessness" is particularly appropriate for reflecting on how the threat of climate change may impact human life on this planet (p. 7). Profound questions related to the meaning of existence are often

provoked by largely uncontrollable societal-level threats to well-being, and eco-anxiety in particular has been suggested to prompt thoughts and feelings—whether conscious or unconscious—associated with death and mortality (Pihkala, 2018). Confronting the large-scale threat of global climate change can understandably complicate the parameters of our familiar sense of existential meaning, bringing a certain "new dimension" to these questions (p. 548).

As Fritze et al., (2008) ask, if the sustainability of human life is uncertain amid potentially catastrophic changes to the Earth's environment, what does this mean for how we understand our individual and collective sense of purpose and meaning? Similarly, Verlie (2019) asserts that learning to live with climate change is a fundamentally existential task that requires much more than cognitive understanding or behaviour modification to grapple with—it requires a new conception of "what life is, what it means to live, and how to live well" (p. 759).

Having a sense of meaning in life is generally conceptualized as an understanding of one's experiences and feeling a sense of significance, combined with having aspirations that contribute to a sense of purpose (Steger & Kashdan, 2013). Meaning in life has been strongly associated with well-being, relating to factors such as depression, anxiety, hope, and life satisfaction (Hedayati & Khazaei, 2014). Indeed, Steger and Kashdan (2013) found that people experiencing a lack of meaning in their lives generally tended to experience more distress, heightened stress reactivity, and social isolation. Conversely, they found that high levels of meaning in life were associated with greater happiness, physical health, and social connectedness.

Social Connectedness and Intergenerational Friendships

Like meaning in life, social connection is linked with numerous determinants of well-being, including but not limited to happiness, health, social competence, increased emotional regulation, increased resiliency, and enhanced coping skills (Seppala et al., 2013). Moreover, these benefits seem consistent across different stages of life—recent research has shown that people of all ages with higher social connectedness were less likely to report symptoms of anxiety (Levula et al., 2018). Hope has also been associated with a sense of social support as a component of high quality social relationships (Hedayati & Khazaei, 2014).

While social network factors are related to various positive mental health outcomes, several researchers argue that social connectedness has proven to be a more accurate and more consistent predictor of health than purely objective measures of social network size (Seppala et al., 2013). Social connectedness refers not only to one's sense of close connection with others, but with social world one inhabits, including strangers and one's broader community; it is highly subjective and can encompass a general sense of belonging alongside the perception of having strong social support (Seppala et al., 2013, p. 415; Levula et al., 2018).

Given that social connectedness appears to be a protective factor across different life stages, Fritze et al's., (2008) observation that the psychological impacts of climate change have a "lifecycle aspect"—in that young people growing up with an uncertain future may experience the threat of climate change very differently from older generations—gives rise to the question of how intergenerational connections might impact not only social connectedness, but hope concerning climate change, and even existential meaning. Research on intergenerational

connections is sparse, but the topic is gaining attention as an important lens through which to view shifting modes of relating and their consequences for numerous well-being-related factors.

The literature on intergenerational or cross-age friendships is limited outside of research on care provision or social support, but it has been acknowledged that intergenerational friendships may be on the rise due to a broad range of societal changes (O'Dare et al., 2017). For instance, it is increasingly common for older adults to undertake programs in higher education where they encounter younger cohorts, to stay in the workforce longer which increases their contact with younger generations entering the workforce, and in general, to regard age-related norms as less important or relevant to their social interests (Holladay & Kerns, 2009). In the research that does exist on intergenerational friendships, one clear finding is that older adults tend to have more intergenerational friends than younger adults (Holladay & Kerns, 2009). Also, the existing research tends to distinguish family ties from social ties, since relationships in the family realm are understood as "qualitatively different" from non-kin connections (Hagestad & Uhlenberg, 2006, p. 649).

Aside from benefits such as broader social engagement, reduced ageism, more opportunities for companionship, and increased opportunities for guiding and/or learning from the experiences of age-discrepant contacts, intergenerational friendships may have specific qualities that are distinct from peer-age friendship (Hagestad & Uhlenberg, 2006; Holladay & Kerns, 2009; O'Dare et al., 2017). Most notably, some research indicates that intergenerational friendships are characterized by higher instrumental functions than peer-age friendships—that is, they may have more of an advising or mentoring quality (Holladay & Kerns, 2009). As a way to contextualize the potentially unique nature of intergenerational friendships, Hagestad and

Uhlenberg (2006) draw on Erik Erikson's (1963) widely influential work on development across the life span, which specifies a set of tasks that individuals confront in different phases of life. The generativity task of middle-age is of particular interest here, as it is defined by a focus on social legacy by "ensuring continuity beyond one's own life span through an investment in younger generations" (p. 647). Could intergenerational friendships have a moderating influence on hope concerning climate change and/or existential meaning, across stages of the life span? In other words, could such connections help people of all ages gain broader perspectives on life, helping them to manage concerns about the uncertain future engendered by the threat of climate change?

Hypotheses

Given the pattern of associations between hope, meaning in life, social connectedness, and well-being outlined above, hope concerning climate change is expected to be strongly and positively associated with both meaning in life and social connectedness (Hypothesis 1). Furthermore, based on the well-established association between meaning in life and social connectedness—and presuming that having intergenerational friendships will be associated with higher social connectedness—intergenerational friendships are expected to relate positively with meaning in life (Hypothesis 2). This study offers the opportunity to substantiate existing research showing that intergenerational friendships tend toward more instrumental qualities, therefore it is expected that intergenerational friendships will be associated with higher perspective-related and advice-related functions than peer-age friendships (Hypothesis 3). The last prediction is that hope concerning climate change will relate positively to a sense of personal identification with collective action efforts, confirming the considerable amount of research showing that both

concern and hope regarding climate change often function as forces that motivate engagement (Hypothesis 4).

Finally, while any interaction between intergenerational friendships and hope concerning climate change lacks theoretical grounding, Hagestad & Uhlenberg's (2006) suggestion that these types of social connections may provide a sense of continuity and/or hope for the future among people of any age inspires this Research Question: Does hope concerning climate change increase along with the number of intergenerational friendships one has in their life?

Method

Participants and Procedure

The study was conducted via online questionnaire, which was posted on Facebook, on the discussion forum website Reddit, and distributed via email to the study author's fellow student and professional colleagues. Initial potential participants contacted via email were explicitly invited to forward the anonymous survey link to anyone they feel would be interested in participating. The study ran for six weeks from February to March 2020. Participants were recruited as follows:

> Volunteers needed to participate in an online survey about perspectives on climate change, existential meaning, and hope. Do you feel anxious or powerless when you think about climate change? Or, do you feel hopeful or empowered to take action to lessen your environmental impact? Does the threat of climate change affect your sense of meaning in life in any way? I'm interested in your thoughts and experiences—in volunteering for this study, you are contributing to

important research by helping us understand the psychological impacts of climate change on well-being.

The study was restricted to those aged 16 and older. A total of 93 participants completed the online survey, with an average age of 43.77 years (SD=18.17 years). There were 62 women, 29 men, and two participants chose not to disclose their gender. The nationality of participants was overwhelmingly Canadian (N=75), with eight participants in the United States of America, and ten elsewhere in the world.

The questionnaire contained assessments of meaning in life, hope concerning climate change, social identification, social connectedness, friendship function related to age-peer and intergenerational friendships, as well as basic demographic questions (age, gender, and nationality). Two validity items were included at appropriate points in the overall questionnaire: "I responded randomly without reading the statements" and "I responded to all statements honestly and accurately." Participants that responded affirmatively or neutrally to the first item and/or neutrally or negatively to the second item (N=2) were excluded from the analysis.

Measures

Meaning in life. While conceptions of existential meaning in life (MIL) vary in the literature, this study adopted George and Park's (2017) multidimensional view of MIL which they define as "the extent to which one's life is experienced as making sense, as being directed and motivated by valued goals, and as mattering in the world" (p. 614). In their Multidimensional Existential Meaning Scale (MEMS), MIL is comprised of comprehension, purpose, and mattering. The comprehension subconstruct can be defined as the perceived degree of a sense of coherence and clarity about one's life, measured by items such as "My life makes sense" and

"Looking at my life as a whole, things seem clear to me" (George & Park, 2017). The purpose subconstruct refers to the degree of one's sense of motivation or engagement in life as directed by value-driven goals, captured by items such as "I have overarching goals that guide me in my life" and "My direction in life is motivating to me" (George & Park, 2017). The mattering subconstruct can be understood as the extent to which one feels that their existence is valued, significant, and makes a difference in the world, assessed by items such as "There is nothing special about my existence" (reverse-coded) and "Even a thousand years from now, it would still matter whether I existed or not" (George & Park, 2017).

While the MEMS has been shown to overlap quite well with existing MIL measures with good reliability, George and Park's (2017) multidimensional perspective has particular advantages over the more common unidimensional approaches (p. 625). Most importantly for present purposes, a multidimensional assessment of MIL enables an examination of the relationships between subconstructs as well as between specific subconstructs and other variables. Indeed, George and Park (2017) found that "different subscales of the MEMS had distinct relationships with other variables, including health and well-being" (p. 625). The MEMS has 15 items, with responses categorized on a 7-point scale from *strongly disagree* to *strongly agree*. Responses are summed such that higher scores indicate a higher sense of MIL. The MEMS was found to be internally consistent in the present study (Cronbach's alpha = .93).

Hope concerning climate change. Li and Monroe's (2018) Climate Change Hope Scale (CCHS) draws on Snyder's (1994) hope theory to measure hope concerning climate change in terms of willpower and waypower. Willpower refers to the extent that individuals feel capable of meeting their life goals, while waypower refers to the extent to which they can devise ways to

face and overcome challenges. However, this conception of hope is focused on problems at the individual level, while climate change is a global collective issue that cannot be solved by individuals alone. In order to address this limitation in existing measures of hope, Li and Monroe (2018) added a collective-sphere of willpower and waypower to their scale, and their validation of the instrument did reveal that those who "hold high levels of personal-sphere willpower and waypower do not always hold high levels of collective-sphere willpower and waypower" (p. 472).

The CCHS, then, is designed to capture the extent to which individuals feel that both they and society more broadly can create and implement solutions to the environmental issues caused by climate change. Items typical of personal-sphere willpower and waypower include "The actions I can take are too small to help solve problems caused by climate change" (reverse-coded) and "I know what to do to help solve problems caused by climate change" (Li & Monroe, 2018). Items typical of collective-sphere willpower and waypower include "Climate change is so complex we will not be able to solve problems that it causes" (reverse-coded) and "Every day, more people begin to care about problems caused by climate change" (Li & Monroe, 2018). The CCHS has 11 items across three factors—personal willpower and waypower (3 items), collective willpower and waypower (5 items) and lack of willpower and waypower (3 items). Responses are categorized on a 7-point scale from *strongly disagree* to *strongly agree* and coded from -3 to +3, with 0 being neutral. Responses are then summed, with a high score indicating a high level of hope concerning climate change. In the present sample, internal consistency for the CCHS was good (Cronbach's alpha = .87).

Social identification. As a construct separate from social identity, social identification has been defined by Postmes et al., (2013) as the "positive emotional valuation" of a relationship

between the self and a particular group as an entity, along two dimensions: self-investment and self-definition (p. 599). Self-investment involves a perspective on group membership as important to one's sense of self, feeling positive emotions about the group, and feeling a sense of solidarity with group members; self-definition hinges on "judgments of similarity" both between the self and group members as well as among group members generally (Postmes et al., p. 600). In a series of meta-analyses, Postmes et al., (2013) have shown that the statement "I identify with _____" as a single-item measure of social identification has high reliability and validity, perhaps because the construct of social identification is fairly uniform, or due simply to its "conceptual clarity" (p. 614).

While Postmes et al., (2013) found that the Single Item Social Identification measure (SISI) was only moderately correlated with the self-definition dimension of identification, it was shown to correlate strongly with self-investment, which is the aspect of particular interest in this study due to its emphasis on positive emotions and sense of solidarity. Indeed, since the challenges presented by climate change are undoubtedly collective and positive emotions are related to hope, this measure is a worthwhile avenue to explore in combination with social connectedness. Moreover, Postmes et al., (2013) make a clear argument for the utility of this single-item measure of social identification in cases where subtle distinctions among various dimensions of identification are not essential to the research question(s). In the present study, the SISI was written as "I identify with environmental or climate change activists." Responses are categorized on a 7-point scale from *strongly disagree* to *strongly agree* and summed, so that a high score indicates high identification.

Social connectedness. Participants' sense of social connectedness was measured with Lee and Robbins' (1995) revised Social Connectedness Scale (SCS–R), which has demonstrated high reliability and strong validity in their research. While this measure was designed with high-school-aged youth in mind, it contains items that generally capture the aspects of subjective social connectedness discussed in the broader literature. For instance, items such as "I feel disconnected from the world around me" and "I feel so distant from people" refer to feelings that are certainly not age-specific. The SCS–R has a total of 8 reverse-coded items and responses are categorized on a 7-point scale from *strongly agree* to *strongly disagree*. Scores are summed, with a high score indicating high subjective social connectedness. In this study, the SCS–R had high internal consistency (Cronbach's alpha = .95).

Intergenerational and age-peer friendship. The McGill Friendship Questionnaire–Friend's Function (MFQ–FF) asks participants to approach the statements with a friend in mind—to "imagine that the blank space in each item contains your friend's name" (Mendelson & Aboud, 2014). It assesses the provision of social, emotional, and instrumental resources identified in the friendship literature, across six subscales: stimulating companionship, help, intimacy, reliable alliance, self-validation, and emotional security. Each subscale has five items, for a total of 30 items. Typical items for each subscale include "is exciting to be with," "helps me when I need it," knows when I'm upset," "would still want to be my friend even if we had a fight," "compliments me when I do something well," and "would make me feel better if I were worried," respectively. Responses are measured on an 8-point scale from *never* to *always* and summed, with a higher score indicating higher quality of friendship function. The scale was found to be highly internally consistent with the present sample population (Cronbach's alpha = .97).

The questionnaire began with the MEMS in order to reduce the possibility of a priming effect, since it would be reasonable for the CCHS to heighten participants' anxieties about climate change. The single-item measure of social identification—"I identify with environmental or climate change activists"— was appended to the CCHS in order to enable an exploration of associations between hope related to climate change and group identification. After the CCHS, participants completed the SCS-R.

Before the MFQ–FF, participants were asked to report how many intergenerational friends they have, defined as "people in your life that you consider to be either close or casual friends, and who are at least 10 years older or younger than you." The 5-item response scale for this question ranged from 0 to 5 *or more*. Those who reported at least one intergenerational friend were shown modified instructions for the MFQ–FF, asking them to approach the items with their closest *intergenerational* friend in mind, while those who reported zero intergenerational friendships were shown the standard instructions for the MFQ–FF.

Two additional statements were added to this section of the questionnaire to explore whether intergenerational friendships have more of an advising or mentoring quality as the literature suggests: "helps me see things in a different way" and "gives me good advice." The additional items were presented to all participants—whether or not they reported intergenerational friendships—in the interest of comparing participants' evaluations of these friendship functions between those with and without intergenerational friends. These items were analyzed separately from the MFQ–FF. Since these additional items have not undergone previous validation and reliability testing, it was reassuring to find that they did not detract from

the MFQ–FF's high internal consistency with this sample population (Cronbach's alpha would hold at .97 if those items were deleted).

Results

Descriptive Statistics and Bivariate Correlations

As shown in Table 1, the mean level of climate change hope was fairly high, as was the mean level of social connectedness. Moderately high mean scores were observed for existential meaning, social identification, and quality of friendship functions. While the distributions for all variables were characterized by slight negative skewness, social connectedness scores were considerably negatively skewed (-1.046) which suggests that most respondents feel a fairly strong sense of connectedness. Age was positively correlated with existential meaning, social connectedness, and number of intergenerational friendships. Gender was not observed to be a significant correlational variable across the data.

Contrary to expectations given the prevailing assumption noted in the literature that age-peer friendships are the norm, a surprising number of participants—men and women alike, across all ages—reported at least one intergenerational friendship (N=85), with roughly half of participants reporting more than five (N=47) and relatively few reporting zero (N=8). Given the small sample size of participants reporting zero intergenerational friendships, all responses to the friendship functions portion of the survey were aggregated and analyzed with regard to the number of intergenerational friendships reported.

Climate change hope, social connectedness, and existential meaning. A bivariate correlation analysis (see Table 1) revealed positive intercorrelations between climate change

hope, social connectedness, and existential meaning. The strongest positive correlation observed across all variables was between existential meaning and social connectedness. Climate change hope had a moderately positive association with social connectedness, and a fairly strong association with overall MIL.

This set of findings lends general support for Hypothesis 1 and sheds further light on the association between hope and MIL: of the three existential meaning subconstructs, overall climate change hope was most strongly correlated with mattering (.471, $p < .000$), less so with comprehension (.328, $p = .001$), and least with purpose (.237, $p = .022$). This observation points toward the mattering aspect of MIL as potentially more consequential for the fostering and maintenance of hope in the face of the challenges presented by climate change. Indeed, raw scores on the lack of hope subscale of the CCHS were fairly significantly negatively correlated with mattering (– .506, $p < .000$).

Contrary to Hypothesis 4, social identification with environmental or climate change activists was far from significantly associated with any of the main variables. This is somewhat surprising since social identification was moderately positively correlated with the personal-hope subconstruct of the CCHS (.307, $p = .003$), although no significant relationship was observed between identification and the collective-hope or lack-of-hope subconstructs. This finding seemingly contradicts the relatively prevalent notion that hope is an important element in the motivation toward participating in collective action to fight climate change.

Intergenerational friendships and social connectedness. The positive association observed between number of intergenerational friendships and social connectedness partially supports Hypothesis 2. In further support for Hypothesis 2, the number of reported

intergenerational friendships showed a low but significant positive correlation with overall MIL, and more specifically with the comprehension and mattering subconstructs (.303 p = .003, and .285, p =.006, respectively). However, regarding the research question stated above, the number of intergenerational friendships was not found to be significantly associated with climate change hope nor was it related to quality of friendship functions. Given the moderate association between hope and connectedness noted above, the lack of association between hope and intergenerational friendship in this sample could indicate that age demographics and ratings of friendship quality are each far less relevant for hope than participants' overall subjective sense of social connectedness.

In terms of the nature of these friendships (Hypothesis 3), it is interesting to note that while the number of intergenerational friends was not significantly correlated with overall quality of friendship function, it was weakly yet significantly associated with higher ratings on the advice-related statement, which offers some support for the possibility that intergenerational friendships rank higher in advice-giving qualities, as suggested in the literature. The perspective-related statement had no such association in this sample population.

Table 1

Descriptive Statistics and Correlations Between Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Climate Change Hope	13.06	11.8	—								
2. Social Identification	5.27	1.67	.20	––							
3. Existential Meaning	72.09	18.38	.420 ***	.109	—						
4. Social Connectedness	43.08	11.46	.320 **	.081	.643 ***	—					
5. Number of IGFs	3.65	1.68	.151	.185	.290 **	.366 ***	—				
6. Friendship Functions	185.19	38.14	.161	.212 *	.253 *	.305 **	.165	—			
7. FF Advice	6.41	1.57	.194	.211 *	.321 **	.260 *	.224 *	.720 ***	—		
8. FF Perspective	5.98	1.68	.188	.223 *	.347 **	.257 *	.128	.682 ***	.762 ***	—	
9. Age	43.77	18.17	.243 *	.160	.274 **	.390 ***	.424 ***	- .025	- .123	- .072	—

Note. IGFs = intergenerational friendships.

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

Table 2

Summary of Regression Analyses

	Climate Change Hope[a]			Existential Meaning[b]			Social Connectedness[c]		
Predictor	β	*t*	Part R^2	β	*t*	Part R^2	β	*t*	Part R^2
Climate Change Hope	—	—	—	.237	2.89**	.05	.054	.623	.002
Existential Meaning	.364	2.89**	.078	—	—	—	.564	6.31***	.245
Social Connectedness	.080	.623	.004	.547	6.31***	.238	—	—	—
Number of IGFs	.016	.154	.000	.055	.656	.003	.194	2.36*	.034

Note. IGFs = Intergenerational friendships.
[a] F(3, 89) = 6.550, p = .000 Adjusted R2 = .153.
[b] F(3, 89) = 26, p = .000, Adjusted R2 = .449.
[c] F(3, 89) = 24.35, p = .000, Adjusted R2 = .432.
* p < .05. ** p < .01 *** p < .001

Predicting Hope in the Face of Climate Change

A series of regression analyses (see Table 2) enabled a more nuanced view of the interconnections between climate change hope, existential meaning, and social connectedness. This study was primarily focused on factors that impact hope regarding climate change, and MIL emerged as the only unique significant predictor. While social connectedness was positively correlated with climate change hope as discussed above, it was not revealed to be a unique predictor of hope. However, a second regression analysis revealed that social connectedness was a strong unique predictor of existential meaning, accounting for 23.8% of variance in MIL. In other words, social connectedness predicted existential meaning, and existential meaning

predicted hope, but connectedness did not uniquely predict hope in this sample population. Furthermore, MIL and the number of intergenerational friendships both emerged as unique contributors to social connectedness—MIL accounted for 24.5% of the variance while intergenerational friendships accounted for 3.4%.

Discussion

Hope concerning climate change is a complex issue, and individual responses to the threat of climate change are undoubtedly shaped by a dynamic constellation of individual and social processes. Personal feelings, thoughts, and beliefs about the threat of climate change are likely to be continually managed and modified according to a wide range of factors such as information exposure, engagement in discussion and comparison of views with others, and personal adaptive capacities and motivations (Fritze et al., 2008). Nonetheless, considering the moderately strong relationships between climate change hope, MIL, and social connectedness found in this sample, it was surprising to find that the only unique contributor to hope (overall MIL) was quite low in predictive value. This suggests that hope related to climate change may be better predicted by another variable or more likely a combination of variables untested in this study. The relatively strong correlation that emerged between hope and MIL—and especially the mattering subconstruct of MIL—is a promising point of departure for a further examination of factors that may predict hope.

For instance, as Steger and Kashdan (2013) argue, much of the literature on MIL, as well as most measures designed to capture it, assume that meaning is a stable resource, reflecting "enduring and reliable resilience, motivational, and cognitive resources" (p. 105). However, in

their exploratory research distinguishing between stable meaning, unstable meaning, and level of meaning intensity, they found that intensity of meaning was related to well-being in a more consistent manner than stability of meaning (Steger & Kashdan, 2013). Their research also revealed a positive association between social connectedness and MIL, but their particular findings led them to speculate that social connectedness was also more strongly related to intensity of meaning than stability (Steger & Kashdan, 2013). Overall, while Steger and Kashdan's (2013) results did indicate that stability of meaning was positively related to overall well-being, they argue that intensity of meaning should be considered fundamental for contextualizing MIL. Therefore, the interactions between hope and MIL observed here may be further clarified by attention to levels of meaning intensity and meaning stability.

Variation in coping strategy is a second potential avenue of insight into the pattern of correlations between hope and MIL observed here. Briefly, the literature on coping generally distinguishes between problem-focused, emotion-focused, and meaning-focused strategies. Problem-focused coping involves gathering information and concentrating on ways to solve the issue; emotion-focused coping aims to reduce negative emotions through avoidance, distancing or denial; meaning-focused coping helps to regulate emotions by drawing on values, beliefs, and existential goals to manage well-being (Ojala, 2012; Folkman, 2010).

Existing research indicates that meaning-focused coping is especially important with stressors such as climate change, the threat of which "cannot be removed and solved at once (or at all) but still demands active involvement" (Ojala, 2012, p. 226). Indeed, pertaining specifically to the uncontrollable events surrounding technological disasters, Reser and Swim (2011) have found that meaning-focused coping strategies were "associated with less stress than were

problem-focused coping and denial" (284). This may be due to the notion that meaning-focused coping enables the simultaneous 'holding' of negative and positive emotions that often arise when dealing with this type of stress (Folkman, 2010). An investigation of meaning-focused coping strategies as they relate to hope concerning climate change may shed more light on the correlations between hope and MIL found here, given the clear conceptual association between MIL and meaning-focused coping in the literature (Ojala, 2012; Folkman, 2010).

Identification With Climate Change Action Efforts

The dimension of coping strategy may also add context to the lack of association between overall hope and identification with environmental or climate change activists observed in this sample. As Ojala (2012) argues, individual coping style can impact not only well-being, but also on one's level of engagement. Since social identification was only associated with the personal-hope subscale of the CCHS and not with overall hope in this study—which, as stated above, largely contradicts the prevalent notion that hope motivates engagement—variations in coping strategy may help to explain this result.

For instance, the benefits of problem-focused coping appear to be context-specific, which may account for the mixed results in existing research. While there is evidence that problem-focused coping can be adaptive at the individual level, when facing multifaceted societal-level problems that are largely uncontrollable, it may lead to increased distress and low well-being (Ojala, 2012). If for a moment we accept the premise that identification with climate change activists would indicate a preference for problem-focused coping, since this sample had a relatively high mean level of hope that did not significantly relate to identification, perhaps

meaning-focused coping was the strategy of choice for a large portion of this sample population. While highly speculative, this possibility warrants consideration in future research.

On the other hand, this sample population may have exhibited a kind of concern about climate change that is closer to 'ecoparalysis,' which is a state that can present as apathy but is actually characterized by a high level of concern (Pihkala, 2018; Usher et al., 2019). Indeed, existing research on emotional reactions to climate change has shown that "many people fail to respond to climate change not because of a lack of concern, but because of their concern" (Verlie, 2019, p. 752).

Social Connectedness and Intergenerational Friendships

While number of intergenerational friendships emerged as a small but significant contributor to social connectedness, no evidence was found in support of a relation between intergenerational friendships and hope concerning climate change. Given the moderate correlation between hope and connectedness observed, this lack of association between hope and inter general friendships indicates that, in this sample, age demographics may be far less relevant for hope than participants' overall subjective sense of social connectedness.

In terms of contributions to the study of intergenerational friendships, the observed correlation between intergenerational friendships and advice-related quality of friendship function is consistent with existing research showing a higher instrumental function at work in these relationships. Moreover, the moderate correlation between number of intergenerational friendships and the comprehension subconstruct of MIL suggests that these relationships may indeed have a quality of generativity—that is, an element of guidance, mentoring, or learning occurring between generations that can benefit both younger and older people in different ways.

Limitations

This study may have been a somewhat too-ambitious attempt to discern specific patterns of association between large and complex variables, with a relatively small sample size. Therefore, a few limitations should be noted. First, the questionnaire did not include a direct measure of well-being; rather, well-being was inferred from scores on MIL, social connectedness, and to a lesser degree, climate change hope. A measure of well-being may have shed more light on the associations between climate change hope and the other variables with established relationships to well-being. Second, the surprising number of respondents reporting intergenerational friendships is suspect given the prevalent assumption that peer-age friendships are the norm. Therefore, it must be acknowledged that despite the instruction to report only non-family intergenerational friendships, it is possible that some participants had trouble drawing a firm distinction between family ties and friends, since close family members can of course also be close friends. Alternatively, this sample population simply may have illuminated the hidden prevalence of intergenerational friendships across all ages; further research is warranted to help clarify this finding.

Finally, at least some base level of eco-anxiety was presumed in this study, since voluntary participants were recruited on the basis of their interest in the topic, which was framed as 'climate change anxiety.' It is entirely possible that some or many participants were experiencing other negative emotions concerning climate change, such as grief, despair, or "environmental melancholy" (Pihkala, 2018, p. 549). Given the incredibly wide range of thoughts, beliefs, and emotions one may have about climate change, and the many possible interactions they may have with hope, further research on the antecedents of hope in the face of climate change—beyond

factors related to individual and collective action—is of clear importance. The urgency of the problem and the extent of uncertainty about the impending social and psychological impacts necessitate as clear an understanding as possible regarding how factors like MIL, social connectedness, and hope can shape how we approach the challenge of "learning to live-with" climate change and the "affective adaptation" that must accompany our efforts to (re)create promising futures (Verlie, 2019, p. 752).

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