

**Promoting Green Hearts: An Association Between Environmental Values and Civic
Engagement Among Emerging Adults**

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Table of Contents

List of Tables.....	4
List of Figures.....	5
Abstract.....	6
Résumé.....	7
Acknowledgments.....	8
Introduction	9
Civic Engagement and Environmental Civic Engagement.....	11
<i>Emerging Adulthood and Environmental Civic Engagement.....</i>	14
Values and Environmental Values.....	14
<i>Perceived Environmental Values of Parents, Teachers, and Peers.....</i>	15
Emotional Relatedness With Nature.....	20
<i>Relationship With Environmental Values.....</i>	21
<i>Relationship With Environmental Civic Engagement.....</i>	22
<i>Emotional Relatedness With Nature as a Potential Mediator.....</i>	22
Environmental Civic Engagement and Well-Being.....	23
Present Study.....	25
<i>Research Questions and Hypotheses.....</i>	25
Method	26
Participants.....	27
Procedure.....	27
Measures.....	28
<i>Perceived Environmental Values.....</i>	28
<i>Emotional Relatedness With Nature.....</i>	29

Environmental Values and Civic Engagement

<i>Environmental Civic Engagement</i>	30
<i>Well-Being</i>	31
Analytical Plan.....	32
Results.....	32
Assumption Checks.....	32
Preliminary Analysis.....	33
Path Analysis.....	35
Discussion.....	37
Perceived Environmental Values and Environmental Civic Engagement.....	38
Mediating Role of Emotional Relatedness With Nature	40
Environmental Civic Engagement and Well-Being.....	41
Limitations and Future Recommendations.....	42
Implications.....	44
Conclusion.....	46
References.....	47
Appendix.....	85

List of Tables

Table 1. Means, Standard Deviations, and Intercorrelations Among Study Variables	34
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List of Figures

Figure 1. Hypothesized Path Analysis.....	26
Figure 2. Path Analysis with Standardized Co-efficients.....	36

Abstract

Environmental civic engagement (ECE) has been recognized as a way to mitigate the effects of climate change. Environmental values (EVs), including those of socializers (e.g., parents, peers, etc), have been identified among the underlying factors for civic action. However, an indirect route of connection between EVs and engagement involving the potential role of emotions has recently been indicated. Additionally, a link between civic engagement and well-being has also been suggested. This study examined the relationship between emerging adults' perception of teachers, parents, and peers' EVs and the ECE of emerging adults along with the role of emotional relatedness with nature in this relationship. The contribution of ECE to their well-being was also studied. Participants included 71 university students between the ages of 18-29 (80.3% women; $M_{age} = 23.13$, $SD = 2.94$). Results from an over-identified path analysis indicated that emerging adults' perception of peers' EVs was related to their own emotional relatedness with nature. Also, emerging adults' perception of their parents' EVs was related to their own ECE. However, perceived EVs of teachers and peers were not related to emerging adults' ECE, nor did emotional relatedness with nature mediate the relationship between ECE and perceived EVs of parents, teachers, and peers, respectively. Additionally, ECE was not related to well-being. Limitations, future study directions, and practical implications regarding how EVs and ECE can be encouraged among the youth were addressed.

Keywords: environmental civic engagement, perceived environmental values, emotional relatedness with nature, well-being, emerging adulthood

Résumé

L'engagement civique environnemental (ECE) a été reconnu comme un moyen d'atténuer les effets du changement climatique. Les valeurs environnementales (VE), y compris celles des socialisateurs (parents, pairs, etc), ont été identifiées comme les facteurs sous-jacents de l'action civique. Toutefois, un lien indirect entre les valeurs environnementales et l'engagement, impliquant le rôle potentiel des émotions, a récemment été mis en évidence. En outre, un lien entre l'engagement civique et le bien-être a également été suggéré. Cette étude a donc examiné la relation entre la perception qu'ont les adultes émergents des VE des enseignants, des parents et des pairs et l'ECE des adultes émergents, ainsi que le rôle de la relation émotionnelle avec la nature dans cette relation. La contribution de l'ECE à leur bien-être a également été étudiée. Les participants étaient 71 étudiants universitaires âgés de 18 à 29 ans (80,3 % de femmes ; moyenne = 23,13, écart-type = 2,94). Les résultats d'une analyse de cheminement suridentifiée indiquent que la perception qu'ont les adultes émergents des VE de leurs pairs est liée à leur propre relation émotionnelle avec la nature. De même, la perception qu'ont les adultes émergents de l'VE de leurs parents est liée à leur propre ECE. Cependant, la perception des VE des enseignants et des pairs n'était pas liée à l'ECE des adultes en devenir, et la relation émotionnelle avec la nature n'était pas non plus un médiateur de la relation entre l'ECE et la perception des VE des parents, des enseignants et des pairs, respectivement. En outre, l'ECE n'était pas liée au bien-être. Les limites, les orientations futures de l'étude et les implications pratiques concernant la manière dont les VE et l'ECE peuvent être encouragées chez les jeunes ont été abordées.

Mots-clés : engagement civique environnemental, valeurs environnementales perçues, relation émotionnelle avec la nature, bien-être, âge adulte émergent

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Promoting Green Hearts: An Association Between Environmental Values and Civic Engagement Among Emerging Adults

Climate change is expected to cause an additional increase in the global temperature beyond 1.5% within the next decade (Harvey, 2023). Moreover, financial and political inadequacies in terms of a lack of governmental investment in environmental conservation and a lack of coordination concerning tax impositions (e.g., carbon tax) have worsened the condition (Avi-Yonah et al., 2009; McCarthy et al., 2012). The younger generation is likely to bear the brunt in terms of frequent forest fires, melting glaciers, etc (Cianconi et al., 2020). Considering these circumstances, the effectiveness of collective efforts of individuals to combat the issue of climate change has been recently highlighted (Roser-Renouf et al., 2014). For example, the efforts of the Blue Dot movement led by the David Suzuki Foundation in Canada, popularly known as the grassroots movement, proved to be successful in gaining the legal recognition in Canada of every individual's right to a clean and healthy environment (David Suzuki Foundation, 2023; Environment and Climate change Canada, 2022). This implies that, in addition to the efforts of those in power, the local-level collective actions can also be impactful and should not be underestimated (Gelissen, 2007).

In light of this, environmental engagement (EE) and more specifically environmental civic engagement (ECE) is an important avenue to explore with regard to making a positive impact against climate change. Civic engagement refers to general collaborative action taken by people to address a common issue to strive for public welfare (Flanagan & Bundick, 2011), and EE focuses specifically on safeguarding the environment (Dean et al., 2018). Further, ECE is a sub-component of EE that includes both activist and non-activist engagement (e.g., policy support, petition signing, leading environmental campaigns, etc; Stern, 2000). More importantly,

Environmental Values and Civic Engagement

ECE becomes a critical component especially during the period of emerging adulthood, because young adults begin to play a critical role in determining the future of the environment (Effendi et al., 2020) through their involvement in environmental protection (Djuwita & Benyamin, 2019). Although more than half of emerging adults have been reported to be civically engaged (e.g., in sports, culture, etc), less than 10% of young adults appear to be involved in ECE (Government of Canada, Statistics Canada, 2020).

This leads to the question of what drives EE. Interestingly, environmental values (EVs) that are characterized by the concern for nature (Steg, 2016) have been identified among the underlying factors for EE including civic action (e.g., de Groot & Steg, 2008; Schultz & Zelenzy, 1999). Since the phase of emerging adulthood also involves the redefinition of the value system (Belic et al., 2022), taking the process of value socialization into account is imperative (including the role of significant others) (Knafo & Schwartz, 2003). In line with this, parents (e.g., Gong et al., 2021; Scopelliti et al., 2022) and peers' influence on values has been found to remain influential even during emerging adulthood (Bouman et al., 2020; Lin & Jia, 2023). However, the role of teachers at different levels of education in developing values has not been extensively studied (Liang et al., 2022), considering the critical recognition of the influence of educational institutions and teachers in encouraging students' civic education (Treviño et al., 2017). Thus, the role of teachers' EVs in relation to students' EE including ECE is yet to be explored.

Although EVs are directly related to EE, some studies have also found an indirect route of connection between the two (e.g., Ünal et al., 2018; Yousefpour et al., 2019). More specifically, the potential role of feeling emotionally connected with nature in the relationship between EVs to EE has recently been pointed out (e.g., Adams et al., 2020; Martin et al., 2020), with the possible role of emotions in influencing behaviors and choices (Antonetti & Maklan,

Environmental Values and Civic Engagement

2014; Onwezen, 2015). Additionally, any kind of community engagement has also been found to bear a connection with the well-being of students (Hyypä & Mäki, 2003). Specifically, a link between civic engagement and well-being has been suggested (e.g., Hart et al., 2014). From a broader human development context, this research is critical considering the growing importance of civic engagement concerning climate during emerging adulthood (Flanagan & Levine, 2010). This stage is further characterized by the identity development phase including value redefinition, whereby the perception of others' values (e.g. significant others) also plays an important role (Wright, 2012). Thus, the current research examined a holistic model of the relationship between emerging adults' perception of teachers, parents, and peers' EVs and the ECE of emerging adults along with the role of emotional relatedness with nature in this relationship. The contribution of ECE to their well-being was also studied.

Literature Review

The following literature review first discusses civic engagement with an emphasis on environmental civic engagement (ECE). This is followed by an explanation of values in general, with environmental values (EVs) in particular, along with perceived EVs of parents, teachers, and peers. Next, emotional relatedness with nature is discussed in relation to ECE and EVs, and its contribution to the relationship between ECE and EVs is highlighted. Finally, well-being and its relationship with ECE is discussed. The gap in the literature is identified and research objectives are stated.

Civic Engagement and Environmental Civic Engagement

The construct of civic engagement (Fong & To, 2022) can be described as collaborative action taken by people to address a common issue (American Psychological Association, [APA], 2016). More specifically, it involves social connection ranging from individual to collective

Environmental Values and Civic Engagement

participation with an aim to strive for public welfare (Ekman & Amnå 2012; Flanagan & Bundick, 2011), and includes behaviors such as demonstrations, petition signing, organizational membership, money donation, etc (Valenzuela et al., 2009). Given its vital role in both environmental and societal problems (Ardoin et al., 2022), as a multidimensional construct (Wray-Lake et al., 2016), it includes pro-environmental behaviors, volunteering, protesting, etc (Wray-Lake et al., 2017). Before understanding the concept of environmental civic engagement (ECE) it is first important to understand pro-environmental behaviors. Focusing specifically on pro-environmental behaviors, it refers to behaviors positively impacting the environment and reducing harm to the climate (Lange & Dewitte, 2019; Steg & Vlek, 2009), and as a multidimensional construct (Blankenburg & Alhusen, 2019) includes both private sphere (e.g., recycling, water conservation, etc) and public sphere activist and non-activist behaviors (volunteering, petition signing, leading environmental campaigns, etc; Larson et al., 2015; Sia et al., 1985; Stern, 2000).

Since pro-environmental behaviors cover a wide range of behaviors, the division of this construct specifically into private and public sphere behaviors has been widely recognized, as pointed above, (Feng & Reisner, 2011; Rice, 2006; Stern, 2000), with public sphere behaviors considered to be more impactful, concerning environmental protection (Stern, 2000). In this context, public sphere pro-environmental behavior (Alisat & Reimer, 2015; Gkargkavouzi et al., 2018), refer to behaviors that go beyond personal-level efforts to protect the environment via collective efforts (e.g., seeking information about environmental issues, actively participating, leading pro-environmental rallies; Alisat & Reimer, 2015). More specifically, public sphere pro-environmental behaviors include both activist and non-activist behaviors (Stern, 2000) whereby activism refers to efforts to advocate for environmental protection via petitions and

Environmental Values and Civic Engagement

demonstrations while non-activism implies support for environmental policies, etc (Stern et al., 1999; Stern, 2000).

Given the lack of specific definitions surrounding the pro-environmental behaviors construct, several terms (e.g., ecological behavior, environmental behavior, environmental action, conservation behavior, eco-friendly behavior, etc; Tian & Liu, 2022) have been used interchangeably with it. Environmental engagement (EE) is another term that can be used interchangeably, in place of pro-environmental behaviors, (Loy & Reese, 2019; Raja & Carrico, 2022; Stern, 2000), whereby EE also includes both private and public sphere environmental engagement. More specifically, EE refers to the efforts to safeguard nature along with participation in environmental protection awareness (Dean et al., 2018), and public sphere engagement, or in other words ECE, as a sub-component of EE, includes both activist and non-activist engagement (e.g., policy support, petition signing, leading environmental campaigns, etc; Stern, 2000), similar to the sub-components of pro-environmental behavior. Given the fact that youth engagement in environmental protection has been regarded as critical for the future of our planet (Tsykalova, 2021), the term pro-environmental behavior has been switched with EE and will make intentional use of EE throughout, with an explicit focus on ECE. This is because civic engagement becomes a critical component during the transitioning phase from adolescence to adulthood primarily due to the exposure to various views be it social or political via sources such as media, volunteering in groups, etc (Flanagan & Levine, 2010), which also contributes to their own views and identity. Moreover, emerging adults tend to be higher on public sphere EE or ECE (e.g., petition signing, demonstrations, etc) given their access to resources (e.g., internet, education) (Balžekienė & Telešienė, 2012) and willingness to undertake sustainability campaigns (Mouchrek et al., 2023). Thus, ECE will be used under a larger construct of EE considering the

Environmental Values and Civic Engagement

greater inclination of emerging adults towards civic engagement (Flanagan & Levine, 2010).

More specifically, emerging adults play a vital role in defining the future and influencing policymaking including the natural environment, which is why considering this age group is of critical importance (Vicente-Molina et al., 2013).

Emerging Adulthood and Environmental Civic Engagement

Emerging adulthood, a term devised by Arnett (2000) covers the age group 18-29 (Arnett, 2011). Environmental civic engagement (ECE) becomes a critical component specifically during this transition phase (Flanagan & Levine, 2010). More importantly, university students reach a stage where they can practically devote time and effort to environmental conservation activities given their ability to acknowledge the threat through a more mature lens (Abd-Rahman et al., 2022). Since, identity development continues even during this stage (Belic et al., 2022), values remain a core component (Wright, 2012). Among several factors underlying environmental engagement (EE) including attitudes, norms, identity, and knowledge (Miller et al., 2022; Stern et al., 1999; Van der Werff et al., 2013), values, and environmental values (EVs) (which implies concern for nature; Schultz et al., 2007) in particular, have been identified as factors related to EE including ECE (Corner et al., 2014; Jia et al., 2017). Thus, the following section will focus on values in general and EVs in particular by tracing a link with EE including ECE.

Values and Environmental Values

Values, as Schwartz (1992) defines them, refer to desirable goals that serve as guiding principles in one's life, characterized by stability (Rokeach, 1973). They explain behavior and attitudes (Schwartz, 2012), influence actions, and remain prominent regardless of context (Schwartz, 1992). Environmental/biospheric values (EVs) are categorized by the concern for nature (Schultz et al., 2004) along with an understanding of the interdependency between nature

Environmental Values and Civic Engagement

and human life (Mamun et al., 2022). They play an important role in determining environmental choices, intentions, and engagement (Steg & de Groot, 2012) and fall under the category of self-transcendence values (refers to concern for the welfare of others and nature; Schwartz, 1994, 2012) and remain closely connected to the domain of environmental protection and care for nature (Gifford & Nilsson, 2014). Since emerging adulthood is characterized by the process of identity development (Schwartz et al., 2005) along with the redefinition of the value system (Belic et al., 2022), taking the value socialization process into account is important.

Perceived Environmental Values of Parents, Teachers, and Peers

Socialization refers to the process by which societal values, behaviors, and skills are learned by young people (Zigler & Child, 1969). In the context of the environmental domain, environmental socialization implies the process via which young people learn environmental values, skills, attitudes, and engagement (Gentina & Muratore, 2012). Parents, teachers, and peers have been considered key socializers for young people even in the environmental domain (Lakew, 2020). Since one's values are shaped by the perception of the values of important/significant others in their life (e.g., Belic et al., 2022; Knafo & Schwartz, 2003; Wong, 2021), it is important to account for perceived values. More specifically, perceived values deal with underlying goals and highlight the reasons for engaging in behaviors (Bouman et al., 2020).

Recent research has started recognizing the role of perceived environmental values (EVs) of one's group in environmental engagement (EE), although the field of research largely remains limited (Bouman et al., 2020; Bouman et al., 2021). Perceived values are considered to be critical from the point of value transmission process (Grusec & Goodnow, 1994). For example, a cross-cultural study showed an association between perceived self-transcendent values including EVs of others (e.g., a typical British or American person) and environmental

Environmental Values and Civic Engagement

civic engagement (ECE) (e.g., voting behavior; Sanderson et al., 2019). Another study by Huang et al. (2022), showed a low but significant correlation between perceived group EVs prevalent in one's culture and EE intentions specifically for ECE (e.g., willingness to support environmental policies) in both individualistic and collectivistic cultures. Given a limited focus on perceived values (Bouman et al., 2020), the emphasis will be on the perceived values of others (i.e., parents, teachers, and peers) in this study.

Parents are considered to be one of the important agents of socialization (Maccoby, 1992) and strongly impact a child's values and behaviors as socializers (Bandura & Walters, 1977; Bronfenbrenner, 1979). Concerning the environmental domain, family values have been found to play an important role when it comes to EE (Léger & Pruneau, 2012). For example, studies have reported similarities between parent-child and adolescent EVs (Balunde & Perlaviciute, 2023; Gong et al., 2021; Grønhøj & Thøgersen, 2009) including perceived EVs of parents (Grusec & Goodnow, 1994). In fact, the influence of family EVs (e.g., mother, father, or grandparents) was regarded as an important factor among the US and Europe-based environmentalists (Chawla, 1999). Concerning emerging adulthood, this stage involves assuming different roles and responsibilities, however, it does not imply complete independence from parents owing to their need for financial and emotional support (Alfieri et al., 2014). University students still bear a connection with their parents/families (Aquilino, 1997) which comes from the fact that as they move out and start living away from their parents, their relationship is marked by fewer conflicts and fosters positive parent-child relationships (Aquilino, 1997). This in turn bolsters the acceptance of parent's values (Döring et al., 2017; Grønhøj & Thøgersen, 2017), which influences behavior. In line with this, empirical evidence also suggests that perceived parental EVs were found to be strongly related to emerging adults' EE including ECE (e.g., seeking

Environmental Values and Civic Engagement

environmental information actively through media, environmental citizenship, etc; Scopelliti et al., 2022). Moreover, late adolescents' perception of their parent's EVs bore a strong association with their own EVs (Lakew, 2020), and a significant correlation was found between family EVs and environmental volunteering among Australian university students' environmental groups (Pinder et al., 2020).

Furthermore, in terms of the influence of mother and father, mothers have been actively contributing to the local grassroots environmental groups (Connolly, 2004; Culley & Angelique, 2003) and influence civic participation among children (Muddiman et al., 2018), while fathers also encourage public sphere environmental actions (Scopeletti et al., 2022) by emphasizing more on values of independence among children (Power & Shanks, 1998). Thus, parental EVs seem to play an important role when it comes to EE including ECE considering the differential influence of mother and father, even during the phase of emerging adulthood.

After parents, peers and friends are also considered the influential figures both during childhood (Harter et al., 1996) as well as college years (Astin, 1993; Homel et al., 2020). This is because the process of identity development is ongoing even during emerging adulthood (Arnett, 2000; Wood et al., 2017), and there is often a tendency to associate with groups similar to oneself in terms of beliefs, opinions, etc (Lazarsfeld & Merton, 1954). Thus, the individual members of a group are more likely to adopt the values they perceive are prevalent in the group they are a part of, considering their need to belong to that group (Brechwald & Prinstein, 2011). Borrowing from this, one's EVs are likely to be influenced by the values of their peer group and friends (Kelly et al., 2023). A study on high school students showed a higher level of value similarity among friends concerning self-transcendence values including EVs (Solomon & Knafo, 2007). Even for adults, their perception of peers' EVs in a political context influenced their endorsement

Environmental Values and Civic Engagement

of EVs (Bouman et al., 2020). Interestingly, the perceived EVs of one's peer group influence one's own EE. For example, studies have shown the association between peer influences (in terms of the motivating force) and EE (i.e., green purchasing behaviors; Suki & Suki, 2019), although primarily centered around the private domain EE over the public sphere. Moreover, a connection between the influence of friends (in terms of discussion about environmental issues, green purchasing, etc) and university students' EE was also found (Simiyu et al., 2022).

Environmentalists also regarded their friends as influencing agents during university years for their environmental activism or volunteering in green organizations (Chawla, 1999). Another study on Chinese university students by Wang and colleagues (2021), found a link between the perceived EVs of classmates and their own EE, although limited to private sphere engagement (e.g., recycling, littering).

Apart from parents and peers, the critical role of teachers as influencing agents and role models concerning environmental protection has also been recognized (Esa, 2010; Potter-Nelson & O'Neil, 2019). There have been some studies involving teachers in the environmental domain. For example, research has been done on cross-cultural differences in pre-service teachers' environmental attitudes (Watson & Halse, 2005), and a connection between teachers' environmental attitudes and their EE has been traced (Gkargkavouzi et al., 2018).

One of the studies also found an association between teachers' EVs and their own EE (Sulaeman et al., 2023). In terms of the influence of teachers, a handful of studies have also demonstrated the influence of teachers on students' environmental attitudes, beliefs, and EE (e.g., Buldur & Ömeroğlu, 2018; Nyberg et al., 2020). Moreover, a study with descriptive findings showed that teachers (at the secondary and university level) who discussed about local environmental issues or engaged their students in environmental protection activities were rated

Environmental Values and Civic Engagement

as the inspiring and influencing factors for EE among environmental activists (Chawla, 1999).

Additionally, a study on elementary school teachers found them to have positive attitudes toward environmental education (Hotchkiss, 2011).

Considering the available evidence, although the focus has been on teachers' environmental attitudes, EE, and environmental knowledge, the value element still stands missing. More importantly, educational institutions can have a drastic impact on student values or in other words, educational institutions could be considered as the ideal atmosphere to impart values to students including EVs. However, there has hardly been any emphasis on EVs in educational institutions (e.g., schools; Husin & Saleh, 2019, Madura, 2019 as cited in Husin & Saleh, 2019). Importantly, EVs can be developed at all levels of education, be it primary, secondary, or tertiary (Teng et al., 2017). As far as teachers' views on their values are concerned, they aim to serve as role models for their students (Thornberg & Oğuz, 2013) and impart those values to their students. Additionally, studies also have found that informal student-teacher interaction even at colleges (e.g., Pascarella & Terenzini, 2005; Thompson, 2001), and professor's position of authority (Emmanuel & Delaney, 2014) can influence student values. Moreover, teachers tend to bring their values to the classroom besides their area of expertise (Kennelly et al., 2008) with an aim to instill those values in their students (Thornberg & Oğuz, 2013). Given the important recognition of teachers' role in the area of environment with a lack of research on how their EVs can influence student EE, this study will consider perceived EVs of teachers. Thus, this study will look at the role of perceived EVs of parents, teachers, and peers and how it is linked to the EE of emerging adults with a special emphasis on ECE.

Furthermore, given the abstract nature of values, some studies have also indicated that values cannot directly transform into behavior, and there might be some other factors influencing

Environmental Values and Civic Engagement

this relationship (Nordlund & Gavrill, 2002; Ruepert et al., 2016; Ünal et al., 2018; Wang et al., 2021; Yousefpour et al., 2019). More specifically, this includes the recent recognition of the potential role of emotions (e.g., Bösehans et al., 2020; Li et al., 2022).

Emotional Relatedness With Nature

The term nature encompasses a variety of flora and fauna as well as landscapes including plants, animals, trees, green spaces, rivers, oceans, etc (Nisbet & Zelenski, 2014) and humans have an inborn tendency to connect with nature, which comes from the biophilia hypothesis (Wilson, 1984). Being evolutionary in nature, this hypothesis refers to the attraction for all life on earth as well as human dependence on nature (Kellert, 1993). Based on the human-nature relationship, nature relatedness or nature connectedness (used interchangeably in this study; Nisbet & Zelenski, 2014) can be conceptualized as a highly subjective sense of connection with nature (Nisbet & Zelenski, 2014).

Emotional relatedness with nature has specifically been defined as the experience of conscious emotion of connection with nature without accounting for any cognitive or behavioral elements (Kals, 2014). Since there is no one specific definition surrounding this construct, different terms have been used to refer to the concept (e.g., emotional affinity with nature, nature relatedness, the inclusion of nature in self; Kals, 2014), and assessed nature connectedness/relatedness by several measures (e.g., environmental identity; Clayton, 2003, emotional affinity toward nature; Kals et al., 1999, connectedness with nature; Mayer & Frantz, 2014, nature relatedness; Nisbet et al., 2009, inclusion of self in nature, etc). Although the most commonly used measure for emotional relationship with nature in the field of environmental psychology is connectedness with nature (CNS; Mayer & Frantz, 2014), some drawbacks concerning its evaluation of emotional connection with nature have been pointed out (Perrin &

Environmental Values and Civic Engagement

Benassi, 2009). More specifically, a series of exploratory, confirmatory, and content analyses of CNS showed that it does not tap into the emotional side of nature connection, with items measuring only the cognitive dimension of nature connection (Perrin & Benassi, 2009). Given the need for a more comprehensive measure and the cautionary use of CNS for assessing emotional relationship with nature (Perrin & Benassi, 2009), love and care for nature has emerged to be another construct (Perkins, 2010). It refers to the feelings of love, interest, and emotional bond with nature marked by a sense of responsible commitment to safeguard the environment (Perkins, 2010), and will be used as a measure in this study.

Relationship With Environmental Values

Given that the value-emotion link in the environmental domain is relatively a new one, much of the evidence comes from the connection between emotional relatedness with nature and personal values. In fact, a very recent study found an association between self-transcendent values including environmental values (EVs), and affiliative emotions (e.g., guilt, feelings of friendliness, etc; Conte et al., 2023). Interestingly, an experimental study conducted by Conte et al. (2022) on university students showed that values precede emotions which are often evoked in response to the value-relevant stimuli. For example, a link was established between EVs and emotions when participants looked at positive environmental stimuli (e.g., picture of a landscape), whereby the emotional intensity was physiologically measured via skin conductance response. Another cross-sectional study pointed towards the link between EVs and nature connection among Chinese university students (Wu & Zhu, 2021). This link between the relationship with nature and self-transcendent values (including EVs) was further empirically supported (Hatty et al., 2020). Since the aforementioned studies center around personal EVs, only one piece of evidence to date deals with perceived EVs. Specifically, a study by Oh and

Environmental Values and Civic Engagement

colleagues (2021), demonstrated an association between EVs (i.e., one's family values) and one's emotional relationship with nature. Considering that other people's values have the potential to influence and shape our own values and behavior (Barni et al., 2014; Oh et al., 2021), and owing to the available evidence tracing a connection between personal EVs and emotional relationship with nature, perceived EVs of socializers (i.e., parents, teachers, and peers) will be studied in relation to emotional relatedness with nature. Additionally, being connected to nature encourages environmentally friendly actions and indeed emotional relatedness with nature has been found to bear a connection with ECE.

Relationship With Environmental Civic Engagement

More specifically, a link has been traced between nature relatedness and environmental engagement (EE) (e.g., educating oneself about environmental issues, spreading awareness about environmental actions; Barrera-Hernández et al., 2020, participation in environmental demonstrations; Ibáñez-Rueda et al., 2020). Other studies have also traced a connection between emotional relatedness with nature and EE including environmental civic engagement (ECE) (e.g., participation in environmental organizations, accessing environmental news; volunteering, signing petitions; Anderson & Krettenauer, 2021; Martin et al., 2020; Tzankova et al., 2023). For example, a cross-sectional study on a Canadian sample by Anderson and Krettenauer (2021) showed a positive association between nature relatedness and EE in general as well as ECE including environmental club volunteering, self-education via environmental news, etc, besides meta-analytic studies, (Mackay & Schmitt, 2019; Whitburn et al., 2019). Thus, based on the connection of emotional relatedness with nature with both EVs and ECE, it is clear that emotional relatedness with nature can serve as a potential mediator between the two.

Emotional Relatedness With Nature as a Potential Mediator

Environmental Values and Civic Engagement

The evidence for the potential role of emotional relatedness with nature in the relationship between environmental (EVs) and environmental engagement (EE) comes from a study by Li et al. (2022) whereby emotions mediated the relationship between EVs and EE among university students. More specifically, this connection draws partial support from the value-belief norm theory (Stern et al., 1999; Stern, 2000) which supports the idea of the indirect influence of values on EE. Originally it propounded that there is a causal connection between values, beliefs, norms, and behavior. Although, it has been widely applied to explain EE mostly in private sphere behaviors (e.g., recycling; Han et al., 2017; Lind et al., 2015; Onel & Mukherjee, 2017; Poortinga et al., 2004; Scherbaum et al., 2008) there has been limited application to public sphere EE including environmental civic engagement (ECE) (Dietz et al., 2007; Doherty & Webler, 2016; Kim & Shin, 2015; Sanderson et al., 2017). To make the theory more comprehensive, the inclusion of several other factors (e.g., social norms, self-efficacy) to enhance its explanatory power has been pointed out (Awais et al., 2022). Since it majorly focuses on cognitive factors, accounting for the emotional factors is also important considering the influence of emotions on behavior and decision-making (Onwezen, 2015). Thus, it is important to study the role of emotional relatedness with nature in the relationship between EVs and ECE.

Climate change has also been found to bear a connection with well-being (e.g., Lawrance et al., 2022). Empirical studies have traced a link between any kind of community involvement such as civic engagement and well-being (Hyypä & Mäki, 2003). Thus, the following section explores the connection between ECE and well-being.

Environmental Civic Engagement and Well-Being

Climate change has recently been identified as a factor that impacts both the physical environment (e.g., rising sea levels, heat waves, etc) and our well-being in terms of increased

Environmental Values and Civic Engagement

anxiety, depression, aggression, and substance abuse (Cianconi et al., 2020). Well-being (Diener et al., 1999) has been defined in terms of positive functioning encompassing emotional, social, and psychological well-being (Magyar & Keyes, 2019). More specifically, emotional well-being goes beyond the experience of positive feelings to include life satisfaction and the absence of negative emotions (Keyes & Magyar-Moe, 2003; Shmotkin, 1998). Psychological well-being includes environmental mastery, self-determination, the ability to maintain positive social relations, acceptance of both good and bad sides of oneself, purpose, and personal growth (Ryff & Keyes, 1995). Social well-being, on the other hand, includes social integration, social acceptance, trusting others, social contribution, social coherence, and social actualization (Keyes, 1998). Since climate change is related to well-being, as pointed out above, (Charlson et al., 2021; Hayes et al., 2018; Lawrance et al., 2022), environmental engagement (EE) including environmental civic engagement (ECE) can act as a buffer (e.g., volunteering for environmental protection, discussions with friends, signing environmental petitions, participation in environmental campaigns, etc) which is linked to emotional (e.g., Tapia-Fonllem et al., 2013) as well as social and psychological well-being (e.g., Liu et al., 2022; Zawadzki et al., 2020). In fact, a study found EE including ECE (e.g., environmental organization membership, volunteering, etc) to be related to well-being (Laffan, 2020). Cross-cultural studies also show a strong relationship between ECE (e.g., donating money and time to environmental conservation activities, learning about environmental issues, etc) and well-being (Capstick et al., 2022; Martin et al., 2020). Overall, this study aims to consider how emerging adults' perception of their parents, teachers, and peers EVs relates to their own ECE and how emotional relatedness with nature can potentially contribute to the relationship between perceived EVs and ECE. Furthermore, the role of how ECE contributes to well-being will be studied.

The Present Study

Considering the aforementioned constructs and the available evidence, it is evident that emerging adulthood is a critical period concerning civic engagement specifically with regard to the environment. Moreover, when it comes to the factors driving civic engagement, values seem to play an important role. More importantly, parents' and peers' environmental values (EVs) are critical when it comes to the socialization process. Furthermore, the role of educational institutions and educators/teachers in civic values and civic engagement has also been recognized as of prime importance. However, the role of teachers' EVs on students' environmental civic engagement (ECE) is yet to be explored.

Besides this, factors such as norms, and attitudes have been examined between EVs and environmental engagement (EE), however, the role of emotions also needs to be studied considering the potential of emotions to influence behavior (Onwezen, 2015). More importantly, the need for finding additional pathways and conditions under which values, directly and indirectly, can influence environmental actions has been signaled (Steg & de Groot, 2012). Since emotional relationship with nature has been found to be associated with a diverse range of EE (Whitburn et al., 2019), explicit focus on ECE is required with the growing importance of civic engagement in emerging adulthood and the role of emotions in behavior. Similarly, although emotional relationship with nature is associated with EVs, perceived EVs need more exploration (Oh et al., 2021) taking the importance of the value socialization process into account. Finally, a link between ECE and well-being being has also been recently traced (Schmitt et al., 2018).

Research Questions and Hypotheses

Specifically, this study examined a model (see Figure 1) and explored: (RQ1) Whether there is a relationship between emerging adults' perception of their parents, teachers, and peers'

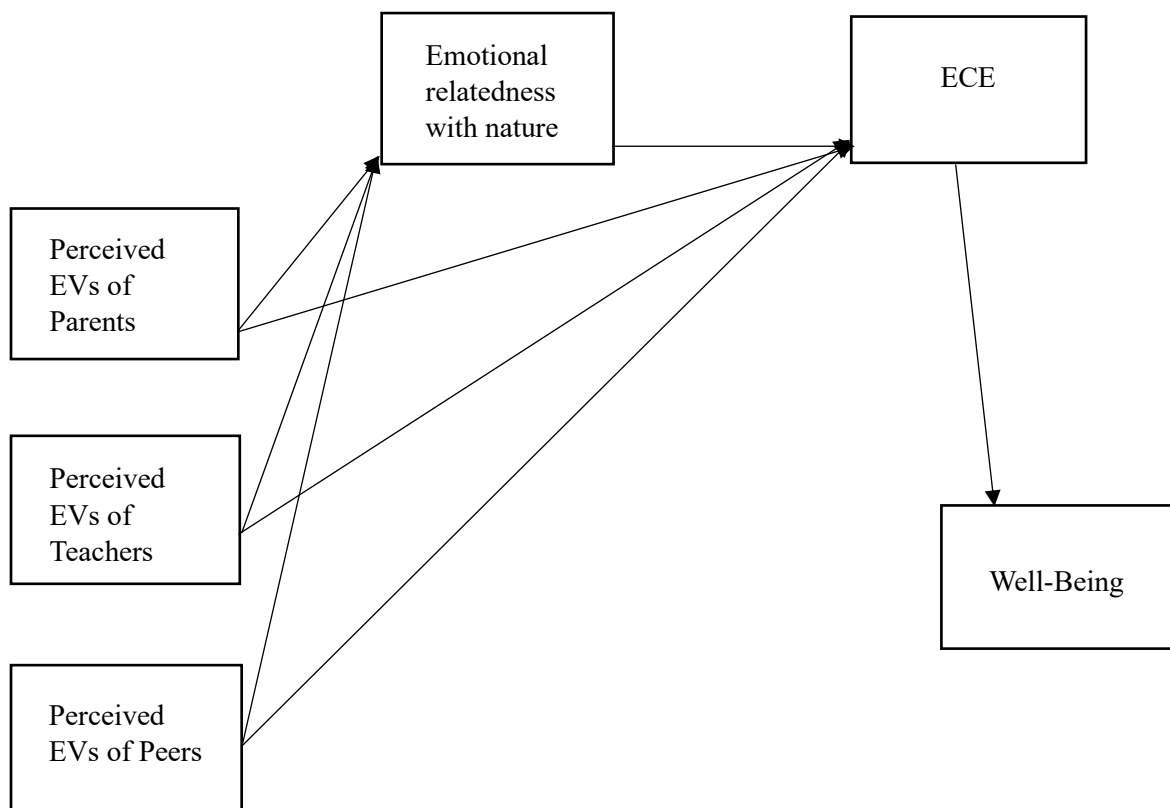
Environmental Values and Civic Engagement

environmental values (EVs) and their own environmental civic engagement (ECE), respectively.

Based on previous studies, it was hypothesized that (H1) emerging adults' perceptions of their parents, teachers, and peers' EVs would positively relate to their ECE, respectively. Secondly, it explored (RQ2) how emotional relatedness with nature will contribute to the relationship between perceived EVs of parents, teachers, and peers and ECE, respectively. It was hypothesized that (H2), emotional relatedness with nature will mediate the relationship between perceived EVs of parents, teachers, and peers, and ECE, respectively. Finally, this study examined (RQ3), whether ECE contributes to well-being. Consistent with the prior literature, it was hypothesized that (H3), ECE will positively relate to well-being.

Figure 1

Hypothesized Model for Path Analysis



Note. EVs = Environmental Values, ECE = Environmental Civic Engagement

Method

Participants

A total of 102 participants between the ages of 18 and 29 were recruited from Universities across Canada. The participants were included in the study if they met the following criteria: (1) currently enrolled in a Canadian university (2) between the ages of 18 and 29. Participants who did not meet the criteria and did not respond to any of the variables were removed from the analysis. The final sample included 71 university students (80.3% women; M age = 23.13, SD = 2.94). In terms of education level, there were almost a similar number of participants/students (i.e., at the master's or doctorate level) (50.8%) and undergraduate students (49.3%). Concerning ethnic background, more than one-third of the participants were European (38.0%), followed by North American (23.9%), West Asian/Middle Eastern (13.0%), East Asian (10.9%), South Asian (8.7%), Latin and South American (2.2%), African (2.2%), and Caribbean = (1.1%). As far as sexual orientation is concerned, majority of students reported being heterosexual (66.2%), followed by bisexual (22.5%), and homosexual (9.9%).

Procedure

Prior to the participant recruitment process, ethics approval was granted from the University's research ethics board. Participant recruitment was done through social media platforms (e.g., student groups on Facebook and Instagram). Participants interested in this study accessed it via a link or the QR code in the advertisement post, which directed them to the Qualtrics platform where they answered an anonymous survey. Before beginning to fill out the online survey, individuals read and signed the online consent form. The confidentiality of their responses was assured along with the provision for skipping any questions participants found uncomfortable answering. Participants could stop answering the survey at any time, given the voluntary nature of participation. A list of mental health resources was also attached at the end of

Environmental Values and Civic Engagement

the survey. After consenting to participate in the study, participants entered their demographic information followed by the standardized measures used in the study. In the end, they were redirected to the compensation page where they entered a 1 in 25 chance of winning a \$25 Amazon gift card. All in all, it took approximately 30 minutes for the participants to complete the survey.

Measures

Demographics

Participant information about their age, gender, current year of study, sexual orientation, ethnic and cultural background was sought through the demographic questionnaire.

Perceived Environmental Values

Perceived environmental values (EVs) of parents, teachers, and peers were measured using a 17-item Environmental Portrait Value Questionnaire (E-PVQ; Bouman et al., 2018) comprising four dimensions i.e., biospheric, altruistic, hedonic, and egoistic, based on the Portrait Value Questionnaire (Schwartz, 2012). The scale was adapted for this study, whereby participants first selected the most influential parent (mother, father, or other), teacher (elementary, secondary, or university professor), and peer figure (friends, classmates, or other), respectively, and answered 17 items concerning perceived values including all four dimensions, for all three figures separately. The participants indicated the extent to which the person described in the statements was like the most influential figure selected by the participant. Items were rated on a seven-point scale ranging from 1 = *totally not like the most influential figure in my life* to 7 = *totally like the most influential figure in my life* for parent figure, for teacher figure, and for peer figure (e.g., “it is important to this person to protect the environment”, “it is important to this person to respect nature”, “it is important to this person to be in unity with

Environmental Values and Civic Engagement

nature”). E-PVQ’s reliability ranges from .68 to .88 (Bouman et al., 2018). It has also been found to be a reliable and valid measure in a previous study on university students (Tamar et al., 2020).

For this study, only the biospheric subscale was used. It demonstrated good reliability for perceived EVs of parents ($\alpha = .91$), teachers ($\alpha = .94$), and peers ($\alpha = .92$), respectively. A confirmatory factor analysis (CFA) using ML estimators and bootstrapping was used. For model fit evaluation, the cut-off values for Comparative Fit Index (CFI) $> .90$, the Standardized Root Mean Square Residual (SRMR) values $< .10$, and Root Mean Square Error of Approximation (RMSEA) $< .08$ were used, which are indicative of a good model fit based on prior recommendations (Bentler & Bonett, 1980; Browne & Cudeck, 1992; Hu & Bentler, 1999).

Considering these criteria, model fit indices for perceived EVs of parents demonstrated overall poor fit, $\chi^2(2) = 9.217$, $p = .01$, CFI = .967, RMSEA = .225 [90% CI = .094, .381], SRMR = .032, for perceived EVs of teachers showed overall poor fit, $\chi^2(2) = 3.968$, $p = .137$, CFI = .993, RMSEA = .125 [90% CI = .000, .307], SRMR = .018, and for perceived EVs of peers revealed overall poor fit, $\chi^2(2) = 7.492$, $p = .023$, CFI = .975, RMSEA = .214 [90% CI = .067, .387], SRMR = .030. The exploratory factor analysis revealed that all 4 items of perceived EVs of parents had factor loadings ranging from .751 to .934, 4 items of perceived EVs of teachers had factor loadings ranging from .738 to .992, and 4 items of perceived EVs of peers had factor loadings ranging from .701 to .963. Overall, they were acceptable considering a cut-off of .40 and above for factor loadings irrespective of the sample size (Stevens, 1992). Although it has been suggested that each value should be centered on the mean of all items (Schwartz, 2003), Borg and Bardi (2016) showed that this approach may result in the loss of valuable information (He & van den Vijver, 2015), which is why no mean centering was done.

Emotional Relatedness With Nature

Environmental Values and Civic Engagement

The 15-item Love and Care for Nature Scale (LCN; Perkins, 2010) was used to assess emotional relatedness with nature which is a 15-item Likert scale-based survey. Participants rated the items (e.g., “I feel a personal sense of interconnectedness with the rest of nature”) on a seven-point Likert scale with responses ranging from 1 = *strongly disagree* to 7 = *strongly agree*. The scale demonstrates high internal consistency, and criterion, content, and construct validity ($\alpha \geq .93$; Perkins, 2010).

Its psychometric properties in terms of reliability stand reasonable in the university student population (Garza-Terán et al., 2022), and demonstrated excellent reliability in this study ($\alpha = .96$). CFA with bootstrapping provided model fit indices whereby they demonstrated overall poor fit, $\chi^2(90) = 202.21, p < .001$, CFI = .865, RMSEA = .147 [90% CI = .120, .174], SRMR = .058. Furthermore, exploratory factor analysis showed that all 15 items of LCN had acceptable loadings (i.e., a cut-off of .40 and above for factor loadings irrespective of the sample size; Stevens, 1992) ranging between .596 and .934.

Environmental Civic Engagement

Environmental civic engagement (ECE) was assessed using a well-used measure, Environmental Action Scale (EAS; Alisat & Reimer, 2015) which is an 18-item Likert scale-based survey. These items were rated on a 5-point scale ranging from 0 = *never* to 4 = *frequently*, based on the report of their activities in the last 6 months (e.g., “took part in a protest/rally about an environmental issue”). In terms of its psychometric properties, the developers of the EAS scale, Alisat and Reimer (2015) found a good internal consistency ($\alpha = .92$) and convergent validity, with EAS scores significantly related to environmental identity ($r = .36, p < .001$) and self-rated interest in the environment ($r = .49, p < .001$).

Environmental Values and Civic Engagement

It also demonstrated excellent reliability in this study ($\alpha = .928$). CFA with bootstrapping provided model fit indices whereby they demonstrated overall poor fit, $\chi^2(104) = 379.61, p < .001$, CFI = .614, RMSEA = .214 [90% CI = .084, .106], SRMR = .111. On the other hand, EFA revealed that all 18 items of ECE had loadings ranging from .364 to .769. However, considering the cut-off of .40 and above for factor loadings irrespective of the sample size (Stevens, 1992), item 1 with a factor loading of .384 and item 4 with a factor loading of .364 were dropped thus leaving factor loadings ranging from .558 to .769. Thus, the scale with the final 16 items revealed excellent reliability ($\alpha = .931$).

Well-Being

Well-being was assessed using the Mental Health Continuum-Short Form (MHC-SF; Keyes, 2009) which is a 14-item Likert scale-based survey, that measures each facet of well-being: psychological well-being (6 items; e.g., “that your life has a sense of direction and meaning to it”), social well-being (5 items; e.g., “that you belonged to a community, like social group or your neighborhood”) and emotional well-being (3 items; e.g., “how often do you feel interested in life”). The answers were based on the feelings experienced in the past month. The participants rated the items on a 6-point Likert-type scale ranging from 0 = *never* to 5 = *every day*. Concerning the psychometric properties, the measure shows a good internal consistency ($\alpha > .80$; Keyes, 2009) and test-retest reliability ($r = .65$; Lamers et al., 2011), and demonstrated good reliability in this study ($\alpha = .929$).

CFA with bootstrapping provided model fit indices whereby they demonstrated overall poor fit, $\chi^2(74) = 148.18, p < .001$, CFI = .873, RMSEA = .131 [90% CI = .100, .162], SRMR = .115. Furthermore, EFA revealed that all 14 items had acceptable loadings (i.e., a cut-off of .40

Environmental Values and Civic Engagement

and above for factor loadings irrespective of the sample size; Stevens, 1992) ranging between .539 and .867.

Analytical Plan

The dataset was first screened and cleaned, and reliability for all measures was assessed using Cronbach's alpha. All the assumption checks for normal distribution by examining normality, univariate and multivariate outliers, linearity, multicollinearity, and homoscedasticity were conducted using SPSS (Version 29; IBM Corp., 2022). Prior to examining the hypothesized model, a series of confirmatory factor analyses (CFA) were performed to evaluate the model fit for each measurement scale. Since all the variables were observed in this study path analysis was subsequently run in Mplus (Version 8; Muthén & Muthén, 2010) to test the research questions (Barbeau et al., 2019). Due to the relatively small sample size for path analyses, considering the number of parameters to be estimated and the sample size below $N = 200$ which is a minimum requirement for sufficient statistical power (Hoe, 2008), bootstrapping with 5000 resampling was used for the estimation of parameters and standard errors (Preacher & Hayes, 2008). For model fit evaluation, the cut-off values for Comparative Fit Index (CFI) $> .90$ and Root Mean Square Error of Approximation (RMSEA) $< .08$ were used, which are indicative of a good model fit based on prior recommendations (Bentler & Bonett, 1980; Browne & Cudeck, 1992; Hu & Bentler, 1999).

Results

Assumption Checks

The initial dataset had 102 respondents. Before assessing the assumption checks, data was first screened for appropriateness and completeness. All the variable values were within the appropriate range. In terms of data completeness, the cases that did not fit the inclusion criteria

Environmental Values and Civic Engagement

based on (i.e., being currently enrolled in a Canadian university and between the ages of 18-29), and those with no response on all variables were removed, with the missing data ranging between 8.5% to 18.3% which was recoded as 999. Thus, the final analysis had 71 respondents including the recoded missing values.

Variables were then checked for violations of assumptions. The linearity assumption was tested by visual inspection of scatter plots and showed a linear relationship between all the variables. In terms of independence, based on the research design, all variables and data points were independent of each other, thereby meeting this assumption. Both univariate and multivariate normality assumptions were also met. More specifically, examination of the skewness and kurtosis values for univariate normality showed that all the values were within the cut-off range i.e., ± 2 (skewness) and ± 7 (kurtosis) (Hair et al., 2010). Furthermore, the visual inspection of the histograms and normal pp plots of residuals also showed that the multivariate normality assumption was met. The assumption of homoscedasticity was also met since the residual scores were horizontally scattered throughout (Tabachnick & Fidell, 2007).

Additionally, univariate outliers were assessed using z-scores based on the ± 3.29 cutoff value (Tabachnick & Fidell, 1996), and multivariate outliers were detected using Mahalanobis distances ($df = 3, p < .001$; Tabachnick & Fidell, 2019). Neither univariate outliers nor multivariate outliers, against the critical value of $\chi^2(3) = 16.27, p < .001$ (Tabachnick & Fidell, 2007) were detected. Additionally, no multicollinearity was observed between each of the variables with the tolerance greater than 0.25 and VIF lower than 4 for all the variables (Menard, 1995). Thus, all the assumption checks were met.

Preliminary Analysis

Environmental Values and Civic Engagement

Information on the descriptives and correlation between variables can be found in Table 1. Results from correlation analysis showed that the perceived environmental values (EVs) of parents bore a non-significant positive association with environmental civic engagement (ECE) ($r = .258, p = .051$) and emotional relatedness with nature ($r = .249, p = .059$). Furthermore, ECE was positively related to the perceived EVs of teachers ($r = .078, p = .562$), and positive association with the perceived EVs of peers ($r = .166, p = .213$). Interestingly, emotional relatedness with nature bore a significant positive association both with perceived EVs of teachers ($r = .292, p = .026$) and perceived EVs of peers ($r = .529, p < .001$). ECE also had a non-significant positive association with emotional relatedness with nature ($r = .109, p = .415$) as well as well-being ($r = .195, p = .143$). It is also important to note that mothers were rated as the most influential parent figure, secondary school teachers and university professors as the most influential teacher figures, and friends as the most influential peer figure by the participants.

Table 1

Means, Standard Deviations, and Intercorrelations Among Study Variables

Variable	1	2	3	4	5	6
1). Perceived EVs of Parents		.490**	.412**	.258	.249	.049
2). Perceived EVs of Teachers			.509**	.078	.292*	-.107
3). Perceived EVs of Peers				.166	.529**	-.076
4). ECE					.109	.195
5). Emotional relatedness with nature						-.218
6). Well-Being						
<i>M</i>	4.533	4.841	5.075	0.648	5.386	3.051
<i>SD</i>	1.558	1.426	1.440	0.783	1.267	0.994

Note. EVs= Environmental Values, ECE= Environmental Civic Engagement

** $p < .01$ (two-tailed); * $p < .05$ (two-tailed)

Path Analysis

An over-identified path analysis was conducted with bootstrapping in MPlus to test the relationship between the perceived environmental values (EVs) of parents, teachers, and peers, environmental civic engagement (ECE), emotional relatedness with nature, and well-being. More specifically, perceived EVs of parents, teachers, and peers were the exogenous variables with emotional relatedness with nature as the mediator and ECE as the endogenous variable. Moreover, the contribution of ECE to well-being was also examined.

Since all the assumptions were met, the maximum likelihood estimator was used. The model explained 28.1% of the variance in emotional relatedness with nature, 8% of the variance in ECE, and 3.8% in well-being. Based on the global fit assessment of the over-identified model, results showed that the model had an overall good model fit. The relative indices met the criterion of a good model fit ($\geq .90$) (CFI = 1.00, TFI = 1.00), indicating a good model fit. The absolute fit indices also showed good model fit (SRMSR = .055, RMSEA = .000) with the cutoff value for SRMSR = $\leq .10$ and RMSEA = $\leq .08$ (Bentler & Bonett, 1980; Browne & Cudeck, 1992). The chi-square value was statistically non-significant, $\chi^2(4) = 2.508, p = .643$. Considering the value of chi-square and model fit indices it is important to exercise caution when interpreting the results.

The results as demonstrated in Figure 2 depict that while emerging adults' ECE was positively associated with the perceived EVs of peers ($\beta = .109, p = .555, 95\% \text{ CI } [-.275, .437]$), it bore a marginally significant positive association with the perceived EVs of parents ($\beta = .267, p = .037, 95\% \text{ CI } [-.001, .509]$). This indicates that when emerging adults perceive their parents to be higher on EVs, the higher will be their own ECE. Surprisingly, perceived EVs of teachers were negatively associated with the emerging adults' ECE ($\beta = -.119, p = .470, 95\% \text{ CI } [-.447,$

Environmental Values and Civic Engagement

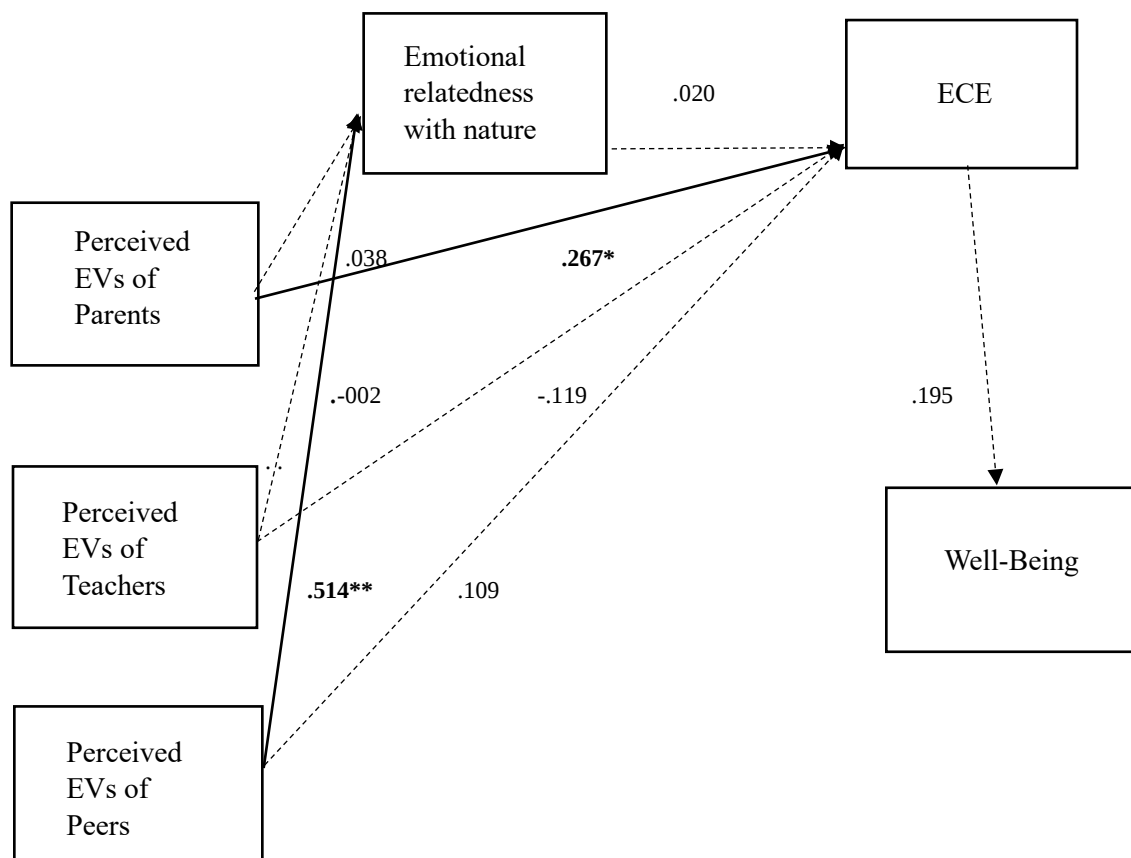
.207]). Moreover, emerging adults' emotional relatedness with nature was positively associated with the perceived EVs of parents ($\beta = .038, p = .762, 95\% \text{ CI } [-.208, .273]$) and it was significantly associated with the perceived EVs of peers ($\beta = .514, p < .001, 95\% \text{ CI } [.188, .764]$). This implies that when emerging adults perceive their peers to be higher on EVs, the higher would be their emotional relatedness with nature. However, just as with ECE, emotional relatedness with nature was also negatively associated with the perceived EVs of teachers ($\beta = -.002, p = .989, 95\% \text{ CI } [-.273, .297]$). Additionally, a positive non-significant association was found between ECE and well-being ($\beta = .195, p = .076, 95\% \text{ CI } [-.033, .394]$) and between ECE and emotional relatedness with nature ($\beta = .020, p = .901, 95\% \text{ CI } [-.274, .335]$).

While, there was a significant positive total effect of perceived EVs of parents on emerging adults' ECE ($\beta = .268, p = .034, 95\% \text{ CI } [.003, .501]$), a non-significant total effect of perceived EVs of peers ($\beta = .119, p = .427, 95\% \text{ CI } [-.191, .395]$) and non-significant negative total effect of perceived EVs of teachers ($\beta = -.119, p = .470, 95\% \text{ CI } [-.446, .203]$) were found on emerging adults' ECE. Additionally, bootstrapped 95% CI indicated non-significant positive indirect effects of perceived EVs of parents ($\beta = .001, p = .971, 95\% \text{ CI } [-.037, .054]$), teachers ($\beta = .000, p = .999, 95\% \text{ CI } [-.050, .046]$), and peers ($\beta = .010, p = .911, 95\% \text{ CI } [-.137, .218]$) on emerging adults' ECE through emotional relatedness with nature. Thus, it appears that emotional relatedness with nature did not have a mediating effect on the relationship between EVs and ECE.

Figure 2

Path Analysis with Standardized Co-Efficients

Environmental Values and Civic Engagement



EVs = Environmental Values, ECE = Environmental Civic Engagement

** $p < .01$; * $p < .05$

Discussion

The present study examined how emerging adults' perception of their parents, teachers, and peers' environmental values (EVs) may relate to their own environmental civic engagement (ECE), the mediating role of emotional relatedness with nature in the aforementioned relationship by partially borrowing from the value-belief-norm theory as well as how ECE may be related to well-being. Specifically, this study addressed three main hypotheses: (H1) emerging adults' perceptions of their parents, teachers, and peers' EVs would positively relate to their ECE; (H2), emotional relatedness with nature will mediate the relationship between perceived EVs and ECE; (H3), ECE will positively relate to well-being.

Environmental Values and Civic Engagement

In general, current findings did not support most of the hypotheses, except for the partial support for H1 related to emerging adults' perception of their parents' EVs and ECE as well as for one of the paths of H2. Specifically, results suggested that emerging adults' perception of their parents' EVs was related to their own ECE. Furthermore, the perception of their peers' EVs was related to their own emotional relatedness with nature. However, perceived EVs of teachers and peers were not related to emerging adults' ECE, nor did emotional relatedness with nature mediate the relationships between emerging adults' perception of parents/teachers/peers' EVs and ECE. Additionally, ECE was not related to well-being. Results of this study, implications, strengths, and limitations will be discussed in subsequent sections.

Perceived Environmental Values and Environmental Civic Engagement

Partially supporting H1, emerging adults' perception of parents' environmental values (EVs) was related to their environmental civic engagement (ECE). Broadly, this connection is in line with the previous seminal works tracing a connection between EVs and environmental engagement (EE) in general (Karp, 1996; Schultz et al., 2005; Stern & Deitz, 1994). Although a connection between parental influence and children/adolescents' EE has been traced, this finding is critical in terms of the focus on the perceptions of parents' EVs and emerging adults' ECE. While prior research has majorly focused on parental influence in terms of norms and perceptions of autonomy support on adolescents' EE mostly in the private domain (e.g., saving water, electricity, recycling paper, etc) (Collado et al., 2019; Grønhøj & Thøgersen, 2017), this study explicitly focused on public sphere EE, with ECE in particular.

Moreover, the mother figure emerged as the most influential figure in this study, which stands in line with the concept of monotropy (Bowlby, 1977). This implies that since the caregiver (which is usually the mother) is biologically invested in their child, she is likely to be

Environmental Values and Civic Engagement

the most influential figure in the child's socialization. Empirical evidence in the field of environmental psychology has found that mothers often tend to promote EE more specifically in the household context such as recycling, while fathers have a greater influence on public sphere EE including ECE (e.g., sustainability campaigns) (Scopelliti et al., 2022). However, mothers have also been found to actively contribute to the local environmental groups and movements (Pardo, 1990). For example, the Chipko movement and the green belt movement led by Wangari Maathai (Philipose, 1989; Wallace, 1993), shows that mothers bear an influence even in the public sphere EE and are not only confined to private sphere EE. This study indeed calls for more emphasis on the important role of mothers in the public sphere EE including ECE.

Contrary to (H1) it was found that perceived EVs of teachers, and peers did not relate to participants' ECE. A possible explanation for this lies in the fact that values may not always directly translate into behavior given the abstract nature of values in general. This is in line with studies that have found an indirect route of connection between values and behavior (e.g., Ünal et al., 2018; Yousefpour et al., 2019). For example, a study found no direct connection between perceived EVs of public in general and EE including ECE (Tsai et al., 2021). This discrepancy comes from the value-action gap in general whereby values do not always reveal in the form of a behavior and there exist several barriers that prevent people from acting in line with the values (Gifford, 2011). When it comes to the perceived values of others, the perception of teachers' EVs had no connection with the ECE of emerging adults and was in fact surprisingly negative. Although teachers are also regarded as prime agents for encouraging EE among students, a lack of knowledge and awareness concerning sustainable literacy among teachers surrounding climate change has been pointed out (Potter-Nelson & O'Neil, 2019). This potentially explains the lack of connection between perceived EVs of teachers (secondary school ones as the most influential

Environmental Values and Civic Engagement

ones in this case) and ECE of emerging adults. Moreover, educational institutions including schools have not been emphasizing the importance of EVs despite schools and educators being capable of influencing student EVs and EE (Husin & Saleh, 2019). Additionally, a very recent study showed that teachers lacked self-efficacy beliefs and knowledge about the environment which influenced their ability to encourage and support students' environmental protection actions (Herranen & Aksela, 2024). Thus, exploring the role of other factors such as teachers' self-efficacy might provide some information on how this connection maybe influenced. Also, perceived EVs of peers did not bear any connection with the ECE of emerging adults. Besides the possible value-action gap explaining this relationship, adults might overlook or even underestimate the EVs of peers (Bouman et al., 2020), possibly explaining the lack of connection between the perceived EVs of peers and ECE of emerging adults.

Mediating Role of Emotional Relatedness With Nature

Although the mediating role of emotional relatedness with nature (H2) was not supported, the path between value and emotion emerged to be significant. More specifically, among the perceived environmental values (EVs) of parents, teachers, and peers, perceived EVs of peers/friends emerged to be an important connection in relation to emotional relatedness with nature of emerging adults. Since the process of identity development is ongoing even during emerging adulthood (Arnett, 2000; Wood et al., 2017), peers and friends occupy a prime position in terms of their influence. Indeed, one's EVs are likely to be influenced by the values of their peer group and friends (Kelly et al., 2023). In line with this, although not directly connecting perceived values and emotions and focusing on the available evidence around personal values, a study found a higher level of value similarity among friends concerning self-transcendence values including EVs (Solomon & Knafo, 2007). Importantly, the support for value-emotion

Environmental Values and Civic Engagement

connection comes from a theoretical standpoint whereby the theory of basic human values (Schwartz, 2012), states that values are tied to emotions. For example, when the value of autonomy is supported, it leads to a feeling of happiness. On the contrary, when the same value is threatened it can evoke the feeling of hopelessness, thus supporting the value-emotion connection. Since there has been no investigation focusing on the connection between the perception of peers' EVs and emotional relationship with nature, this study makes an important contribution to the field of environmental psychology concerning the newly emerging value-emotional link, specifically perceived values of significant others i.e., peers.

Additionally, the connection between emotional relatedness with nature and environmental civic engagement (ECE) was not supported. Although, studies including meta-analysis indicate the relationship between nature-connection and environmental engagement (EE) including ECE (Mackay & Schmitt, 2019; Whitburn et al., 2019), most of the measures to assess emotional relationship with nature in environmental psychology have been done using connectedness with nature (CNS; Mayer & Frantz, 2014). However, CNS has been shown to not tap into the emotional side of nature connection, with items measuring only the cognitive dimension of nature connection (Perrin & Benassi, 2009). Since this study used a measure purely assessing emotions this might explain why the finding is contradictory to the previous research. Based on the findings, the mediating effect of emotional relatedness with nature could not be inferred.

Environmental Civic Engagement and Well-Being

Considering H3, our findings did not support the hypothesis. This is in contradiction with the prior evidence in the literature (e.g., Laffan, 2020). Since most of the participants reported not being involved in environmental civic engagement (ECE) for the past 6 months, this

Environmental Values and Civic Engagement

primarily explains the lack of connection between ECE and well-being. Indeed, studies have traced a connection between environmental activism and well-being, however, it is also important to remember that majority of the cases in this study reported a lower ECE, which can potentially explain why no connection was observed between the two. More specifically, barriers such as lack of time, skills, perceived effectiveness of one's actions, and a lack of knowledge about how and where to get started among youth can serve as contributing factors to the lack of engagement (Brady et al., 1995; Latkin et al., 2023). Furthermore, since well-being comprises different facets (i.e., emotional, social, and psychological well-being), it is important to consider those facets separately. More specifically, some studies have found ECE to not bear a positive relationship with emotional well-being (Ibáñez-Rueda et al., 2020; Venhoeven et al., 2013).

Limitations and Future Recommendations

Several limitations of this study must be kept in mind. From a statistical perspective considering the global and the local model fit indices, caution must be exercised, regardless of all the assumptions being met. More specifically, such results might result from the smaller sample size and low correlation among the study variables (Nguyen, n.d.). Secondly, the items that were dropped from the Environment Action Scale (Alisat & Reimer, 2015) after the factor loadings being lower than the cut-off limit of .40 (Stevens, 1992) further bear a justification from a conceptual perspective. More specifically, this study explicitly assessed civic engagement, which implies a range of behaviors including individual volunteerism, protest, membership of an organization, support for NGOs, etc (e.g., Sloam, 2014). Considering the dropped items, i.e., 'educated myself about environmental issues (e.g., through media, television, internet, blogs, etc)', and 'talked with others about environmental issues (e.g., spouse, partner, parent(s), children, or friends)' do not clearly fall under the purview of civic engagement, which is why

Environmental Values and Civic Engagement

they were not included in the subsequent analysis. Additionally, results must be interpreted with caution owing to a considerable percentage of missing values.

Furthermore, since self-report measures were used, results must be interpreted with caution, specifically for the perceived environmental values (EVs) of parents, teachers, and peers. Self-report measures often involve reporting biases, such as social desirability (Richman et al., 1999). Future research could consider using multi-informant instruments (e.g., parent, teacher, and peer reporting their own EVs) with simultaneous administration involving the perspectives both from the socializers and emerging adults regarding EVs. Moreover, this study used a cross-sectional design which does not allow for causal inferences. A longitudinal design can be considered in future work to infer robust causal relationships. Since the current sample is not the most representative one, it may bias the results of the study. The sample size was relatively small ($N = 71$), below the recommended minimum sample size ($N = 200$) for structural equation modeling and path analysis (Kline, 2016). This could have resulted in low power with the inability to detect relationships among variables, besides reducing the generalizability of the findings. Thus, future studies may benefit from a larger sample size.

Moving further, it would be equally interesting to explore the differential role of parents and teachers in the environmental civic engagement (ECE) of emerging adults. Not only this but also the introduction of randomized control trials to strengthen EVs among youth and socializers is a potential avenue to explore along with the ability to establish strong causal connections. More specifically, social-emotional learning (including key components of identity, agency, curiosity, belongingness, and collaborative problem-solving) has been tied to civic engagement (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2023). In fact, SEL

Environmental Values and Civic Engagement

interventions have been used with students and teachers to promote civic efficacy and civic participation (Barr et al., 2015), which can be explored in future research.

Implications

This study is important from several standpoints. Firstly, environmental civic engagement (ECE), or in other words, public sphere pro-environmental behavior (as commonly addressed in the literature) has not been well researched, specifically with regard to collective actions (Dono et al., 2010), although the power of collective actions concerning climate change cannot be overlooked (Gelissen, 2007). Secondly, this study took into account the role of perceived environmental values (EVs) of socializers in ECE of the youth, since a majority of the prior work revolves around social and personal norms including parental and peer norms (e.g., Collado et al., 2019; Goldstein et al., 2008; Grønhøj & Thøgersen, 2012). Furthermore, the influential role of mothers' EVs in the ECE of emerging adults was established by this study. Usually, mothers' EVs have been found to be influential concerning private sphere environmental engagement (EE) (e.g., recycling, waste production; Scopelliti et al., 2022). This study highlights the important role of mothers in encouraging ECE of children including emerging adults, which can further be exclusively focused on in subsequent research. Additionally, this study provides insight into a newly emerged value-emotion connection. More specifically, how perceived EVs of peers relate to one's emotional relatedness with nature. Besides this, the inappropriateness of the consistent use of CNS (Mayer & Frantz, 2014) for measuring emotional connection with nature in the field of environmental psychology has been considered in this study, as previously pointed out by Perrin and Benassi (2009). This in turn will help potential researchers to employ the use of measures that tap the emotional side of nature-connection.

Environmental Values and Civic Engagement

Although the relationship between emerging adults' perception of their teachers' EVs did not bear any relationship with their own ECE, considering the important role of teachers and educational institutions in civic education and civic values (Van Camp & Baugh, 2016; Teng et al., 2017), future research might benefit from further accounting for the role of teachers EVs in EE and exploring the role of possible other factors that might help explain this relationship. Moreover, this study accounted for peer values since a lack of research on peers' values has been highlighted in the prior literature (Benish-Weisman et al., 2022). Indeed, less attention has been paid to the peer group concerning the environmental domain (Collado et al., 2019), which calls for more focus on the role of peers' EVs. It also carries some important implications. More specifically, these results may guide the development of a program/intervention that emphasizes and promotes environmental values/understanding of socializers (i.e., parents, teachers, and peers) in order to encourage environment-friendly actions among university students. This study is also expected to inform policymaking and educators to address the issue of climate change by primarily focusing on EVs and collaborating with other partners in the educational contexts to encourage civic engagement among emerging adults specifically in the environmental domain. More importantly, young adults play a critical role in determining the future condition of our planet and will have an influence on policymaking (Effendi et al., 2020) which is why spreading awareness among them and motivating them to take action is the need of the hour. In fact, young Quebecers have expressed their concern about their right to a healthy environment and are demanding a more effective strategy to address the climate crisis (The Canadian Press, 2021)

Moreover, designing interventions that target emotional relatedness with nature can help encourage engagement in environmental protection. Additionally, civic engagement in the environmental domain has been well-studied and popular in the European context (Ibáñez-Rueda

Environmental Values and Civic Engagement

et al., 2020), however, this study will serve as a stepping stone towards extending it to the North American context for future research. We believe that engaging in protecting our living environment is big agenda of human development and our responsibility.

Conclusion

Climate change is one of the most pressing issues across the globe with global warming already on the rise along with the depletion of natural resources (Djuwita & Benyamin, 2019). Thus, focusing on and encouraging environmental values (EVs) and environmental civic engagement (ECE) among youth is greatly required as a step further towards complementing the ongoing policies such as Canada's 2030 Emissions Reduction Plan and Quebec's 2030 plan for a green economy. In this regard, this study explored the role of emerging adults' perception of their parents, teachers, and peers' EVs in their own ECE, how emotional relatedness with nature may contribute to this relationship as well as the relationship between ECE and well-being. Considering the human development perspective, civic engagement, and ECE per se, serve as a critical component specifically during this transition phase of emerging adulthood (Flanagan & Levine, 2010) along with the redefinition of value system, influence of social factors including significant others (e.g., peers, parents, teachers) as well as the willingness to contribute towards safeguarding the environment via actions. More importantly, our future generation will be the future decision-makers and policymakers. Thus, this study serves as a stepping stone for future research to focus on how EVs and ECE may help combat the issue of climate change. After all, our actions today determine our tomorrow!

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Appendix

McGill University
Research Ethics Board Office
www.mcgill.ca/research/research/compliance/human



CERTIFICATE OF ETHICS APPROVAL

REB File Number:	23-06-012
Project Title:	Environmental Values and Engagement in Relation to Well-Being Among Emerging Adults
Student Principal Investigator:	Shubhangi Bhardwaj
Department:	Educational & Counselling Psychology
Supervisor Name:	Dr Chiaki Konishi
Sponsor/Funding Agency (if applicable):	-
Research Team (if applicable):	

Name	Affiliation

Approval Period:

FROM	TO
27-Sep-2023	26-Sep-2024

The *REB-2* reviewed and approved this project by Delegated review in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Participants and the Tri-Council Policy Statement: Ethical Conduct For Research Involving Humans.

- * Approval is granted only for the research and purposes described.
- * The PI must inform the REB if there is a termination or interruption of their affiliation with the University. The McGill REB approval is no longer valid once the PI is no longer a student or employee.
- * An **Amendment** form must be used to submit any proposed modifications to the approved research. Modifications to the approved research must be reviewed and approved by the REB before they can be implemented. Changes to funding or adding new funding to a previously unfunded study must be submitted as an Amendment.
- * A **Continuing Review** form must be submitted before the above expiry date. Research cannot be conducted without a current ethics approval. Submit 2-3 weeks ahead of the expiry date.
- A total of 5 renewals are permitted after which time a new application will need to be submitted.
- * A **Termination** form must be submitted to inform the REB when a project has been completed or terminated.
- * A **Reportable New Information** form must be submitted to report any unanticipated issues that may increase the risk level to participants or that may have other ethical implications or to report any protocol deviations that did not receive prior REB approval.
- * The REB must be promptly notified of any new information that may affect the welfare or consent of participants.
- * The REB must be notified of any suspension or cancellation imposed by a funding agency or regulatory body that is related to this study.
- * The REB must be notified of any findings that may have ethical implications or may affect the decision of the REB.