



## Differentiating environmental concern in the context of psychological adaption to climate change

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### ABSTRACT

Despite existing evidence for the threats of climate change facing people living in the U.S., the psychological impacts of this threat have been neglected in public and scientific discourse, resulting in a notable lack in studies on individuals' adaptation to climate change. Using social-cognitive theory, we examine how three forms of environmental concern—egoistic (e.g., concern for oneself; one's health or life), social-altruistic (e.g., concern for others; future generations or country), and biospheric (e.g., concern for plants and animals; nature)—influence concurrent ecological stress and ecological coping strategies. Further, we examine how ecological stress and coping are associated with both depressive symptoms and pro-environmental behaviors. In an online survey of 342 U.S. adults we found unique patterns of the three forms of environmental concern. Only individuals higher in biospheric environmental concern perceived ecological stress and engaged in ecological coping. In contrast, individuals higher in social-altruistic concern did not perceive ecological stress, but did engage in ecological coping. Those higher in egoistic concern neither perceived ecological stress, nor engaged in coping. In addition, perceived ecological stress was positively associated with depressive symptoms; ecological coping negatively predicted depressive symptoms, while positively predicting pro-environmental behaviors. In sum, with the exception of those high in biospheric concern, study participants did not seem to perceive climate change threats as having a profound effect on their own or their family's life.

Differentiating three forms of environmental concern provides a nuanced view on their association with ecological stress and coping, and in turn depressive symptoms and pro-environmental behaviors. Results indicate that current public policy approaches that often focus on the natural environment when depicting or explaining the effects of climate change, may limit the effectiveness of interventions to those people who already show high concern for all living creatures, while failing to affect those motivated by egoistic or altruistic concern, increasing the risks associated with delaying climate change adaptation and the potential for large-scale negative mental health effects in our society.

## 1. Introduction

### 1.1. Psychological impacts of climate change

Climate change has impacts on natural and human systems on all continents and across all oceans (IPCC, 2015), requiring us to adapt to a new reality. However, the psychological impacts of the threat of climate change have been vastly neglected in public and scientific discourse (Fritze et al., 2008; Grothmann and Patt, 2005) despite the realization that “humanity's ability to adapt physically will depend in part on how well people adapt psychologically” (Hamilton and Kasser, 2009, p. 2). For example, neither coping nor adaptation to climate change on the individual level have been salient considerations for the

Intergovernmental Panel on Climate Change (IPCC, 2015) or climate change science (Reser et al., 2012a). This is surprising given that climate change is already affecting the lives of all people on the planet in many negative ways (NCA, 2014).

Individuals' experiences of climate change-related events such as natural disasters have been associated with negative mental health effects (e.g., Akerlof et al., 2013; Berry et al., 2008; Morrissey and Reser, 2007). However, longer term impacts of climate change on mental health can also result from emerging awareness and growing understanding of climate change as a global environmental threat that affects people's social and emotional wellbeing (Fritze et al., 2008; McMichael et al., 2006). The ensuing ecological degradation will impinge upon mental health by increasing the incidence of stress, anxiety, and

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depression (Clayton et al., 2014; Fritze et al., 2008). Understanding possible strategies of adaptation is therefore of particular importance (Doherty and Clayton, 2011; Stokols et al., 2009). However, there has been little study of the psychological dimensions of adaptation (APA Task Force, 2009; Grothmann and Patt, 2005). The ways in which individuals manage stress and anxiety in the face of perceived ongoing threats that are far removed from everyday life such as climate change are largely unknown (Reser et al., 2011, 2012a).

The adjustments and adaptations people will make, both individually and collectively, will depend on how they are making sense out of, and are coming to terms with, the phenomenon of climate change (Reser et al., 2012a). Hence, the purpose of our study is to better understand determinants and outcomes of individual psychological adaptation processes. Drawing from health psychology, these psychological adaptations are often the target of interventions to improve decision making and healthy functioning. Here, we consider the extent to which these adaptations are linked to individual beliefs and to specific behaviors and cognitions.

### 1.2. Environmental concerns and adaptations

Environmental concern is defined as, “the degree to which people are aware of environmental problems and support efforts to solve them and/or indicate a willingness to contribute personally to their solution” (Dunlap and Jones, 2002, p. 484). In our study, we focus on a particular set of interindividual difference variables—three types of environmental concerns (i.e., egoistic, social-altruistic, and biospheric)—to understand how each type of concern impacts psychological adaptation to climate change in the form of perceived ecological stress and ecological coping, which in turn may impact depressive symptoms and pro-environmental behaviors (see Fig. 1). We build on insights from psychological stress research indicating that chronic or unrelieved stress which may result from appraisals of climate change threats can lead to depression (Reser et al., 2012a). Since moderate levels of ecologically-induced stress and coping may be protective and can motivate people to act (Molden et al., 2008; Reser et al., 2011), we also investigate their linkage with pro-environmental behaviors (PEB), which can be described as forms of behavior that harm the environment as little as possible, or even benefit the environment (Steg and Vlek, 2009). Therefore, such PEB are, in essence, individual efforts at mitigating the effects of climate change. Initial research, as detailed below, has identified different psychological strategies people employ to cope with or adapt to perceived pressures associated with climate change threats and demonstrated that certain coping strategies activate PEB, while others inhibit them (Homburg et al., 2007).

### 1.3. Study aims

The current study sets out to examine how environmental concerns influence concurrent perceptions of ecologically-induced stress and coping strategies (Aim 1) and how, in turn, these ecologically-induced stress and coping strategies are associated with depressive symptoms and specific PEB (Aim 2). To our knowledge, this is the first study to include these psychological adaptation variables and PEB. Understanding which form of environmental concern is most closely linked with adaptation carries important implications for work aimed at changing individual ecological coping and ecological stress strategies, and ultimately behaviors. By using the scale suggested by Homburg et al. (2007), which focuses on eight psychological strategies people employ to cope with global environmental problems, we also provide validation of this ecological coping scale in a U.S. context.

### 1.4. Socio-cognitive theory for environmental concern: egoistic, social-altruistic, biospheric

An individual’s psychological reactions to climate change threats are a combination of individual processes, including their own concerns, defenses, thoughts and feelings (Fritze et al., 2008). In this study, we suggest that people’s beliefs regarding the consequences of climate change influence their psychological adaptation (perceived ecological stress and coping) and, subsequently, depressive symptoms and PEB. Past research in this area suggested that people’s individual belief systems are influenced by their general values, as explained in Schwartz’s (1977) theory for normative decision-making. In their Value-Belief-Norm (VBN) theory, Stern and Dietz (1994) built on this notion that attitudes or concerns about environmental issues are determined by an individual’s general set of values which includes, yet surpasses, altruism. According to VBN-theory, people’s attitudes about environmental issues are determined by the value that they place on themselves (egoistic value), other people (social-altruistic value), or plants and animals (biospheric values). In his social-cognitive theory for environmental concern, Schultz (2001) went a step further in suggesting that not values per se, but clusters of valued objects determine attitudes about the harmful consequences of environmental damage. People who make decisions based upon self-interest care about the environment because it influences them and those important to them, explaining the egoistic base of environmental concern (Dietz et al., 2005). Broadening the scope of concern from self and family to a larger community, possibly encompassing all of humanity, leads to the second base for environmental concern—social or humanistic altruism (Dietz et al., 2005). The third base for environmental concern goes beyond the benefits to humans and is directed toward other species or the state of ecosystems and the planet. This has been termed biospheric altruism (Dietz et al., 2005; Stern et al., 1993) because it acknowledges intrinsic

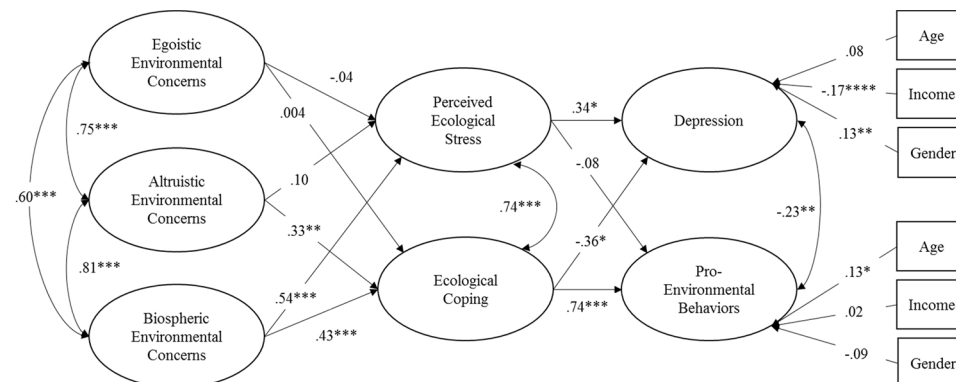


Fig. 1. Study Model.  
\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Standardized betas shown. Model fit:  $\chi^2 = 839.37$ ,  $df = 409$ ,  $p < .001$ , CFI = .935, TLI = .927, RMSEA = 0.06 [0.05, 0.06].  
\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

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