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Study on Emotions, Coping, and Behaviours Related to Climate Change

Final Paper in School Psychology

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Environmental Studies Certificate Programme

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Munich, 25.09.2023

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Abstract

Climate change has come to pose an existential challenge to humanity. As only human action may contain environmental degradation, factors contributing to pro-environmental behaviours need to be identified. This exploratory online survey study investigated the association between eco-emotions, environment-related coping strategies, and pro-environmental individual and collective behaviours based on self-reports of young adults. Tentative results suggest that eco-anxiety, eco-anger, and problem-focused coping are positively linked with pro-environmental behaviours whereas meaning-focused coping showed negative associations. Eco-depression, eco-hope, and emotion-focused coping did not show any significant effects on behaviours. Thus, climate communication should be directed at inducing anger and anxiety together with a focus on solutions rather than abstract hope. Further, environmental psychological research merits more interdisciplinary approaches grounded in the environmental humanities, as well as an investigation of social context factors.

Keywords: eco-emotions, eco-anxiety, eco-depression, eco-anger, eco-hope, coping, pro-environmental behaviour, climate change

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Climate change has evolved into a crisis in many places with floods leaving more than 33 million homeless in Pakistan in 2022 (Khan, 2022) and killing 20 000 in Libya in 2023 (Loveluck, Dadouch, Fahim, 2023). While the Global North is starting to face environmental consequences as well, it is vulnerable communities in the Global South that have been affected the worst (Perkins, 2019, in Martiskainen, Axon, Sovacool, Sareen, Furszyfer Del Rio, Axon, 2020; Pihkala, 2022b). Climate change has been acknowledged to be a global problem of such scale that according to the IPCC report 2018 "rapid, far-reaching and unprecedented changes in all aspects of society" are needed (cited in Stuart, Gunderson, Petersen, 2020, 199), which require deep structural changes (Bamberg, Rees, Schulte, 2018; Eyster, Satterfield, Chan, 2022; Malm & Homborg, 2014; Zeller, 2020). In the following, the ecologically discrepant concepts of climate and environment will be treated as interchangeable sources of eco-emotions, coping, and targets of behaviour.

Pro-Ecological Behaviour

Human Action Theories and Environmental Psychology

As human activity is central to ecological degradation, only human action may tackle the problem, which is an issue for psychology (Adams, 2017). While environmental psychology has only evolved since the 1960s amid a rising environmental movement (Uzzell & Räthzel, 2009), there is extensive psychological literature on social movements and human action theories. Although it has been remarked that they need to become more interdisciplinary (Eyster et al., 2022), they warrant a look. Most environmental psychology research focuses on industrialised populations (Pihkala, 2022a) as does the following.

Human action has been theorised from different perspectives as Eyster and colleagues have shown in their synthesis of 86 human action theories across social sciences and the humanities (2022). Two examples of their eight distinct metatheory categories contrast the difference in scientific approaches. Independent Self theories conceptualise individual action as a result of personality

attributes such as “values, attitudes, traits, beliefs, and worldviews” mostly independent of external context. They have been criticised for “psychologizing social problems - that is, treating a problem as solely a result of individual actions” (Manne, 2017, in Eyster et al., 2022, 732), for being inappropriate at explaining radical change (Hastings & Saren, 2003, in Eyster et al., 2022), and for over-rationalising humans because many action tendencies manifest in subconscious processes and not reasoned decisions (Fritsche, Barth, Reese, 2021). For example, the debunked “information deficit models” of the 1970s propose that there is a lack of action only because of a lack of environmental education (Kollmuss & Agyeman, 2002). Top-Down Metatheories do justice to a proposed focus on context variables in explaining human behaviours. They assume that “personal characteristics and individual actions result from a range of top-down factors, such as culture, beliefs, economic systems, political systems, and wealth distribution”. This theory is mostly applied within critical scholarship and is appropriate to describe systemic root causes and transformational futures, but rarely describes specific interventions (Eyster et al., 2022, 740). Top-Down theories stress inequality (Redcliff & Benton, 1994, in Kollmuss & Agyeman, 2002) and want to challenge the notion that environmental problems are behavioural problems as they are seen to be shaped by our social and economic context (Uzzell & Räthzel, 2009). In this view, behaviour is interrelated with the behaviour of our social environment in a form of unconscious collective (Adams, 2017). This study examined how eco-emotions and coping strategies affect behaviour, while being aware that these individual psychological variables have a social context and may not explain climate action on their own. Instead of focusing on why people do *not* act pro-environmentally, this study aimed at identifying why people *do* act.

Focus on Consumerism

If environmental psychology has the aim of investigating human pro-ecological behaviour, then it must define which behaviours are *pro-ecological* and which behaviours are not. The necessarily underlying, oftentimes implicit or even unconscious, theory of change for environmentalism should be made explicit for a critical assessment along the natural and social sciences. With the production of material

goods emitting greenhouse gases (Burke et al., 2012, in Stuart et al., 2020), much psychological research is grounded in a theory of change that focuses on individual behaviour change towards "sustainable" lifestyles in the sense of "green" consumerism. There has been much criticism that this will not mitigate climate change (Adams, 2021; Geels et al., 2015, Jackson, 2009, Scholl et al., 2010, Schor, 2010, in Bamberg et al., 2018; Eyster et al., 2022; Stuart et al., 2020; Uzzell & Räthzel, 2009; Zeller, 2020).

Environmental sociologist Diana Stuart, sociologist Ryan Gunderson and geographer Brian Peterson remark that "solutions focused on consumption choices involve a critical assumption: that consumption drives production" (2020, 200). However, they explain that production drives consumption (i.e., through advertisement, creation of pseudo-needs for social validation). Within the framework of a materialistic theory of change, human ecologists Andreas Malm and Alf Hornborg (2014) make a case that climate change is not a problem caused by humanity but rather the small percentage of humanity with the power over production. They insist that narratives of climate mitigation should not replicate illusions of globally well-distributed means of destruction such as oil production sites. In Max Weber's words: "given the actual distribution of power" only "few consumers may influence production" (Weber, 1978, in Stuart et al., 2020, 200; cf. Redcliff & Benton, 1994, in Kollmuss & Agyeman, 2002). The Carbon Major Report 2017 which found 100 companies were emitting 71% of global industrial greenhouse gases (Griffin, 2017) and Kühne and colleagues' findings (2022) that just 425 fossil fuel projects might exceed the 1.5°C carbon budget by a factor of two show that fossil companies must be held accountable over-proportionately. They have tried to ward off this responsibility: British Petroleum hired an advertising agency in 2004 to create the carbon footprint calculator and a 2021 study by Oreskes & Supran found that since 1972, ExxonMobil consistently used "rhetoric aimed at shifting responsibility for climate change away from itself and onto consumers" (Schendler, 2021).

A materialistic position argues that the root cause for climate change and the point at which solutions must be applied is a system of power relations and property. Historian, human geographer,

and sociologist Jason Moore (2015) claims that in the age of the "Capitalocene", nature, power and capital are interwoven to such an extent that they threaten further existence on earth by putting the whole of nature to work for capital. Geographer Christian Zeller (2020, 12) explains that the necessity to reduce emissions as fast as possible collides with capitalism's constraint to accumulate ever higher profits based on competition and infinite growth within planetary boundaries. According to his analysis, it is not in the interest of powerful political parties and classes to do something against these constraints. To change the goals of production means to change the power dynamics behind them and, thus, a rise and self-empowerment of the exploited against the economically and politically powerful. This perspective rejects "voting with your dollar" (Stuart et al., 2020, 202f) as ineffective. These positions are spread widely in the grassroots climate movement with a conviction that collective action, such as protests, is more effective (Becker & Wright, 2011, in Bamberg et al., 2018; Salomon et al., 2017, in Fritsche et al., 2021). This theory of change is founded in historical observation that "collective action has always been a motor of societal change" (Bamberg et al., 2018, 4). Thus, a focus on consumption choices within environmental psychology needs to be contested from a materialistic environmental humanities perspective.

Individual and Collective Pro-Environmental Behaviours

To investigate eco-emotions' and coping strategies' link with pro-environmental behaviour, it is interesting to measure both individual *and* collective behaviours and to determine whether there are differences as to the effects. The used behaviours scale in this study, based on Samantha Stanley and colleagues' 2021 study with a representative Australian sample, measures both sets of behaviours. Individual pro-environmental behaviour is "behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world" (Kollmuss & Agyeman, 2002, 240). While the items, buying certain goods and reducing consumption, might not actually help mitigate climate change on a relevant scale according to the perspective presented above, they may still demonstrate participants' engagement in their idea of environmentalism and their pro-environmental intentions.

Collective action can be “prototypical behaviour” which is directed at representing a particular group or furthering its values (Wright et al., 1990, in Bamberg et al., 2018, 9) such as environmentalism, as well as collectively agreed upon and organised actions, for example protests. Many activist lives may have started from the point of individualistic behaviour change and considerations but have transformed into collective action as social behaviour (Bamberg et al., 2018). This is often associated with a collective identity built on an “injunctive norm” of how the world ought to be (Bamberg et al., 2018, 14) While there is almost no scientific work on long-time activism (Bamberg et al., 2018), numbers of people reporting to have participated in protests have grown dramatically since the mid-1970s (Martiskainen et al., 2020). Recent experiments show that reminding people of the complexity of climate change makes them orient towards collectives, probably to restore control convictions and their perceived agency (Fritsche et al., 2021) since collectives are associated with empowerment (Bamberg et al., 2018).

Eco-emotions

Emotions are motors for particular action inclinations (Fritsche et al., 2021). Climate emotions, eco-emotions or “Earth emotions”, as named by Albrecht, are “affective phenomena which are significantly related to the climate crisis” (Pihkala, 2022a). In recent years, there has been a higher interest in eco-emotions with so-far narrow frames of taxonomy (Pihkala, 2022a). Climate change as an existential threat with various losses has detrimental mental health effects (Pihkala, 2022b; Ojala, 2007). It is still unclear whether these “psychoterratic syndromes” should be categorised as maladaptive or pathological (Ágoston et al., 2022, 2). This paper will follow a perspective which claims that with climate change turning increasingly into crisis, eco-emotions are reasonable. However, in society those experiencing eco-anxiety or grief are often mocked (Atkinson, 2020). These “disenfranchised” emotions (Doka, 1989, in Pihkala, 2022b, 100) may lead to loneliness because of individuals’ communities invalidating their emotions (Kretz, 2017, and White, 2015, in Pihkala, 2022a).

As people are affected differently based on locality, socio-economic background and entanglement with nature, emotional responses differ between populations such as relatively wealthy

westerners or indigenous peoples (Adams, 2021; Cunsolo Willox et al, 2013, in Ágoston et al., 2022). While post-traumatic stress syndrome is found in those who have lived through natural disasters, people in the Global North show something called "pre-traumatic stress" (Kaplan, 2020, and Susteren & Al-Delaimy, 2020, in Pihkala, 2022a, 11). In the less affected regions, activists (Kleres & Wettergren, 2017; Martiskainen et al., 2020) and environmental scientists (Pihkala, 2022b) may experience climate-emotions in a higher intensity than those who occupy themselves less with environmental degradation.

Kurth and Pihkala (2022) stress that different eco-emotions function in different ways. They may be directed at the self or others, have different temporal dimensions as well as an individual or collective nature (Pihkala, 2022a). Emotions may lead to engagement or disengagement (Stanley, Hogg, Leviston, Walker, 2021; Kollmuss & Agyeman, 2002). With a "finite pool of worry" at their disposal, individuals can get overwhelmed with the world's suffering (Hansen et al., 2014, in Beyerl, 2021, 353). Further, an "intricate emotion management" system uses apathy to allow us to continue our social life undisturbedly (Norgaard, 2011, in Kleres & Wettergren, 2017, 1).

As emotions can also spur action (Fritsche et al., 2021; Aminzade & McAdam, 2002, Flam & King, 2005, Goodwin et al., 2001, Barbalet, 1998, Flam, 1990, Gould, 2009, Kleres, 2017, Summers-Effler, 2007, in Kleres & Wettergren, 2017; Nabi et al., 2018, in Pihkala, 2022a), one aim of eco-emotion research is to understand how these emotions may lead to more pro-environmental behaviour (Pihkala, 2022a). The following study focuses on four emotions: eco-anxiety, eco-depression, eco-anger, and eco-hope.

Eco-anxiety

Albrecht conceptualises eco-anxiety as one of the negatively-valenced "psychoterratic" syndromes directed toward environmental degradation (Albrecht, 2011, in Ágoston et al., 2022) while the American Psychological Association defines it as the "chronic fear of environmental doom" (Clayton et al., 2017, in Kurth & Pihkala, 2022). Eco-anxiety may be understood within the framework of existential fears (Pihkala, 2020, in Ágoston et al., 2022; Kurth & Pihkala, 2022; Giddens, 1990, 1991, in

Ojala, 2007) as it is related to recognising the dimension of environmental crises (Kurth & Pihkala, 2022). Thus, it is related to threat and risk perceptions and may protect individuals from harm but may also become rife (Pihkala, 2022a). Further, eco-anxiety is sometimes described as egocentric, while it may actually indicate moral attunement (Ojala, 2007) since it shows people's care for those affected by environmental degradation and the environment itself (Kurth & Pihkala, 2022).

Eco-anxiety comes in different forms and with different qualities. It is a "future-oriented cognitive-emotional phenomenon" (MacLeod et al., 1991, in Ojala, 2007, 731) and can lead to repetitive, uncontrollable chains of thought (Verplanken et al., 2020, in Pihkala, 2022). It is associated with felt powerlessness, uncontrollability, unpredictability, and uncertainty (Pihkala, 2022a). Anxiety about how others perceive one's environmental behaviour should be differentiated as "social eco anxiety" (Sexton & Sexton, 2014, Brough et al., 2016, Hwang & Choi, 2018, in Kurth & Pihkala, 2022, 5). Generally, "eco-anxiety and climate anxiety should not be seen fundamentally as anxiety disorders" (Pihkala, 2022a, 12) as clinical levels of anxiety disorders and depression are rare in those anxious about the environment (Berry & Peel, 2018, Clayton & Karazsia, 2020, Ogunbode et al., 2021, Wullenkord et al., 2021, in Kurth & Pihkala, 2022).

In many studies about eco-emotions, worry and anxiety are the most-often named emotion responses in interviews and surveys (Martiskainen et al., 2020; Ojala, 2007) especially among young people (Ágoston et al., 2022). A global survey with 10.000 young people had 67% report climate fear, 62% climate anxiety, and another 56% powerlessness (Hickman et al., 2021, in Pihkala, 2022a). The stronger one identifies with pro-environmental values, the more anxious one feels (Clayton & Opotow, 2003, Doherty, 2018, Helm et al., 2018, in Kurth & Pihkala, 2022).

In Stanley and colleagues' survey (2021), eco-anxiety was correlated negatively with collective action and had no association with individual behaviours. Further studies show a negative association between eco-anxiety and pro-environmental behaviours (Hart & Nisbert, 2012, in Kurth & Pihkala, 2022) which Norgaard explained on the base of a collective emotion management process which controls and transforms fear into denial (Norgaard, 2011, in Kleres & Wettergren, 2017). Social

movement research shows that fear usually obstructs collective action, but in climate activism it has been found to also be an activating emotion (Kleres & Wettergren, 2017). Studies show that eco-anxiety is associated with information-gathering efforts, increased awareness, and advocacy, as well as higher support of pro-environmental policies as it may motivate coping mechanisms (cf. Kurth & Pihkala, 2022). Ojala (2007) argues worry is based on a profound love for nature, responsibility, and a desire for ecological justice. According to Kurth and Pihkala (2022, 4f) these activating properties of eco-anxiety may be best understood within the framework of "practical anxiety": "the unease that we experience in the face of a novel or difficult choice" which spurs thoughts about what to do and, thus, engagement. This unease attunes us to the challenges at hand and starts risk minimisation processes. Whether fear is activating or inhibiting is also dependent on whether it can be turned into anger rather than helplessness (Barbalet 1998 in Kleres & Wettergren, 2017) among other factors.

Eco-depression

Depression is generally characterised by a lack of energy, low moods, difficulties in experiencing joy and meaning, and cognitions of worthlessness (Gotlib & Hammen, 2014, in Pihkala, 2022b). One may speak of eco-depression when climate change as a chronic stressor is an important contributing factor to depression which is expected to become more prevalent (Pihkala, 2022b). The Finnish word "alakuloisuus", meaning sad and depressed (Pihkala, 2022b, 106), demonstrates a strong connection between eco-depression and eco-grief. The more devastation caused by climate change, the harder it will become to differentiate normal levels of grief and actual depression (Pihkala, 2022b).

Eco-depression might further be linked to intense worrying and helplessness in face of the seemingly invincible power of fossil capital, denial in society, and the high levels of uncertainty which make attaining concrete goals harder (Ojala, 2007). This may result in overwhelmedness or even "psychic numbing" when these emotions get too difficult to cope with (Lifton, 2017, in Pihkala, 2022a, 13f). When there is no more belief in change, people may even lose faith in humanity and lapse into resignation. This hopelessness is associated with feelings of meaninglessness and "climate anhedonia". This translates into low self-esteem, inadequacy, guilt, shame, and powerful despair

(Pihkala, 2022a, 14). Eco-depression may arise after natural catastrophes, from a continued separation from the "more-than-human world" (Pihkala, 2022b, 112f; cf. Abram, 2017) or from the general experience of climate change (Stanley et al., 2021). Numbers of reports on clinically relevant forms of eco-depression are growing (Bodnar, 2008, Kidner, 2007, Pihkala, 2020, in Pihkala, 2022b). While this is relevant in terms of public health, oftentimes emotional support can only be found in counterculture (Pihkala, 2022b).

In Hickman and colleagues' global survey of 2021 with 10.000 young people, 44% reported climate despair and a representative study in Finland by Hyry 2019 had 9% self-report depression as a consequence of climate change (Pihkala, 2022b).

Usually, depression is associated with deactivation (Stanley et al., 2021) as low energy inhibits engagement even though investing in environmentalism may ease negative emotions (Pihkala, 2022b; Stanley et al., 2021). There might be a difference in disengaging despair-as-a-mood and despair-as-a-feeling which might motivate action (Pihkala, 2022a) as Stanley et al. (2021) have found a positive association with collective action. No matter whether eco-depression inhibits or enhances environmentalism, one should not induce it because of its detrimental health effects (Stanley et al., 2021).

Eco-anger

Anger is an emotion arising from a perceived transgression of one's own boundaries or norms such as justice (Kleres & Wettergren, 2017; Rothmund et al., 2014, Zomeren, Postmes & Spears, 2008, Wranik & Scherer, 2010 in Nicolai, 2022; Weiss, Suckow, Cropanzano, 1999 in Van Zomeren, Spears, Fischer, Leach, 2004). According to Packer, a "normative conflict" arises between how the world is and how one thinks it should be (Packer, 2008, in Bamberg et al., 2018, 12). In social movement research, it was shown that the more affected a person is themselves, the higher their anger (Mees, 2021, in Nicolai, 2022). Eco-anger occurs in those affected by climate change as well as those who are not (yet) affected but perceive the injustices going along with it: Those who contributed least to climate change are those affected the worst and with the least resources to protect themselves. There are different

opinions on whether frustration is part of anger or not (Nicolai, 2022; Pihkala, 2022a) but since Stanley and colleagues (2021) operationalise anger with frustration as a core part, this will be assumed here as well.

As anger is a result of perceived transgressions, a transgressor must be identified. Thus, anger results from ascribing guilt and/or responsibility (Nicolai, 2022; Kleres & Wettergren, 2017; Van Zomeren et al., 2004). Kleres and Wettergren identify anger as a "potentially political emotion" since an attribution of guilt onto those in power takes place which can even transform fear into anger. In "the emotional regime of Western 'post-political' democracies (Mouffe, 2005), however, anger is viewed with suspicion (Stearns, 1994) and movement activists tend to avoid expressions of anger" (Kleres & Wettergren, 2017, 3).

Anger can be a strong group-based emotion when experiences of injustice and unfairness are shared within a certain population and one recognises that others perceive the situation as unjust as well (Stanley et al., 2021; Van Zomeren et al., 2004). It was found that eco-anger was related with lower anxiety, depression, and stress (Stanley et al., 2021) and that it might counteract fear (Barbalet, 1998, in Kleres & Wettergren, 2017). Eco-anger is seen as an adaptive reaction to the climate crisis as it helps individuals defend themselves, take action for what they cherish (Nicolai, 2022), and express their emotions (Stanley et al., 2021). However, anger may also arise for narcissistic reasons when something threatens identity (Pihkala, 2022a), it can promote activist burnout and conflicts within active groups (Gould, 2009, Summers-Effler, 2007, in Kleres & Wettergren, 2017) and it has a negative image as it is often associated with aggression (Nicolai, 2022).

57% reported eco-anger in Hickman and colleagues' global survey of 2021 with 10.000 young people (Pihkala, 2022a). A German-wide representative study showed that eco-anger was one of the most dominant emotions across all social milieus and is expected to increase (Krause & Gagné, 2021, in Nicolai, 2022).

Anger is usually regarded as an activating emotion (Stanley et al., 2021). In social movement research, anger predicts collective action (Martiskainen et al., 2020; Landmann & Rohmann, 2020, Van

Zomeren et al., 2008, in Nicolai, 2022) especially when people are directly affected by injustice such as in queerfeminist or antiracist protests (Gould, 2009, Rodgers, 2010, in Kleres & Wettergren, 2017; Nicolai, 2022; Van Zomeren et al., 2004). Whether anger turns into collective action is often dependent on further variables such as experiencing group-based anger by means of social identification with that group, sharing an evaluation of how unjust a situation is, perceived group efficacy and a group's intention to act (Martiskainen et al., 2020; Van Zomeren et al., 2004).

However, collective action is not only taken when people are affected themselves but also as a result of moral outrage which drives solidarity actions with those affected and less powerful such as vulnerable communities but also the more-than-human world in general (Rodgers, 2010, in Kleres & Wettergren, 2017; Knab & Steffens, 2021, in Nicolai, 2022). The effects of *eco*-anger on behaviour have been investigated only in the last years (Pihkala, 2022a). In a study, eco-anger was a positive predictor for climate engagement (Landmann & Rohmann, 2020, Nicolai, 2022) with anger being the strongest predictor for both personal and collective pro-environmental behaviour in Stanley and colleagues' survey study (2021). Anger does not only spur action, but action can also increase anger as those engaged are confronted more with injustices (Becker et al., 2011, in Nicolai, 2022). The more people realise that others around them are angry about the climate crisis, the likelier they are to support climate policy independent of their own political views (Nicolai, 2022). Kollmuss and Agyeman (2002) problematise that an ascription of responsibility to multinationals, politicians etc. may also go along with a refusal to engage in personal pro-environmental behaviours.

Eco-hope

"Hope is elicited by the cognitive appraisal that a meaningful goal is possible to achieve in the future" which is different from the concept of motivation (Van Zomeren, Pauls, Cohen-Chen, 2019, 1, based on Averill et al., 1990, Lazarus, 1991; cf. Ojala, 2007). Hope spurs cognitions about agency and goal achievement (Van Zomeren et al., 2019) and is associated with uncertain thoughts of positive expectations for the future (Ojala, 2007). Yet, it may also arise when we see our own agency as limited (McGeer, 2004, in Kleres & Wettergren, 2017). Hope can be put in ourselves, collective action,

humanity, institutions etc. (Kleres & Wettergren, 2017). Climate activists report eco-hope arises from collective action within a movement (Kleres & Wettergren, 2017). In an experimental study by Van Zomeren and colleagues (2019), hope was found to have an emotion-focused coping function, helping to ward off negative feelings of despair and hopelessness. This "rainbow of the mind" (Snyder, 2002, in Van Zomeren et al., 2019, 1) may be a "healthy coping response" when there are no better alternatives at hand (6). Hope was added to the Stanley and colleagues' 2021 eco-emotion scale to investigate associations with meaning-focused coping.

In Hickman and colleagues' global survey, 31% of young people stated they felt "climate optimism" (Pihkala, 2022a, 17) with hope being one of the two emotions most often declared in Martiskainen and colleagues' survey (2020).

Hope is generally regarded as a strong motivator (McGeer, 2004, in Kleres & Wettergren, 2017; Ojala, 2007; Greenaway et al., 2016, in Van Zomeren et al., 2019). Especially when chances of success are perceived to be low, hope seems to be a necessary condition for action. Hope may lead to action, but action might also create hope which can lead to a self-perpetuating spiral (McGeer, 2004, in Kleres & Wettergren, 2017). However, in an experimental study by Van Zomeren et al. (2019), hope did not predict collective action. This might possibly be the case when hope's emotion-focused coping function fends negative feelings and thus, removes the need to act.

Coping

Climate change poses a threat that goes along with different negative emotions and expectations which society and individuals have to cope with (Van Zomeren et al., 2019). Adaptive coping strategies to deal with climate change are a "set of cognitive, affective, and behavioral responses [...] that involves acknowledging the problem, shifting attitudes to a more pro-environmental position, and adopting a problem-solving attitude, which contributes to psychological adjustment and emotion management" (based on Bradley et al., 2016, in Ágoston et al., 2022, 12). According to Lazarus and Folkman, coping involves "cognitive and/or behavioral efforts to manage specific external and/or

internal demands" (Ojala, 2013, 2192) with Folkman (2008) adding that coping is only effective when one is able to determine when a goal should no longer be pursued.

The Cognitive Theory of Stress and Coping by Lazarus & Folkman, 1984, and its extension by Folkman, 2008, is an appraisal-based model (Folkman, 2008). When an event occurs, in primary appraisal, an individual judges whether this event is of importance for their own goals, values, and wishes. If the event is judged to be of importance and potentially negative, in secondary appraisal, an analysis of our abilities to cope with the situation follows (Lazarus, 1991). These specific appraisals lead to different emotions and different coping strategies. Problem-focused coping is initiated when we believe to be able to solve the situation and emotion-focused coping happens in situations we think we cannot change (Folkman, 2008). For situations with unfavourable outcomes after coping, Folkman (2008) introduced the concept of meaning-focused coping as can be seen in Chart 1. These coping strategies may be differentiated in engagement and disengagement strategies resulting in different ways of dealing with issues such as climate change (Olderbak, Uusberg, MacCann, Pollak, & Gross, 2022).

Problem-focused Coping

Problem-focused coping is defined as "planful actions to change the actual person-environment relationship by directly acting on the environment or on oneself" (Lazarus, 1991, 830). It is, thus, a confrontation of the problem or stressor itself (Ojala, 2013; Van Zomeren et al., 2004). Related to climate change, problem-focused coping strategies reported in a semi-structured interview with climate-sensitive people in Hungary included planning and executing actions and trying to persuade others even at the cost of conflict (Ágoston et al., 2022). According to Ojala (2007, 743), in order "to find strategies to promote both psychological well-being and an active engagement among young people, it is not the ability to get rid of worry that should be sought after but rather the capacity to face worry". In her studies, activism was one of the most important and adaptive ways of coping with negative eco-emotions as it transformed worry and anger into positive actions (cf. Martiskainen et al., 2020) and had mostly mental health benefits (Ojala, 2007). It is, thus, not surprising that problem-

focused coping goes along with increased levels of pro-environmental engagement (Martiskainen et al., 2020; Ojala, 2007; Ojala, 2013; Homburg et al., 2007, in Ojala, 2013; Van Zomeren et al., 2004).

Emotion-focused Coping

Emotion-focused coping results when a stressor or problem seems to be unchangeable and is characterised by an attempt to change negative emotions through a change in meaning for example through denial, avoidance, or attention deployment from the stressor (Lazarus, 1991; Ojala, 2013). It can be understood as part of emotion regulation (Olderbak et al., 2022). This strategy goes along with lower levels of subjective well-being but might be a useful strategy when stressors are uncontrollable. Adults often use distancing strategies such as switching off the TV at climate-news or down-playing their severity (Ojala, 2013). In semi-structured interviews the following strategies were named: withdrawal, acceptance of the situation associated with cynicism and learned helplessness, wishful thinking, focus on hobbies, an abstract fantasising about what should be done (Ágoston et al., 2022; *remark: this study only differentiates problem-focused and emotion-focused coping which is why examples were divided in sub-categories by the author*). From a climate change mitigation perspective, emotion-focused coping strategies are maladaptive (Bradley et al., 2014, in Ágoston et al., 2022) and were negatively correlated with pro-environmental behaviours in Ojala's studies (2013).

Meaning-focused Coping

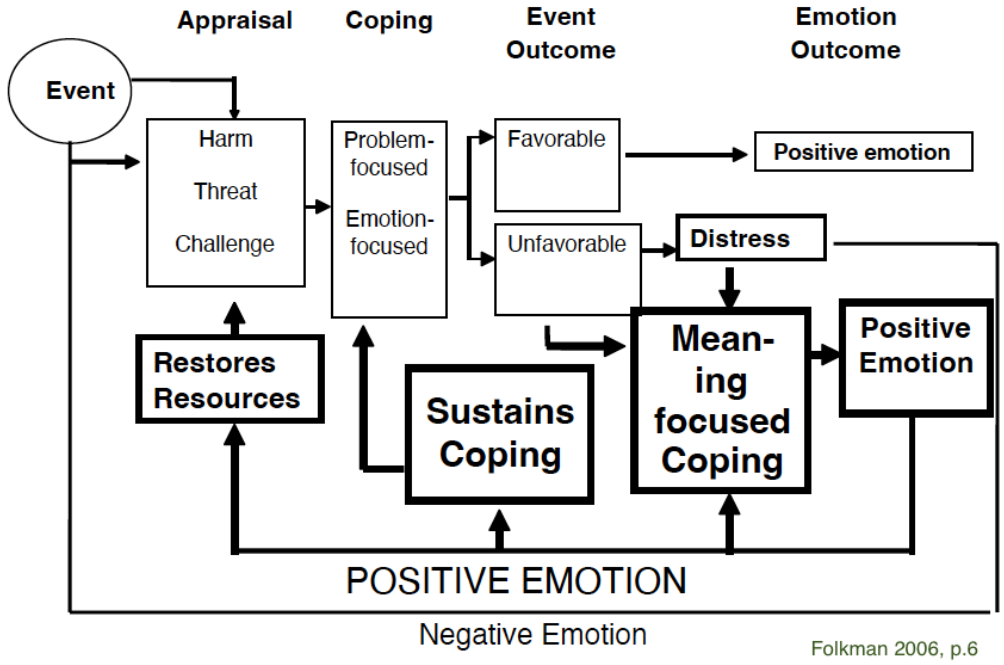
This added category of coping is probably important for situations which cannot be changed easily (Ojala, 2007). Meaning-focused coping involves a positive - even spiritual or religious - reappraisal with a focus on the meaning and advantages of difficult situations (Ojala, 2013) and draws on existential meanings to sustain coping in difficult times (Folkman, 2008). Existential meaning "gives the person a feeling of belonging to something larger" - ordinary events are imbued with positive meaning (Ojala, 2007, 732). Meaning-focused coping activates positive emotions rather than decreasing negative ones (Ojala, 2013) and helps restore coping resources for problem-focused coping which is critical for mental well-being (Folkman, 2008). Benefit-finding as part of this coping strategy revolves around the (subjectively perceived) potential of growth in wisdom and a greater appreciation of "what matters".

Young climate activists named a trust in the long-term efficiency of small gestures, a trust in humanity, or the subjectively hopeful glimpse that even when humans cease to exist, nature will thrive again at some point among others (Ojala, 2007). Study participants also said reframing climate change as a challenge helped them cope with climate change (Ágoston et al., 2022; *remark: this study only differentiates problem-focused and emotion-focused coping which is why examples were divided in sub-categories by author*).

Ojala's study with teenagers found that meaning-focused coping and pro-ecological behaviour were positively correlated (2013). However, Folkman raised the concern that benefit-finding as a form of self-protection might impede important problem-focused coping (Folkman, 2008).

Chart 1

Folkman's Extended Version of the Cognitive Theory of Stress and Coping by Lazarus & Folkman, 1984



Hypotheses

Building on Stanley and colleagues' (2021) and Ojala's (2013) research, the main research questions are whether eco-emotions such as eco-anxiety, eco-depression, eco-anger, and eco-hope predict pro-environmental individual and collective behaviours; and whether such an association between eco-emotions and pro-ecological behaviours is moderated by ecology-related problem-focused, emotion-focused, and meaning-focused coping. This was formulated in the hypotheses:

Hypothesis No. 1: Eco-emotions predict pro-environmental individual behaviour (Model 1)

Hypothesis No. 2: Eco-emotions predict pro-environmental collective behaviour (Model 2)

Hypothesis No. 3: Coping strategies moderate eco-emotions' link with individual behaviour (Model 3)

Hypothesis No. 4: Coping strategies moderate eco-emotions' link with collective behaviour (Model 4)

Regarding the direction and specificity of effects, this study was exploratory.

Method

Study Design

To measure effects of eco-emotions on pro-ecological behaviour as well as possible interaction effects with eco-related coping strategies in a cross-sectional study, parts of validated surveys were combined into a 52-item online survey. These included the eco-emotion and pro-environmental behaviours measures by Stanley and colleagues (2021) as well as the Maria Ojala's Coping Scale (Ojala & Bengtsson, 2019; Ojala, 2013; Ojala, 2012). Further, social desirability was measured via the short form of the SDS-CM (Lück & Timaeus, 1997) as well as age, gender, and educational parameters. Two attention check items were in order to exclude those with low attention to the survey questions. The safe LMU-based platform RedCap was used to perform the study (Harris et al., 2009; Harris et al., 2019) which was pre-registered on AsPredicted under No. #136637. The study was coupled with Dr. Mitho Müller's project ClimateCons and thus, followed regulations for ethics and data protection approved by Ludwig-Maximilians University.

Participants

A prior power analysis (power = 0.8, effect = 0.5, alpha = 0.05) determined that at least 146 participants were needed for an 18-predictor multiple linear regression (Model 3 and 4). As young people are more affected by climate change than the generations before them and as they exhibit higher rates of concern about climate change (Milfont, Zubielevitch, Milojev, Sibley, 2021), an age cut-off of 18-30 years was determined. Participants were mobilised from within climate activism contexts in Munich and Germany to include those who act pro-environmentally. However, the survey was also shared among students of Environmental Studies, Education for Sustainable Development, and (School) Psychology at Ludwig-Maximilians University, Munich. Psychology students were able to obtain credits for their studies via participation, other than that there was no compensation. Drawing on some of the remarks some participants left, the survey also included climate-sceptics and deniers. To estimate the percentage of climate activists in our sample, we implemented a cut-off of 10/100 for the items measuring protest participation and organisation. Using this cut-off, we identified 95 participants (i.e., less than half of our sample) as climate activists. The mean age within the sample was 23.55 years old (SD = 3.34). Although optional, most participants stated their gender (cf. Chart 2) and educational background (cf. Chart 3). Most participants were cis-female (n = 125) with less than half cis-males (n = 52), and some gender queer participants (n = 18). This is in line with the finding that women are usually more emotionally engaged in ecology and more willing to change than men (Kollmuss & Agyeman, 2002). Further, the sample was dominated by academics with most having either completed their Abitur (equivalent to A-Level, n = 109) or an academic degree (n = 87). This may confirm that years of education are associated with environmental knowledge (Kollmuss & Agyeman, 2002, 248) or it was simply a consequence of where the survey was spread. 12 participants did not name their gender, possibly due to non-applicability (cf. Appendix No. 3) and 2 did not name their educational background.

Chart 2

Distribution of Gender Identities Within Sample

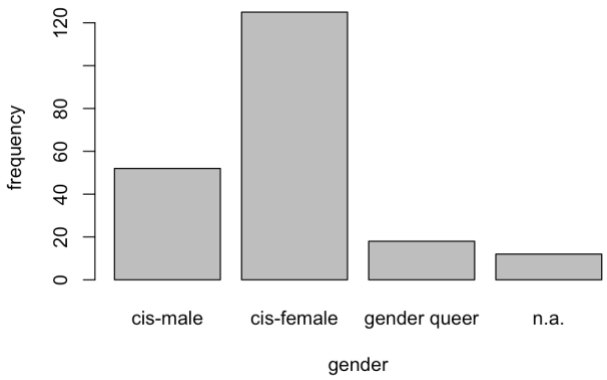
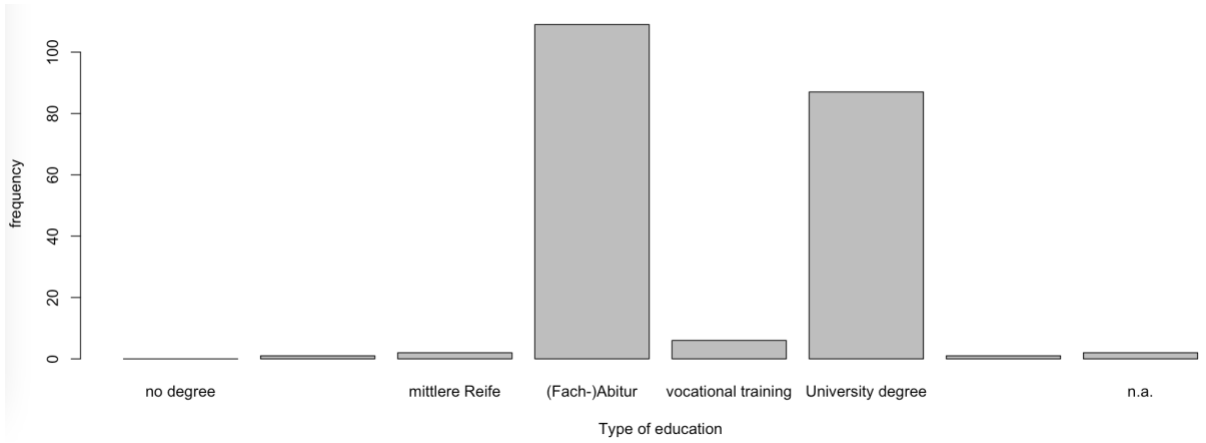


Chart 3

Distribution of Educational Background Within Sample



Measures

The newly combined measures for eco-emotions, climate-related coping, and ecological behaviours were translated from English to German using backtranslation to check for correctness.

Eco-Emotion Measures, Stanley et al., 2021

This short survey operationalises eco-depression, eco-anxiety, and eco-anger using two adjectives respectively which participants can apply to themselves on a sliding scale from 0 (*Not at all*) to 100 (*A great deal*). Eco-anxiety was defined by the items "anxious" and "afraid", eco-depression had "depressed" and "miserable" as defining characteristics, and anger was conceptualised with the adjectives "angry" and "frustrated". Eco-hope as "confident" and "hopeful" was added to investigate its associations with meaning-focused coping and because there is contradictory research on hope's effects on behaviours. In the original study, Spearman-Brown coefficients for the three eco-emotions were between 0.82 and 0.84, indicating good internal consistency. As "eco-hope" was added, overall reliability and validity were slightly changed. Although the eco-emotion constructs in the study are rather simple, the measure differentiates between negatively valanced eco-emotions. This was regarded as a reason for more differentiated study results in the original study than in those which mixed up these emotions (Stanley et al., 2021).

Pro-Environmental Behaviours Measure, Stanley et al. 2021

Stanley and colleagues' survey is one of the few that includes collective behaviours which is why it was chosen for the study at hand. It operationalises collective behaviours as participation in protests, convincing others, letters, and petitions to policy makers within eight items. The individual-behaviour sub-scales are operationalised as buying more sustainable products and reducing consumption in another eight items. The item "Organising protests in a group" was added to collective behaviours as this was seen as a core collective behaviour omitted in the original survey and because this would fit part of the politically engaged study participants better. Participants were asked to rate the occurrences of the respective behaviours on a sliding scale from 0 (*Never*) to 100 (*At every opportunity*) for the last year. In the original study, Cronbach's alpha was 0.84 for personal behaviours and 0.89 for

collective action, indicating good internal consistency. Validity may have been, and reliability was slightly changed as a result of the collective-behaviours scale's modification.

Coping Scale, Ojala & Bengtsson, 2019; Ojala, 2013; Ojala, 2012

Ojala's coping scale emerged from an earlier qualitative study with young people in Sweden, suggesting high face validity (Ojala, 2013) and is built upon Folkman's 2008 extension of the Cognitive Theory of Stress and Coping by Lazarus & Folkman, 1984. It measures problem-focused coping with three items (i.e., "I think about what I myself can do"), emotion-focused coping with 11 items (i.e., "Nothing serious will happen during my lifetime") and meaning-focused coping with 6 items (i.e. "I have faith in humanity, we can fix all problems"). Participants were asked to determine how much these statements applied to their thoughts and feelings on six categorical levels of intensity from 0 (*not at all*) to 5 (*to a large extent*). Cronbach's alphas were between 0.72-0.75, indicating acceptable internal consistency. This scale was not changed but translated using backtranslation.

SDS-CM, Lück & Timaeus, 1997

The four-item version of Lück and Timaeus' social desirability scale was used in its German original. It was used to determine to what degree participants were answering according to what they thought would "meet[] the approval of others" (Lück & Timaeus, 1997). The items contained the statements "I always say what I think", "I am sometimes irritated, when I don't get my way", "I am willing to admit to a mistake I am making", and "I have sometimes intentionally said something that could hurt the feelings of someone". These items could be determined as either "true" or "false" by participants. A correlation t-test was conducted to investigate social desirability's influence on participants' answers.

Statistical Analyses

All statistical analyses were performed using RStudio, R version 4.3.1 (R Core Team, 2021) using car package (Fox & Weisberg, 2019), dplyr package (Wickham, François, Henry, Müller, Vaughan, 2023), pwr package (Champely, 2020), sjPlot package (Lüdecke, 2023), psych package (Revelle, 2023), and mbess package (Kelley, 2022). The analyses used the standard $p < .05$ criterion for all analyses to determine if the observed effects were statistically significant.

Data Exclusion and Missing Data

Incomplete data sets (n = 94) and those who failed both attention checks (i.e., "If you are still attentive, click on X"; n = 26) were excluded from the survey reducing the 331 initial participants to 211. Otherwise, all data was used.

Main Analyses

Means, medians, standard deviations, and Cronbach's alphas were calculated for all eco-emotion, coping and behaviour variables as well as a correlation table. To test the two main hypotheses, four multiple linear regressions were conducted. In the first regression, it was investigated whether the predictors eco-depression, eco-anxiety, eco-anger, and eco-hope would show effects on individual pro-ecological behaviour (Model 1). The same regression was done with collective pro-ecological behaviour as the outcome (Model 2). The second set of regression models examined not only emotions' effects on the two sets of behaviours but also the effect of the three different coping strategies as well as the respective interactions of each coping strategy with each eco-emotion (Model 3 and 4). These two regressions were, thus, conducted with 18 variables which leads to a higher instability of the model. This approach differs from Stanley and colleagues who used structural equation modelling and from Ojala who based her research on correlations. This exploratory cross-sectional study was determined unsuitable for causal investigations such as structural equation modelling and thus, relied on multiple linear regression modelling:

Model 1: Regression model with the four eco-emotions as predictors for pro-environmental individual behaviour

Model 2: Regression model with the four eco-emotions as predictors for pro-environmental collective behaviour

Model 3: Regression model with the four eco-emotions, three coping strategies and their respective interaction with eco-emotions as predictors for individual behaviour (18 predictors)

Model 4: Regression model with the four eco-emotions, three coping strategies and their respective interaction with eco-emotions as predictors for collective behaviour (18 predictors)

Exploratory Analyses

As the 18-variable regressions, Model 3 and Model 4, were not statistically feasible (see Variance Inflation Factors in Results section), five more exploratory multiple linear regressions were conducted. These investigated potential links between eco-emotions and coping strategies as well as coping strategies and both individual and collective behaviour.

Model 5: Regression model with the four eco-emotions as predictors for problem-focused coping

Model 6: Regression model with the four eco-emotions as predictors for emotion-focused coping

Model 7: Regression model with the four eco-emotions as predictors for meaning-focused coping

Model 8: Regression model with the three coping-strategies as predictors for individual behaviour

Model 9: Regression model with the three coping-strategies as predictors for collective behaviour

Variance Inflation Factors

To determine the scientific merit of the used models, variance inflation factors were calculated for all used models. A variance inflation factor above 5 is considered high, indicating substantial multicollinearity between predictors. In this case, the regression model is not well fitted and the predictors do not “provide unique or independent information” (Zach, 2019).

Results

Descriptive Analysis

Means, medians, and standard deviations were calculated for all eco-emotions, coping, and behaviour variables as can be seen in Table 1 as well as a correlation table to be found in the Appendix (No. 1).

Within the sample, most participants showed higher levels of eco-anxiety and eco-anger than in the original study by Stanley and colleagues (2021, cf. Table 1). The comparatively lower levels of eco-depression were 1.5 times higher than in the original study. Eco-hope was on a low level in comparison with the other emotions as can be seen in Chart 4. Especially among the negatively valanced emotions, there were many outliers with lower values. Therefore, it is important to examine the medians of eco-anxiety and eco-anger rather than their lower means. Generally, standard deviations were high but internal consistency was acceptable to very good. The negatively valanced eco-emotions correlated positively with one another. However, eco-hope shows negative correlations with the other measured eco-emotions (cf. Appendix No. 1).

The sample showed slightly higher instances of self-reported individual pro-ecological behaviours than the original study, and roughly twice as high self-reported collective pro-ecological behaviours with high standard deviations as can be seen in Table 1. Chart 5 shows that there were several outliers in the lower values for individual behaviours. Internal consistency was acceptable for individual behaviour and good for collective behaviour.

The sample showed high levels of problem-focused coping with a high standard deviation. Emotion-focused coping was rather low and meaning-focused coping closer to the middle of the scale. There were outliers in each category as can be seen in Chart 6. Internal consistency was acceptable für problem-focused and emotion-focused coping but only minimally acceptable for meaning-focused coping.

Table 1

Means, Medians, and Standard Deviations for Emotions, Behaviours, and Coping Related to Climate Change

Variable	*Mean*	*Median*	*Standard Deviation*	*Cronbach's Alpha*
Eco-depression	56.64 (37.75)	58.5	22.64 (28.01)	.79
Eco-anxiety	73.44 (50.34)	**79**	21.65 (28.46)	.77
Eco-anger	74.91 (55.28)	**82.5**	25.04 (29.05)	.87
Eco-hope	32.39	31.5	20.85	.83
Individual Behaviour	71.26 (66.75)	72	14.65 (18.81)	.79
Collective Behaviour	48.5 (25.81)	49.56	20.79 (23.76)	.83
Problem-focused Coping	3.696682	**4**	0.89	.80
Emotion-focused Coping	1.6648	1.64	0.4	.72
Meaning-focused Coping	2.7	2.67	0.64	.68

Note: Values of eco-emotions and behaviours are from 0-100; values for coping strategies are from 0-5; values in brackets show values of original studies (Stanley et al., 2021) where available

Chart 4

Boxplots for Eco-emotions

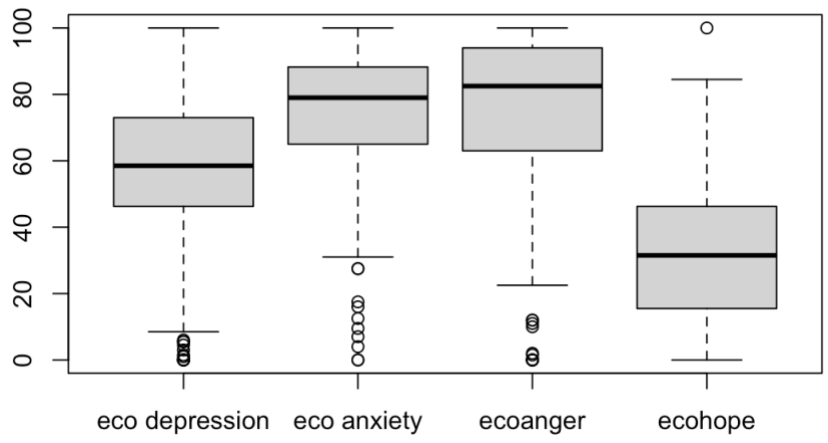


Chart 5

Boxplots for Pro-Environmental Behaviours

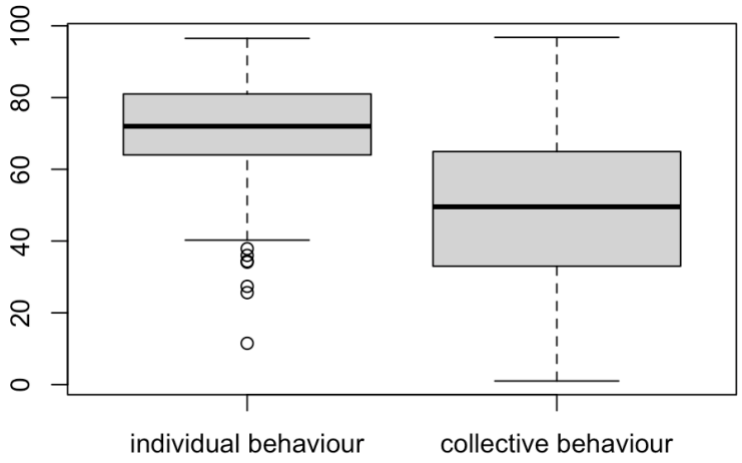
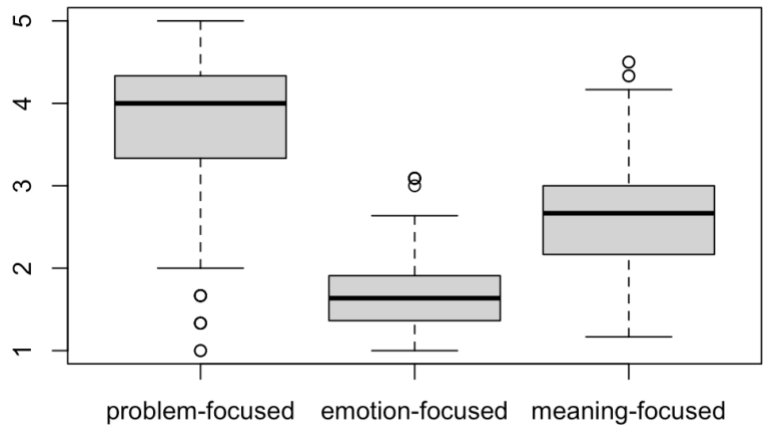


Chart 6

Boxplot for Ecology-Related Coping Strategies



Analysis of Hypotheses

Social Desirability and Variance Inflation Factors

The correlation tests showed no significant correlations between social desirability and eco-emotions, coping strategies, or behaviours. Therefore, reported answers were not distorted by a wish to be approved by others. The 18-predictor Models 3 and 4 showed high variance inflation factors between 26.65 (meaning-focused coping) and 195.62 (eco-depression) (cf. Appendix No. 2). This indicates high multicollinearity. Thus, the predictors within these two models do not explain variance independently rendering the models unproductive. The pre-registered Models 1 and 2 had acceptable variance inflation factors and so did the exploratory models 5 to 9 which can be seen in Table 2. Thus, in the following, the results of Models 3 and 4 will not be analysed and interpreted.

Main Analysis: Do Eco-Emotions Predict Behaviours?

Eco-anxiety and eco-anger proved to be significant predictors for individual behaviour while eco-depression and eco-hope were non-significant predictors (Table 3). Model 1 only explained 19% of the variance in individual behaviour. In Model 2, shown in Table 4, collective behaviour only had one positive significant predictor which was eco-anger while the other eco-emotions remained non-significant. This model explained 31% of variance in collective behaviour.

Exploratory Analysis: Do Eco-Emotions Predict Coping and Does Coping Predict Behaviours?

As the 18-predictor Models 3 and 4 could not be used for interpretation, analyses which were not pre-registered were conducted in order to reduce the amount of variables and, thus, account for higher stability in the models.

As Table 5, 6 and 7 show, eco-emotions were found to be predictors for the three different coping strategies: While eco-anxiety and eco-anger were significant positive predictors for problem-focused coping with a relatively high variance explanation of 40%, eco-anger had a significant negative link with emotion-focused coping with only 16% of variance explanation. There was a positive link between meaning-focused coping and eco-hope ($R^2 = 0.33$).

When analysing coping strategies as predictors for behaviours in Models 8 and 9, problem-focused coping was found to be a significant positive predictor of individual behaviour with a variance explanation of 34% and on collective behaviour as well. Meaning-focused coping showed a negative link to collective behaviour (Multiple $R^2 = 0.37$). Results may be found in Table 8 and 9.

Table 2

Variance Inflation Factors of Models

Predictors	Model 1 & 2: Emotions as Predictors for Behaviour	Exploratory Models 5, 6, 7: Emotions as Predictors for Coping	Exploratory Models 8 & 9: Coping as Predictor for Behaviours
eco-depression	2.16	2.16	
eco-anxiety	2.37	2.37	
eco-anger	2.14	2.14	
eco-hope	1.23	1.23	
problem-focused coping			1.28
emotion-focused coping			1.30
meaning-focused coping			1.02

Table 3

Model 1: Emotions as Predictors for Individual Behaviour

Predictors	*Estimates*	*CI*	*p*
(Intercept)	374.30	305.30 – 443.31	**<0.001**
eco-depression	0.29	-0.18 – 0.76	0.230
eco-anxiety	0.55	0.04 – 1.07	**0.035**
eco-anger	0.48	0.05 – 0.90	**0.027**
eco-hope	0.17	-0.22 – 0.55	0.395
Observations	211		
R^2 / R^2 adjusted	0.194 / 0.178		

Table 4

Model 2: Emotions as Predictors for Collective Behaviour

Predictors	*Estimates*	*CI*	*p*
(Intercept)	58.82	-43.47 – 161.12	0.258
eco-depression	0.48	-0.22 – 1.17	0.177
eco-anxiety	0.34	-0.42 – 1.11	0.374
eco-anger	1.65	1.02 – 2.27	**<0.001**
eco-hope	0.41	-0.16 – 0.98	0.161
Observations	211		
R^2 / R^2 adjusted	0.305 / 0.291		

Table 5

Model 5: Emotions as Predictors for Problem-Focused Coping (Exploratory)

Predictors	*Estimates*	*CI*	*p*
(Intercept)	4.84	3.48 – 6.19	**<0.001**
eco-depression	-0.01	-0.01 – 0.00	0.231
eco-anxiety	0.02	0.01 – 0.03	**<0.001**
eco-anger	0.02	0.01 – 0.03	**<0.001**
eco-hope	0.00	-0.00 – 0.01	0.295
Observations	211		
R^2 / R^2 adjusted	0.399 / 0.388		

Table 6

Model 6: Emotions as Predictors for Emotion-Focused Coping (Exploratory)

Predictors	*Estimates*	*CI*	*p*
(Intercept)	23.94	21.30 – 26.57	**<0.001**
eco-depression	0.02	-0.00 – 0.03	0.094
eco-anxiety	-0.02	-0.04 – 0.00	0.083
eco-anger	-0.03	-0.05 – -0.02	**<0.001**
eco-hope	-0.00	-0.02 – 0.01	0.801
Observations	211		
R^2 / R^2 adjusted	0.156 / 0.140		

Table 7

Model 7: Emotions as Predictors for Meaning-Focused Coping (Exploratory)

Predictors	*Estimates*	*CI*	*p*
(Intercept)	13.99	11.94 – 16.04	**<0.001**
eco-depression	-0.01	-0.02 – 0.01	0.413
eco-anxiety	0.00	-0.01 – 0.02	0.790
eco-anger	-0.00	-0.02 – 0.01	0.558
eco-hope	0.05	0.04 – 0.06	**<0.001**
Observations	211		
R^2 / R^2 adjusted	0.327 / 0.314		

Table 8

Model 8: Coping-Strategies as Predictors for Individual Behaviour (Exploratory)

Predictors	*Estimates*	*CI*	*p*
(Intercept)	324.58	207.86 – 441.30	**<0.001**
Problem-focused Coping	24.77	19.24 – 30.30	**<0.001**
Emotion-focused Coping	-0.73	-4.13 – 2.67	0.672
Meaning-focused Coping	-0.97	-4.43 – 2.48	0.580
Observations	211		
R^2 / R^2 adjusted	0.337 / 0.328		

Table 9

Model 9: Coping-Strategies as Predictors for Collective Behaviour (Exploratory)

Predictors	*Estimates*	*CI*	*p*
(Intercept)	179.42	-1.64 – 360.47	0.052
Problem-focused Coping	39.04	30.46 – 47.62	**<0.001**
Emotion-focused Coping	-0.71	-5.99 – 4.56	0.790
Meaning-focused Coping	-10.05	-15.41 – -4.69	**<0.001**
Observations	211		
R^2 / R^2 adjusted	0.374 / 0.365		

Discussion

Discussion of Results

Study results were mostly consistent with previous research but tentative due to the non-representative sample. The interpreted models could only explain a variance between 16% and 40%, suggesting that other factors than emotions also play an important role in the generation of behaviour and action as was discussed in the Pro-Ecological Behaviour section. According to Pihkala (2022a), many contextual factors need to be considered rather than asserting a deterministic emotion-behaviour model. According to Uzzell and Räthzel (2009, 340) “individuals are the sum of their social relations, i.e., they are the cause and consequence of their relations to others and the environment”. Hence, the Social Identity Model of Collective Action (Van Zomeren et al., 2012 in Van Zomeren et al., 2019) or the Encapsulated Model of Social Identity for Collective Action (Thomas & McGarty, 2009 in Bamberg et al., 2018) might be good, empirically grounded models to explain behaviour. Yet, emotions did prove to be contributing factors. No conclusions can be drawn about interactions between emotions and coping strategies as Model 3 and 4 proved uninterpretable.

As the study was a non-experimental cross-sectional study, conclusions as to the direction of effect should be treated carefully even when conducting a predictor-outcome study. However, based on the theoretical model it is assumed that coping-mechanisms prompt behaviour instead of the other way around. In the case of emotions and behaviour as well as emotions and coping-strategies, it seems more likely that the effect could be bi-directional.

In this study, eco-anxiety had a positive link with individual behaviour but not collective behaviour in main analysis and a positive link with problem-focused coping in exploratory analysis. Eco-anger was a positive predictor for both forms of behaviour in the main analysis. Consistently, in the exploratory models, it was a positive predictor for problem-focused coping which was the only positive coping-predictor for both pro-ecological behaviour categories in the sample. In further exploratory models, eco-anger was a negative predictor for emotion-focused coping which did not have any significant prediction effects on behaviour and was generally low within the sample. Eco-

depression and eco-hope did not show any significant links with collective or individual behaviours in the main regression models. While for eco-depression no significant links with any coping strategies could be found in the exploration, there was a positive association between hope and meaning-focused coping. Meaning-focused coping was negatively associated with collective behaviours in an exploratory model.

The findings of eco-anxiety being positively linked with individual behaviour and problem-focused coping are in line with findings of eco-anxiety as an activating force (Kleres & Wettergren, 2017; Kurth & Pihkala, 2022) within the framework of "practical anxiety" (Kurth & Pihkala, 2022, 4f). This contrasts study results which have found eco-anxiety to be deactivating (Hart & Nisbert, 2012, in Kurth & Pihkala, 2022) such as the original study of Stanley and colleagues (2021): In their results, eco-anxiety had no association with individual behaviour and a negative link to collective action. As for collective behaviour, fear may be activating when it can be turned into anger which is a strong collective force (Barbalet, 1998, in Kleres & Wettergren, 2017). Thus, eco-anxiety which remains in the realms of anxiety and/or helplessness may not spur people into acting as a group or based on group norms. This potential phenomenon could be increased when eco-anxiety is perceived as a socially illegitimate emotion and when perceived powerlessness (Pihkala, 2022a) is high. In this case, withdrawal to the private might be a logical consequence. Further, as anxiety is characterised as an internalising affect (Walton & Pavlos, 2015), eco-anxiety may go along with internalised guilt for climate change. Consequently, a tendency towards "sustainable" consumption choices and consumption reduction seems logical: individual behaviours might be an attempt at making amendments or feeling better about oneself.

This study's result of eco-depression being a non-significant predictor for behaviours is inconsistent with the literature: Generally, eco-depression is found to be a deactivating eco-emotion (Ojala, 2007; Pihkala, 2022a), or surprisingly in Stanley and colleagues' study (2021), it was positively associated with collective behaviours. An explanation is that environmentalism may ease negative emotions (Pihkala, 2022b; Stanley et al., 2021) when individuals feel that they at least are doing

something about the problem. However, when individuals constantly occupy themselves with future-scenarios or feel their engagement is ineffective, eco-depression seems likely to rise.

Eco-anger seems to be the strongest predictor for pro-ecological behaviours with its positive links with both sets of behaviour and problem-focused coping as well as its negative link to emotion-focused coping, which is regarded as deactivating in the literature (Bradley et al., 2014, in Ágoston et al., 2022; Ojala, 2013). This is in line with the literature: Anger is understood as an activating emotion, important especially for collective action (Landmann & Rohmann, 2020, in Nicolai, 2022; Stanley et al., 2021; cf. Van Zomeren et al., 2008, in Nicolai, 2022; Martiskainen et al., 2020) but also individual behaviours as in the original study (Stanley et al., 2021). Considering that anger is related to a "normative conflict" between how the world is and how one thinks it should be (Packer, 2008, in Bamberg et al., 2018, 12), it would be only consequent if anger spurred action to change this gap. However, claims as to the direction of effect need to be treated cautiously. It is also plausible to see anger as a result from the frustrations of pro-ecological behaviours which would be consistent with the operationalisation of eco-anger in this study as "angry" and "frustrated". Within the literature, (eco-)anger is seen as an adaptive emotion which helps individuals act for what they cherish (Kleres & Wettergren, 2017; Nicolai, 2022; Stanley et al., 2021) while maintaining higher levels of mental health (Stanley et al., 2021).

Although hope has been discussed mostly as an activating emotion in the literature (McGeer, 2004 in Kleres & Wettergren, 2017; Ojala, 2007; Greenaway et al., 2016, in Van Zomeren et al., 2009), it did not have any significant effects on this sample's behaviour at all. Further, environmentalism seems to not elicit hope among participants. Its positive link with meaning-focused coping, which in turn had a negative link to collective behaviours, is in line with Van Zomeren and colleagues' study (2019) in which hope was also not a significant predictor for collective action, possibly because it eases negative affect and, thus, the need to act. Another explanation for hope's non-significance as a predictor might be the generally low levels of hope within the sample. Possibly, hope is a somewhat

irrelevant affect among this study's participants whose climate protection efforts seem to be based on their stronger emotions, eco-anxiety and eco-anger.

Problem-focused coping's positive association with environmentalism is in line with Ojala's original study: There, problem-focused coping was the strongest predictor for environmentalism (Ojala, 2013) which is in accordance with general research (Martiskainen et al., 2020; Homburg et al., 2007, in Ojala, 2013; Ojala, 2007; Ojala, 2013; Van Zomeren et al., 2004). This makes sense as problem-focused coping is defined as "planful actions to change" something in the real world (Lazarus, 1991, 830). As problem-focused coping spurs problem-appraisals, eco-anger and eco-anxiety might be plausible consequences of these appraisals. Therefore, the positive link of eco-anger and eco-anxiety with problem-focused coping is likely. These negatively valanced emotions may be alleviated by acting on their stressor.

In Ojala's original study, emotion-focused coping strategies were negatively correlated with pro-ecological behaviour (2013) which is in line with the general construct of stressor-denial and avoidance as well as attention deployment (Lazarus, 1991; Ojala, 2013). These strategies had low levels in the sample which possibly account for the lack of significance in inhibiting environmentalism in this study compared with other studies (Ágoston et al., 2022; Bradley et al., 2014, in Ágoston et al., 2022, 2).

Although in Ojala's original study, meaning-focused coping was positively related with general pro-ecological behaviour (Ojala, 2013), a negative association such as in this study may be expected when looking at the items. They are operationalised as faith in something mostly exterior such as scientists, people in environmental organisations, politicians, or general society. The hope put in these groups may have been disappointed in the last 10 years since Ojala's studies with adolescents or among the older sample researched in this study. Moreover, the hope arising from such cognitions might be rather stupefying than activating. Folkman introduced this coping category to explain coping that arises in difficult situations that may not easily be solved but can generate new mental resources for problem-solving (2008). However, there was no correlation between problem-focused coping and

meaning-focused coping in the sample. Generally, an orientation towards a somewhat spiritual greater meaning may help individuals cope with their emotion but, at least in this sample, it seems to be rather detrimental from a climate-mitigation perspective. This is in line with Folkman's claim that benefit-finding as a form of self-protection might impede important problem-focused coping (Folkman, 2008).

Whether coping strategies moderate positive and/or negative links between eco-emotions and pro-ecological behaviours (Hypotheses 3 and 4) could not be determined due to the statistical failure of the models 3 and 4.

Strengths and Limitations

Statistical Weaknesses and Merits

The study was trying to investigate complex interrelations and interlinking concepts with many variables to get a better understanding of environmental psychological constructs. Part of this broad approach was to add eco-hope to the eco-emotions list. Multiple linear regression models need normal distributed predictors. Unfortunately, within the sample eco-anxiety, eco-anger, and eco-hope were skewed with problem-focused coping and emotion-focused coping slightly skewed. However, according to Maronna, Martin and Yohai (2006), with a large enough sample the model is still thought to be robust. Minimum size of sample (N = 146) was determined via prior power analysis and fulfilled (N = 211). The sufficiently large sample included both climate-sensitive young adults as well as climate deniers helping to explore the connections between eco-emotions, coping strategies, and pro-environmental behaviours. Generally, results may not be generalised, as the sample was not representative, recruited to a mostly within academic and/or environmentally interested or engaged social groups. Deducted from the recruitment, participants were from the Global North where they "speak from a socio-material context with resources both to mitigate and to adopt to climate change, while not being situated in the geographical areas that are hit the hardest" (Kleres & Wettergren, 2017, 5) and prohibit generalisations to contexts of enhanced climate change affectedness. Yet, many results were in line with findings of prior studies and might be seen as a further confirmation.

Statistical weaknesses were high standard deviations across the measures and many outliers in the sample, potentially distorting the results. Yet, the obtained data had acceptable to high internal consistency and no social desirability effects.

Simplified Emotion Constructs

Emotions have several dimensions, such as self or other-directedness, individual or collective affect, and different temporalities (Pihkala, 2022a) which was not accounted for in the survey. Kurth and Pihkala (2022, 2f) criticise that in the Stanley and colleagues' 2021 survey, over-simplified emotion constructs were used, and emotions need to be differentiated more for better results. In the study, it is unclear whether eco-anger arises from the injustice of climate change affectedness, or an anger towards "climate hysteria" among climate sceptics for example. Moreover, Nicolai (2022) remarks that humans usually experience several emotions at the same time, and they may not be easily isolated. This has implications for the validity of the survey, and therefore the results.

Self-Reports and Social Desirability

There are inherent problems with self-reporting such as deficient memories, lacking awareness of personal psychological processes as well as misrepresentation of behaviour (Olderbak et al., 2022) and emotions (Pihkala, 2022a). However, the correlation tests for social desirability showed that participants did not answer according to what they found socially appropriate to report.

Untransparent Political Assumptions

A further limitation of the study is that the underlying political assumptions of the behaviours scale were not made transparent. As Bamberg and colleagues (2018, 22) point out: "Such a 'political' debate may seem intimidating and not necessarily part of our 'daily business' as researchers". However, critical psychologists have long criticised mainstream psychology for claiming to be politically neutral while obscuring and maintaining the political status quo through its research practices and interpretations (Adams, 2021).

With the overall pro-environmental behaviour score being high when participants reported high values for "sustainable" consumption choices, writing letters to politicians, signing petitions, or

climate communication on social media and their environment, the behaviours scale proposed the following theory of change: Everybody can make a difference by their consumption choices, everybody can use their voice to convince others - be it friends, strangers, or politicians. Effective pro-environmental action will follow conviction. This theory of change easily integrates into a neoliberal, individualising, reformist position (Adams, 2017) with a premise often found in climate communication: If policy makers realise the scale of devastation from climate change, they will act accordingly (Malm & Zetkin Collective, 2021). As materialist positions are spread widely in the grassroots climate movement, the survey may not have been well fit towards a relevant part of the sample which was confirmed by some participants' critical comments (cf. Appendix No. 3).

Environmental and Sociological Soundness of Scale

Regarding environmental psychology, "[c]ritical psychologies question whether the kinds of change advanced [in mainstream psychology such as recycling] will add up to social transformation on a scale necessary to mitigate the ill-effect of climate change scenarios" (Adams, 2021, 16). A theory of change grounded in the environmental humanities (Kühne et al., 2022; Malm & Hornborg, 2014; Moore, 2015; Schendler, 2021; Stuart et al., 2020; Zeller, 2020) and social sciences (Adams, 2017; Bamberg et al., 2018; Eyster et al., 2022; Fritsche et al., 2021; Uzzell & Räthzel, 2009) proposes that deep structural and systemic changes are needed in order to combat climate change and that they will be achieved through collective action rather than personal lifestyle choices. For example, it was shown that recycling in 100% of US private households accounted for only 1% of the solid waste produced (Plant & Plant, 1991, in Uzzell & Räthzel, 2009).

Even if a focus on consumerism was environmentally sound, there would be issues within the behaviours scale: All 17 eco-behaviours items have the same weight. Switching off lights has the same value on the behaviours scale as living vegan for example. However, if switching off the lights after leaving a room added up to one hour a day, then, under average light conditions, a person would save about 4 kg of carbon dioxide equivalents a year (calculation based on Merkur, 2021). This negligible emission reduction is 145 times lower than the potential 578 kg carbon dioxide equivalents saved by

veganism (Ökotest, 2020) if production of livestock products was decreased through consumption choice. And yet, both behaviour items are operationalised at the same weight which indicates little environmental scientific grounding. Thus, the behaviour survey only defines behaviours with a pro-environmental intention rather than environmentally effective behaviours.

Further, one could contest that collective behaviour items such as "written a letter to a member of parliament", "expressed your own thoughts or shared information about climate change on social media" or "considered changing who you would vote for because of climate change matters" are truly of a collective nature as operationalised in Stanley and colleagues' survey (2021). The study tried to include an extensive discussion of collective behaviours as environmentalism. The added item "Organising protests in a group" as a complementing behaviours option helped include truly collective forms of environmentalism especially important within climate activist communities. This addition was part of a critical confrontation of an environmental psychology which is designed off the social sciences and environmental humanities.

Social Context

Environmental psychologist David Uzzell and sociologist Nora Räthzel (2009, 341) criticise a focus in psychology on the individual "as if people live in a social, cultural and political vacuum". The criticism can be applied to this study which did not investigate context factors which would have been beyond the scope of a student's scholarly work. This lack of investigation of social context factors may explain the low to medium explained variance between 16-40%.

Practical Implications

Although tentative, the numerous results are potentially valuable not only for scientists but pro-environment campaigners when it comes to climate communication towards the public and within groups. Eco-anxiety and especially eco-anger were found to be activating eco-emotions within the sample. Thus, they seem to be an important pillar in effective climate communication. Depending on whether individuals or groups aim at only individual consumption choices or both individual and collective behaviours, they should focus on eco-anxiety or eco-anger. However according to the

literature, eco-anxiety may also be a deactivating emotion and should, thus, be handled with care. This study's results suggest that campaigners should not rely on hope as an agitating and mobilising emotion. This contrasts with the widely spread belief in the global North that climate communication would be more effective when based on positive messaging (Kleres & Wettergren, 2017). While fear-messaging is quite common, in "the emotional regime of Western 'post-political' democracies" anger-based messaging is often frowned upon (Mouffe, 2005, in Kleres & Wettergren, 2017, 3). Other studies' and this study's results suggest that such a dismissal of (eco-)anger as a legitimate emotion within political struggles needs to be overcome for effective environmental protection. If anger arises from a perceived injustice or transgression of values (Kleres & Wettergren, 2017; Rothmund et al., 2014, Zomeren, Postmes & Spears, 2008, Wranik & Scherer, 2010 in Nicolai, 2022; Weiss, Suckow, Cropanzano, 1999 in Van Zomeren et al., 2004), then pro-environmental campaigns and climate-communication towards the public must raise awareness for this unfairness. In earlier studies, anger was defined as a "political emotion" as it is associated with the allocation of responsibility (Kleres & Wettergren, 2017, 3; cf. Van Zomeren et al., 2004) for injustices and transgressions. While Kollmuss & Agyeman (2002) problematise that an ascription of responsibility to multinationals, politicians etc. may also go along with delegation and thus a refusal to engage in personal pro-environmental behaviours, this negative association is not seen in this study or Stanley and colleagues' results (2021). Eco-anger seems to be the strongest predictor for pro-environmental behaviours and may, thus, be seen as the most adaptive emotion in face of climate mitigation challenges. As "fear can [be] transform[ed] into anger through the ascription of guilt" (Kleres & Wettergren, 2017, 3, emphasis removed), an approach for collective action rather than individual consumption must identify those responsible for climate change. As to climate communication within social or activist groups, eco-emotions need to be acknowledged not only as a normal phenomenon of 21st-century societies but also as potential drivers of change and therefore something to be cherished and maybe even reinforced.

With different results for meaning-focused coping in this study compared with Ojala's study (2013), practical suggestions around meaning-focused coping must be made cautiously. It seems that an orientation towards a somewhat spiritual greater meaning may help individuals cope with their emotion, but, at least in this sample, it can be detrimental to environmental protection and thus, should not be pursued. It seems that problem-focused coping is the most adaptive coping strategy. Therefore, campaigning aimed at mobilising people into pro-environmental behaviours should focus on what can be done to bring about change. As discussed about environmental and sociological soundness, from a climate-mitigation perspective, the communicated solutions people can be part of should not only make them feel like they are helping protect the environment but be actual solutions.

Scientific Implications

In future research, it would be interesting to investigate the associations between eco-emotions, coping strategies, and environmentalism with broader samples, study designs which can account for causal direction, complex constructs, and study designs built on a broad theory of change, the environmental humanities, and social sciences. Thus, samples could include people living in the most affected areas of climate change which is often in the global South. Samples could be representative including less educated populations to see whether the found effects can be generalised to society. In order to find out more about the direction of causation, longitudinal experimental studies need to be conducted. More insights on the potential moderating effects of coping strategies may be drawn from mean centring in case of multicollinearity. A more differentiated operationalisation of eco-emotions could possibly explain their different functions and effects better. Such complex constructs could include self or other-directedness, individual or collective affect, different temporalities, and co-occurrence with other (eco-)emotions. With a median of 58.5, eco-depression would merit further research to determine possible public mental health implications.

For the purpose of transparent science, scientists should investigate their own underlying assumptions regarding how to bring about environmental protection. Any pro-ecological behaviours scale necessarily must define what such behaviour is and, instead of raising claims of value-neutrality,

the underlying values and assumptions should be stated transparently. This could also open new ways of investigating social groups and their fit with different theories of change. For example, those with a materialistic theory of change score low on pro-ecological behaviour scales because they do not see the merit in individual consumption choices or online petitions even when they are very engaged in collective action. In future research, participants could also be asked to rate how effective they find each behaviour item. Differentiating social groups based on their theory of change could prompt further research questions as to whether eco-emotions' strength or effects are different across these groups. However, any theories of change transported by behaviour scales need to be environmentally sound. Otherwise, behaviour surveys only define behaviours with a pro-environmental intention rather than environmentally effective behaviours. This can lead to potentially harmful results when climate communication tactics are recommended that do not serve climate mitigation at all. In order to do environmental psychological research, scientists need to open their fields (Adams, 2017; Bamberg et al., 2018), connecting psychology with the environmental humanities.

According to Uzzell and Räthzel (2009), environmental psychology should investigate the conditions in which change takes place, as well as the taken-for-granted conditions of the status quo which result in certain attitudes and behaviours, rather than investigating only those attitudes and behaviours. Since human behaviour is inherently social (Adams, 2017; Adams, 2021; Bamberg et al., 2018; Uzzell, 2010), this social embedding must be accounted for rather than proposing individuals should adapt to a society that is never questioned (Uzzell & Räthzel, 2009). Thus, critical work proposes to redirect attention from individuals to social relations within which unsustainable ways of living are (re)produced (Uzzell & Räthzel, 2009).

Conclusion

The results show that eco-emotions are strongly felt within the sample. The results suggest that eco-anxiety is positively linked to individual behaviours while eco-anger is positively associated with both individual behaviours and collective action, making it possibly the most adaptive emotion for climate mitigation. Problem-focused coping seems to be the coping strategy which can explain pro-

environmental behaviour best, whereas meaning-focused coping had rather negative effects on behaviours, and emotion-focused coping showed no effects at all. Hope was a rather irrelevant emotion within the sample, whereas eco-depression was comparatively high but did not show associations with behaviours. It might be more helpful regarding mental health as well as climate protection to turn eco-anxiety into eco-anger by the ascription of responsibility to those who have contributed to climate change the most from a sociological and historical point of view. This contradicts a prevalent view which suggests evenly distributed means of destruction and responsibility. To ground psychological surveys in environmental science, an opening of the field towards the environmental humanities is suggested. Further research should focus on the social embeddedness of pro-environmental behaviour and action as behaviour largely is social behaviour. Regarding limiting factors, this study may only present tentative results which merit further research with bigger, representative, and more international samples.

Declaration of Competing Interests

The author declares that they have no known competing financial interests that could have influenced the study.

Acknowledgement

This study could not have been realised without the supervision of Dr. Monika Schreckenbach, Nathalie Claus, and Katharina van Bronswijk. Dr. Mitho Müller offered help for a data protection approval and gave valuable advice. Florian Fertl and Maya Ahnen helped with the backtranslation of the survey, ensuring a high quality of translation.

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Appendix

1. Correlation Table

	1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*
1. Eco-depression	1	.68	.62	-.41	.35	.41	.39	-.17	-.30
2. Eco-anxiety	.68	1	.69	-.31	.40	.43	.57	-.31	-.22
3. Eco-anger	.62	.69	1	-.36	.39	.54	.57	-.37	-.27
4. Eco-hope	-.41	-.31	-.36	1	-.12	-.14	-.16	.10	.57
5. Individual behaviour	.35	.40	.39	-.12	1	.35	.58	-.30	-.06
6. Collective behaviour	.41	.43	.54	-.14	.35	1	.58	-.30	-.24
7. Problem-focused coping	.39	.57	.57	-.16	.58	.58	1	-.47	-.05
8. Emotion-focused coping	-.17	-.31	-.37	.10	-.30	-.30	-.47	1	.13
9. Meaning-focused coping	-.30	-.22	-.27	.57	-.06	-.24	-.05	.13	1

2. Variance Inflation Factors

Predictors	*18-predictor Models*	*Emotions-as-predictors Model*	*Exploratory: Coping-as-predictor models*	*Exploratory: Emotions-as-predictors-for-coping models*
eco-depression	195.62	2.16		2.16
eco-anxiety	190.10	2.37		2.37
eco-anger	181.93	2.14		2.14
eco-hope	116.06	1.23		1.23
problem-focused coping	34.23		1.28	
emotion-focused coping	31.77		1.30	
meaning-focused coping	26.65		1.02	
eco-depression : problem-	95.52			
eco-depression : emotion-	67.90			
eco-depression : meaning-	39.84			
eco-anxiety : problem-focused	106.25			

eco-anxiety : emotion-focused	83.43
eco-anxiety : meaning-focused	65.88
eco-anger : problem-focused	108.59
eco-anger : emotion-focused	52.02
eco-anger : meaning-focused	53.56
eco-hope : problem-focused	37.28
eco-hope : emotion-focused	52.03
eco-hope : meaning-focused	41.49

3. Participants' Remarks

Amount	Category	Examples (German quotes)
	Comments on gender	
7	Wish for more gender-inclusivity	
2	Rejection of gender-inclusive language	
1	Wish for explanation for gendered language	
	Wishes for more differentiation	
9	in general survey	
4	in social desirability scale	
5	**Suggestions for further behaviour items** i.e. more radical action forms, giving up wish for children, choosing jobs based on climate protection necessities	"Ich hab erhofft dem Grad meiner Radikalität hier ausdruck zu verleihen. Mich würde es sehr interessieren wie viele Menschen mit der Handlung des Filmes "How to blow up a pipeline" sympathisieren" (sic.) "Ich kenne viele Menschen, die eigentlich einen großen Kinderwunsch haben, aber aufgrund der ungewissen Zukunft in der Klimakrise stark über diesen Wunsch reflektieren und sogar erwägen, gar keine Kinder zu bekommen." "Beim Thema was-machst-du-gegen-den-Klimawandel" hat mir folgendes gefehlt: "Ausüben/Anstreben von Klimaberufen"""
6	**Rejection of statements/ survey assumptions based on political views**	"Frage "Brief an Abgeordnete" ignoriert Menschen, die das aus politischer Überzeugung nicht für effektiv halten, dito Frage zu Wahlen und Petitionen."

		“Die Aussage/ Frage, dass ich denke, dass Forscher*innen irgendwann eine Lösung finden, find ich bisschen schwierig, weil sie ja schon Lösungen gefunden haben, diese aber von der Regierung nicht ausreichend durchgesetzt werden”
		“Die Fragen nach dem persönlichen Konsumverhalten gehen mMn nach in die falsche Richtung. Der private fossile Fußabdruck wurde von Ölkonzernen erfunden um die Verantwortung abzulenken. Die Idee, man könnte etwas den Klimawandel stoppen, indem man regionale Produkte kauft, ist individualisierend und Unsinn. Die Frage danach, ob man die einzelnen Dinge, die man tut, auch macht um damit gg den Klimawandel vorzugehen bzw ob man denkt dass das etwas bringen würde, fehlt. Ich versuche, meine Sachen selbst zu reparieren und eher nicht so viel klimaschädliches Zeug zu kaufen. Ich denke aber nicht dass das tatsächlich etwas gegen den Klimawandel ausrichtet. Ich denke auch dass es Politiker gibt die das Problem ernst nehmen. Ich glaube nur trotzdem nicht dass sie es lösen werden. Der Klimawandel ist ein systematischen Problem, es basiert auf dem Zwang zum Wachstum im Kapitalismus. Diesen müssen wir umwerfen um den Klimawandel zu bekämpfen. Diese Option gibt e aber in der Umfrage nicht. “
		“Ich finde die Fragen teilweise nicht sinnvoll. Sie suggerieren man könne sich besonders umweltfreundlich verhalten indem man anders konsumiert. Aber dadurch ändert sich nichts an dem grundsätzlichen Problem, dass die Wirtschaft nach Profiten strebt, nicht danach die Bedürfnisse der Menschen zu erfüllen (auch langfristig ein überleben zu Sichern).”
1	**Suppression of climate reality as a means of self-protection**	
2	**Normative statements about emotions and behaviours**	“Fühlt man sich handlungsfähig und engagiert sich, kann man den Problemen und "Wahrheiten" eher begegnen, ohne dass sie einen zerstören.”
		“Mit Zuversicht bleibt mensch handlungsfähig! Lasst uns den Mut nicht verlieren und aus jeder Situation das beste rausholen! :))”

4	**Climate scepticism/ denial**	“Es gab schon immer Klimawandel auf Erden udn denn wird es auch weiterhin geben. Nur, dass was jetzt abgeht, mit dieser Panikmache ist unerträglich. Der "Klimawandel" ist hausgemacht - dank den ganzen Wettermanipulationen (chemtrails) Es ist einfach nur eine Panikmache!!! Mein Oma sagte mir, dass es früher jeden Sommer 30 Grad hatte - Sommer eben, da darf es heiss sein. z.B. vor 29°C vor 7 Jahren (Sommer), heute 29 °C Hitze (Klimawandel) = Propaganda für Doofies!!!!”

Erklärung zur Hausarbeit gemäß § 29 (Abs.6) LPO I

Hiermit erkläre ich, dass die vorliegende Hausarbeit von mir selbstständig verfasst wurde und dass keine anderen als die angegebenen Hilfsmittel benutzt wurden. Die Stellen der Arbeit, die anderen Werken dem Wortlaut oder Sinn nach entnommen sind, sind in jedem einzelnen Fall unter Angabe der Quelle als Entlehnung kenntlich gemacht.

Diese Erklärung erstreckt sich auch auf etwa in der Arbeit enthaltene Zeichnungen, Kartenskizzen und bildliche Darstellungen.

München, 25.09.2023 Poettinger

Ort, Datum **Unterschrift**

Bitte Plagiatserklärung - mit Datum und Unterschrift im Original – in jedes Exemplar einbinden. Danke.