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Agents of Action? Youth Climate Perceptions: A Literature Review

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Abstract: Youth perspectives are important for climate risk research. Young people are both the decisionmakers of the future and have a lifespan where the consequences of climate change are expected to intensify. However, little research appears to be conducted on youth risk perception related to climate change and climate action within risk research. This paper presents a literature review on youth climate perception from a wide range of disciplines, provides a thematic overview of the literature, and discusses how these insights might inform the well-documented gap between youth climate perceptions and climate action. The literature review identifies several cognitive, psychological, social, and cultural aspects of knowledge and emotions as important in influencing youth perceptions, as well as motivating and sustaining youth action over time. In this context, the review identifies self- and collective efficacy, proximity, collaboration, and social identity to be especially important. To capture the interrelatedness and complexity of these factors and their combined impacts, this paper suggests that future research makes use of frameworks allowing a broad and holistic understanding of youth risk perception and behavior.

Keywords: Youth, Adolescents, Climate Change, Risk Perception, Climate Action, Emotions, Knowledge

1. Introduction

Anthropogenic climate change (CC) poses one of the largest and most all-encompassing threats to human and planetary health. As of February 2025, we are far from meeting the climate goals agreed upon in the 2015 Paris Agreement, and our chances to change course are diminishing quickly. In order to safeguard our fragile socio-ecosystems, urgent action on every societal level is needed. Today's youth are the decisionmakers of tomorrow and the inheritors of the consequences of previous generations' (in)actions. There are approximately 1.6 billion youth globally who, due to their age, are uniquely positioned in terms of opportunities and hinderances for climate action (CA), with many lacking traditional political, social, and economic power (United Nations 2025a). Youth are also amongst the most vulnerable to CC, especially where it intersects with gender, class, ethnicity or other identities (United Nations 2025a).

Simultaneously, it is important to recognize youth capacities for CA due to their unique knowledge and valuable lived experiences (Morgan 2020). The year 2018 witnessed a surge in youth engagement, culminating in the social movement "Friday for Future" (FFF) spearheaded by Greta Thunberg. This has led to a wave of interest and optimism for youth contributions to climate action and justice (Marquardt 2020). Since then, the world faced various threats and risks, such as a global pandemic, violent conflicts, and political and social unrest, accompanied by "doom and gloom" narratives (Fisher 2016). This might have had a dampening effect on youth climate action (Chou et al. 2023), cultivating hopelessness and other negative emotions (Devlin 2024). Engagement has been identified as a potential factor to mitigate negative mental health impacts of CC (Nairn 2019). However, some studies find that there often are significant gaps between youth climate perceptions (YCP) and behavior. This tendency is commonly referred to as the "intention-behavior gap" (e.g., Misch et al. 2021).

In this context, risk perception is an important concept. Research shows that there is an important link between risk perception and behavioral responses, in which perception usually is seen influencing action; however, there is also research showing that the relationship can be reversed (Brewer et al. 2004). Several studies demonstrate that there is a discrepancy in how the public versus experts judge and understand climate risks (e.g., Renn 2011). However, in this context, less research in the risk field has been devoted to youth.

To provide insight into this relationship, and to help understand how to best motivate, promote and sustain CA, this paper reviews existing literature on youth climate perceptions covering a wide range of literature from different disciplines and research traditions. By identifying a selection of important factors for perception and action, this paper presents a state of the art on the broad topic of YCP, which to the authors' knowledge has not previously been done.

2. Methods

A systematic literature search using the keywords "youth climate perception" and "adolescent climate perception" was conducted from June to October of 2024 using the search engines Scopus and Google scholar. Only peer reviewed articles written in English and published between 2014-2024 were included in the review, resulting in 132 articles. The articles were then read and analyzed with the sample being further reduced to 52 articles by excluding articles that did not address the perception-action relationship. "Youth" generally describes people 14–25 years old; however, definitions vary and are context dependent (United Nations 2025b). Therefore, this review also includes research on groups of people ranging 8–40 years old. The coding of the data followed an abductive approach which resulted in a thematic categorization of the findings, based on trends emerging in the analysis of the data and also guided by insight from other reviews (e.g., Lee et al. 2020). The results are presented in two main categories: *perception* (Section 3.1) and *action* (Section 3.2), where perception again is divided into these subthemes: *knowledge* and *emotions*. The categories reflect the main focus in the research reviewed and are used to systematize the findings. However, it must be stressed that these categories are in reality interrelated.

3. Results

3.1. *Perception*

The following sections present aspects of YCP that the analysis of the research reviewed establish as important, and that in various ways relate to intentions to act and climate action.

3.1.1. *Climate knowledge*

Research suggests that scientific climate knowledge (CK) can strengthen knowledge, foster awareness and belief, and mitigate climate denial and skepticism (Pickering et al. 2020). There are also indications that CK can positively influence belief and support for CC mitigation policies and intentions to act (Lampinen et al. 2022; Acikgoz and Yorulmaz 2024; Zong et al. 2024; Siddique et al. 2024).

As stated by García-Vinuesa et al. (2021), some research envisions CK as predominantly a part of natural science education. However, one study found minor differences in CK between science and technology students and those who study social sciences. The authors could not conclude that higher levels of CK lead to more "correct" risk perceptions of CC (García-Vinuesa et al. 2021). This points to some other central findings identified in the literature. Youth acquire information from a myriad of sources including friends, family, and social media (Arnot et al. 2024; Almansa-Martínez et al. 2024; Gallagher and Cattelino 2020). For example, Timmons et al. (2024) found that accurate information about CC can boost belief in collective action in youth who underestimated other people's levels of worry. However, highlighting generational differences did not strengthen intentions to act, it only increased worry. Lastly, this underscores that the framing of CK is influential for YCP (Timmons et al. 2024).

Youth also have varying levels of knowledge on climate action impact (Andersson et al. 2022). Pickering et al. (2020) found Canadian youth to have little knowledge about effective individual mitigation strategies. The survey found that "low impact actions" such as changing lightbulbs and recycling were rated as more impactful, whereas "high-impact actions"

like having fewer children and adopting a plant-based diet were ranked less impactful (10). Furthermore, the youth felt that their education had not prepared them for CC mitigation.

3.1.2. *Placed-based knowledge*

YCP are spatially and temporally contiguous (Chou et al. 2023), meaning lived experience is important for knowledge production. Personal experiences can strengthen CK and thus create awareness and bolster belief (Deng et al. 2017), as well as foster knowledge about mitigation strategies. (Simon et al. 2022). For instance, Morgan et al. (2022) found that intergenerational narratives and knowledge-sharing influenced YCP in indigenous communities in Canada. Here, youth tied their own experiences with their physical environment to stories told by elders. Their lived experiences, paired with intergenerational local perspectives, strengthened their knowledge about their environment and community, and how to safeguard it. Similarly, Deng et al. (2017) found specific knowledge about climate issues that directly impact youth to be more influential than general CK. Placed-based, participatory, and collaborative initiatives for learning out in nature were found to improve CK and YCP (Bissinger and Bogner 2018; Gallay et al. 2022). Hu and Chen (2016) emphasize that place-based, intergenerational communication can minimize the experience of psychological distance to climate change.

3.1.3. *The role of knowledge for perception*

Although the wider consensus seems to be that knowledge influences YCP, some of the literature did not reflect this (García-Vinuesa et al. 2021; Schrot 2021). In a study on youth willingness to change behavior, Tasquier and Pongiglione, (2017) found this to be positively correlated to a certain level of knowledge. However, beyond a certain level, the relationship became inconsequential again. The pathways in which CK influences YCP are also not clear. Stevenson et al. (2014) argue that high levels of CK could mitigate the effects of worldviews, and Ojala (2015) finds climate skepticism to be predicted by knowledge, along with values, political orientation, gender, tolerance towards immigrants, and influence from friends and family. Knowledge about mitigation strategies also effects YCP and intentions to act. Studying CK and perceptions of individual mitigation actions, Pickering et al. (2020) found that youth who perceive that their actions will have little impact (e.g., low self- efficacy) also are less motivated to alter behavior. Bissinger and Bogner (2018) finds "environmental literacy" an important part of the learning process that build competency and can influence YCP and intentions to act. In their intervention study in a "out of school" context, participants' knowledge, attitudes, and intentions to act to were afterwards found to be strengthened.

3.2. *Emotions*

There have been extensive efforts to map out negative emotional responses to CC events and threats amongst youth. Climate anxiety, eco-anxiety, and worry are emotions detected amongst youth globally (Hickman et al. 2021; Khatun and Logan, 2023; Karsgaard and Davidson 2023). Studies show that this can have a negative impact on youth's daily functioning and generate pessimistic thoughts about the future (Galway and Field 2023; Jones 2023; Ndetei et al. 2024). Perceived proximity to CC can also spur emotional responses (Vercammen et al. 2023), which can lead to negative mental health impacts (Simon et al. 2022). For instance, one study found that youth who are directly exposed to climate hazards exhibited lower mental resilience (Lykins et al. 2023).

Negative emotions such as anxiety, grief, and distress are also detected among youth who are engaged (Thew et al. 2022; Nairn 2019; Fisher 2016; Karsgaard and Davidson 2023; Prendergast et al. 2021; Haugestad et al. 2021; Bright and Eames 2022). However, engagement is often mentioned as a factor mitigating negative mental impacts of CC (Nairn et al. 2024). Some even argue for the importance of emotions like worry and concern for "appropriate" CC perceptions and CA (Lampinen et al. 2022; Zong et al. 2024; Haugestad et al. 2021). For instance, Bright and Eames (2022) found that climate strike leaders reported anxiety, anger, and fear as primary motivators for action. Others highlight the negative and debilitating impact negative emotions can have on intentions to act. Studying a group of college students, Maduneme (2024) found that "extreme" levels of anxiety could hinder pro-environmental intentions.

Significant attention is given to the role of hope for YCP (Ojala, 2016; Zummo et al. 2020; Soler-i-Martí et al. 2022). Kleres and Wettergren (2017) found that the incapacitating effect of fear could be mediated by hope, while Nairn (2019) found critical, collective hope important for climate engaged youth to avoid the negative mental health impacts of high levels of worry. Karsgaard and Davidson (2023) found that positive emotions was fostered in collaboration with others, and Timmons et al. (2024) argue that belief that others will act is important for belief in collective action. Soomro et al. (2024) found that reinforcement of positive emotions through family and community ties could mitigate the negative mental health impacts of YCP in vulnerable populations in Pakistan, whilst Gallay et al. (2022) found that feelings of hopefulness could mitigate climate anxiety in collaborative learning contexts. Andersson et al. (2022) point to research which found that time spent in nature can alleviate negative impacts on mental health due to CC and strengthen intentions to act.

Maduneme (2024) adapts a nuanced approach to studying the role of emotions for YCP, arguing that climate anxiety both can be useful and detrimental. Léger-Goodes et al. (2023) found feelings of gratefulness, pride, and connection to coexist with feelings of anger amongst youth. Soler-i-Marti et al. (2022) assert that feelings of emergency can be effective for youth mobilization in online climate discourses. Managing these complex emotions through various coping strategies has been found to improve mental wellbeing, YCP, and intentions to act (Ojala 2015; Dong et al. 2022).

3.2. *Action*

Pickering et al. (2021) found that youth mostly partook in "low impact," individual behavior. This might be explained in part by lack of resources for high-impact action, lack of knowledge (Andersson et al. 2022), perceived low-efficiency in collective, high-impact action, or a focus on communication strategies that predominantly encourage "low impact" action (Pickering et al. 2020). In a study on German youth activists, Posmek (2024) found some youth to partake in action that did not have an impact on CC, such as walking barefoot. She argued that this had a demonstrative and performative function, signaling commitment to the environmental cause, thus highlighting a different function of low-impact, individual behavior.

Moral convictions and responsibility have been found as rationales for partaking in CA (Thew et al. 2022). Sentiments of responsibility towards disadvantaged populations, animals, and the planet is associated with CA (Budziszewska and Głód 2021), along with feelings of solidarity (Kowasch et al. 2021). Nature connectedness also seems to be linked to climate action. One study found that youth engaged in CA spent more time in their local outdoor environment (Andersson et al. 2022). Similarly, Prendergast et al. (2021) found that youth who expressed the importance of living in harmony with their environment and nature were more likely to strike. In a study on Filipino youth, Simon et al. (2022), found that personal experiences with climate change events led to behavior aimed at mitigating CC. Another study found that personal experiences with CC disasters such as drought motivated activism (Ortiz et al. 2024).

Climate action seems to influence emotions, and vice versa. Bright and Eames (2022) found that collective action alleviates worries in relation to climate change. However, as emphasized by Nairn (2019), action can also lead to burnout, due to both workload and the emotional burden. Thew et al. (2022) found that youth participating in UN climate change negotiations experienced structural barriers—such as limited access to arenas for negotiations and tokenistic inclusion—which led to feelings of disempowerment. However, through collaboration, activists also felt optimistic and hopeful for the future. Another study argues that CA can be empowering, build community, provide a sense of duty, promote ethical integrity, and lead to self-improvement and growth (Budziszewska and Głód 2021). The activists in the study highlight the importance of taking small, deliberate actions to avoid feeling overwhelmed, which helps sustain action over time. Further, Nairn et al. (2024) argue that collective action can foster collective hope that in turn contributes towards sustaining CA.

4. Discussion

This review shows ways in which a wide array of literature attempts to understand the relationship between perception and action, and which aspects are important to mitigate the gap between the two. The results illustrate that the relationship might

best be thought of as a process involving various dynamic and interacting "parts," instead of as a linear relationship.

The UN deems education as fundamental for tackling CC (García-Vinuesa et al. 2021). However, learning doesn't begin and end in the classroom. It must be recognized that climate knowledge comes in different forms, and that provision of scientific knowledge alone does not automatically influence YCP and CA. The desired effects hinges on other cognitive, physical, and social factors that also are a part of knowledge production (García-Vinuesa et al. 2021). Educational strategies focusing on collaboration and place-based knowledge enhance environmental literacy and can empower and activate youth CA by strengthening competency and social identity (Bissinger and Bogner 2018; Morgan 2020; Vendrell-Simón et al. 2024). Participatory learning, outside and inside the classroom, might strengthen both cognitive and social dimensions linked to perception and action. Education should not solely focus on teaching causes of CC and providing CK, but also emphasize specific mitigation strategies, especially in youth populations where knowledge is strong, as this could bridge the gap between perception and action (Andersson et al. 2022). Risk communication plays an important part in strengthening YCP, and CA and should inform and inspire youth locally in the spaces they already "operate" in, physically and online.

The results also draw attention to how emotions in different ways can influence perception and action, but also vice versa. Perception, action, or inaction generate and shape emotions that can be fruitful or detrimental for sustaining CA and mental wellbeing. Here, emotional resilience and appropriate coping strategies are important (Ojala 2015; Dong et al. 2022). As both negative and positive emotions in tandem are found to influence YCP and CA, an important question is: *Which emotions, and how much?* (Maduneme 2024). More knowledge about this relationship could help support engaged youth in sustaining behavior and mental wellbeing, and in turn guide risk communication aimed at non-engaged youth.

Studies indicate that youth with personal experiences of CC have heightened risk perceptions and might therefore be more likely to engage in pro-environmental behavior (Lykins et al. 2023; Ortiz et al. 2024). However, CC does not impact all youth equally. Emotional proximity could be a way to foster "correct" YCP and enhance CA when physical proximity to CC is lacking. Furthermore, hopeful intergenerational and "glocal" framings of CC could mitigate feelings of alienation and isolation and foster responsibility (Hu and Chen 2016; Vendrell-Simón et al. 2024). Increasing time spent in local natural environments could strengthen nature connectedness, place-based CK, perceived proximity, and responsibility, as well as generate CA (Andersson et al. 2022; Prendergast et al. 2021).

This review found that a significant portion of the literature focuses on youth partaking in single-event action, such as striking, or individual, "low-impact" behaviors. These actions can lack continuity or impact, which is essential for successful climate mitigation. Studies using qualitative, longitudinal, or mixed methods deepen the knowledge on youth diverse capacities for CA, underscoring that all behavior contains social and collective factors which appear important for mitigating the gap between YCP and CA.

This review identified little risk research related to the role of youth in the context of risk perception and climate action. Despite representing important stakeholders and "resources" in the work towards reducing the consequences of CC risks now and in the future, youth appear to be understudied in risk research. Based on the findings which show that there are a wide range of factors influencing youth risk perception and action, there is need for a broad framework to support the integration of the various "lessons" learned from the data. Representing an integrative framework developed to bridge different "schools" of research and to describe the various dynamic social processes underlying risk perception and response (Fjaeran et al. 2024), the Social Amplification of Risk (SARF) (Kasperson et al. 1988) framework could be considered for such a purpose. The SARF has previously been used in CC contexts (e.g., Renn 2011), and in conjunction with social theories (Fjaeran et al. 2024). This framework could represent a useful tool to study the effects of the different factors (i.e. psychological, sociological and cultural) identified in this review as important

for youths' perception of CC and their behavior in response to it.

5. Conclusion

This literature review illuminates the width of empirical contributions on the topic of youth climate perceptions. The findings showcase that youth's perception and behavior related to climate change risks are nuanced and socially, temporally, and structurally contingent. Different types of knowledge and combinations of emotions, positive and negative, in dynamic and interrelated ways shape perceptions and actions, and mitigate the gap between the two. The review identified several factors important in this regard, namely collective and individual efficacy, emotional and/or physical perceived proximity to risk, collaboration, community support, and social identity. These factors influence perception and action; likewise, perception and action act upon them in return. The research reviewed in this paper draw attention to the interrelatedness of these factors, underscoring the importance of broad and holistic approaches in research aiming to help mitigate the gap between perception and action in CC contexts.

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