General Discussion
5.1. INTRODUCTION

We must accept an undeniable and harsh truth: we live in an era that relentlessly confronts us with a multitude of crises, including devastating natural disasters (e.g., Hurricane Katrina in 2005, earthquake in Haiti in 2010, earthquake in Turkey in 2023) and global pandemics (e.g., the COVID-19 pandemic). Amidst these unprecedented contemporary challenges (Lagadec, 2009; Lagadec & Topper, 2012) lies a remarkable potential: crises can allow us to question the status quo, find new opportunities and change for the better, instead of merely preserving and/or recovering what we had (i.e., “bouncing back”; Bonanno, 2004). Although this proposition finds support in analyses of human confrontation with past examples of climate change and pandemics (Benedictow, 2004; Degroot et al., 2021), as well as in research on trauma and chronic illness (Bostock et al., 2009; Carver & Antoni, 2004; Meyerson et al., 2011; Tomich & Helgeson, 2004), the possibility of adapting through positive change has remained mostly overlooked by studies on how people can adapt to large-scale contemporary adversities, like climate change and the COVID-19 pandemic.

In this PhD dissertation we introduced the novel construct transilience to examine whether people perceive they can do more than ‘bounce back’ in the face of adversities (cf. Davoudi et al., 2013), and specifically whether they perceive they can adapt to such adversities through positive change. We define transilience as the perceived capacity to persist (persistence), adapt flexibly (adaptability), and positively transform (transformability) in the face of an adversity. As such, transilience allows to broaden the perspective on human adaptation to adversities while also bringing a positive outlook on it.

Across three empirical chapters, we addressed two main overarching research questions. Firstly, we examined whether individuals perceive transilience in the face of contemporary adversities. We hypothesised that people perceive transilience across different threats with varying levels of severity, as well as at different levels (i.e., individual and collective). To test this, we wanted to develop and validate a measure of transilience. Secondly, we examined the association between transilience and different types of adaptation actions, as well as indicators of mental health. Generally, we expected that higher transilience is associated with more adaptation actions and with better mental health across different socio-political contexts with varying levels of threat severity.

In the following sections, we summarise the main findings of this dissertation and we elaborate on the main theoretical implications of our research. After that, we discuss
key open research questions, as well as relevant practical implications deriving from our overall findings.

5.2. SUMMARY OF THE FINDINGS AND THEORETICAL IMPLICATIONS

Transilience can be Assessed in a Valid and Reliable Way

First, in this PhD dissertation we set out to develop a valid and reliable scale to measure human transilience in the face of an adversity. As a case in point, we tested the validity and reliability of the transilience scale in the context of climate change. We expected the scale to capture well the three components of transilience, yet to reflect that transilience is an overarching construct. Additionally, we expected transilience to be positively associated with theoretically related constructs (i.e., self-efficacy, outcome efficacy, resilience), yet not to overlap with any of them. We also expected that transilience does not imply that people deny or downplay the threat posed by the adversity under consideration. Furthermore, we expected the transilience scale to be applicable both at the individual and at the collective level; this is relevant considering that the threat of certain adversities, particularly large-scale adversities like climate change, likely affects both individuals and groups.

Overall results show that we succeeded in developing a valid and reliable transilience scale. In Chapter 2, we developed a scale to assess individual transilience, and we tested its validity in the context of climate change risks; the scale comprises items reflecting the three components of transilience (i.e., persistence, adaptability, and transformability), which we developed in consultation of the literature and with experts in the field of climate change adaptation (see Table 5.1 below). We found support for the reliability and validity of the climate change transilience scale across four empirical studies, conducted in three different countries (USA, The Netherlands, UK). As expected, the individual transilience scale showed good content validity, as it accurately reflected the three components of persistence, adaptability, and transformability. Yet, as expected, the overall transilience score appeared the most meaningful to report and interpret, indicating that transilience is an overarching construct.

The climate change transilience scale showed to have good concurrent and discriminant validity. As expected, transilience was found to be positively related, yet not overlapping with self-efficacy (i.e., the extent to which people think they are capable of engaging in adaptation behaviour; van Valkengoed & Steg 2019b), outcome efficacy (i.e., the extent to which people think their adaptation actions would reduce climate change risks; van Valkengoed & Steg 2019b) and resilience (i.e., the extent
to which people consider themselves able to ‘bounce back’ from setbacks in life in general; Smith et al., 2008), respectively, indicating that individual transilience captures a distinct and novel construct. In line with our expectations, we found that transilience was either positively or not significantly related to climate change risks perceptions, except for one study (where we found a small negative effect), indicating that transilience generally does not imply that people downplay climate change risks.

Table 5.1. Final Transilience Scale

<table>
<thead>
<tr>
<th>Transilience Scale</th>
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</thead>
<tbody>
<tr>
<td>Introductory text:</td>
</tr>
<tr>
<td>The following questions are about how you think that the confrontation with [specific adversity] affects you / you, as [specify community].</td>
</tr>
<tr>
<td>Specifically, we want to ask you to think about how being confronted with the risks of [an adversity] affects you/ you as [specific community].</td>
</tr>
<tr>
<td>To what extent do you agree or disagree with the following statements?</td>
</tr>
<tr>
<td>Items:</td>
</tr>
<tr>
<td>(Persistence)</td>
</tr>
<tr>
<td>1. I/we [specific community] can be brave.</td>
</tr>
<tr>
<td>2. I/we [specific community] can be persistent. (s)</td>
</tr>
<tr>
<td>3. I/we [specific community] can stay determined. (s)</td>
</tr>
<tr>
<td>4. I/we [specific community] can remain strong-willed.</td>
</tr>
<tr>
<td>(Adaptability)</td>
</tr>
<tr>
<td>5. I/we [specific community] can take different measures to deal with this. (s)</td>
</tr>
<tr>
<td>6. I/we [specific community] have several options to deal with this.</td>
</tr>
<tr>
<td>7. I/we [specific community] can find multiple means to deal with this. (s)</td>
</tr>
<tr>
<td>8. There are different ways I/we [specific community] can deal with this.</td>
</tr>
<tr>
<td>(Transformability)</td>
</tr>
<tr>
<td>9. Dealing with the stress that this causes can strengthen me/us [specific community].</td>
</tr>
<tr>
<td>10. Dealing with this can have additional benefits for me/us [specific community].</td>
</tr>
<tr>
<td>11. I/we [specific community] can grow as a person/group by dealing with this. (s)</td>
</tr>
<tr>
<td>12. I/we [specific community] can learn something good by dealing with this. (s)</td>
</tr>
</tbody>
</table>

Note. (s) = item to be selected for using the 6-items version of the scale

The reliability of the transilience scale was quite high in Chapter 2, suggesting that some of the components may be overly identified by the developed items. Therefore, in Chapter 3 we explored whether a shorter scale comprising of 6 items could also be used to reliably assess transilience, which may increase the applicability of the transilience scale in research studies with constraints on time or resources. The shorter version of the scale (with 2 items per subcomponent) led to similar findings compared
to the full 12-items scale (see Chapter 3). Indeed, some of the items of the transilience scale are very similar (e.g., the items assessing adaptability), which may explain why the shorter version of the scale works well. Still, we recommend using the full version of the scale to capture the full complexity of the construct, unless external limitations impede to do so.

In Chapter 4, we adapted the individual climate change transilience scale to assess transilience at the collective level, and we tested its validity in the context of climate change risks. Results across two studies conducted in the US and the Netherlands indicated good psychometric properties of the collective transilience scale (i.e., the perceived capacity to persist, adapt flexibly, and positively transform in the face of climate change risks as a community). As expected, we found that the collective transilience scale captures well the three theorised components, yet that it should be interpreted and reported as an overarching construct.

The collective transilience scale also showed good concurrent and discriminant validity. As expected, collective transilience was positively related to higher collective efficacy (i.e., the perceived ability of a community to achieve specific (climate change adaptation) goals; Bandura, 1998). Yet both constructs did not overlap, indicating that collective transilience reflects a different construct. Again, as expected, we found that higher collective transilience does not imply that people downplay or deny that climate change poses risks to one’s community. Additionally, we found that collective transilience is positively related to individual transilience, yet the two constructs can be empirically distinguished. As such, our findings suggest that the more people perceive they can be transilient as individuals, the more they perceive they can be transilient as a community. At the same time, while both collective and individual transilience tap into people’s perceived capacity to adapt to an adversity, individual transilience specifically captures the perceived adaptive capacity of the individual, while collective transilience captures the perceived adaptive capacity of one’s community.

All in all, in this PhD dissertation we succeeded in developing a valid and reliable scale to measure transilience, at the individual as well as collective level, which can be used in the face of threats with different levels of severity, including different adversities (e.g., climate change, COVID-19 pandemic) and countries. In line with our proposition, the transilience scale captures three distinct components, which are all relevant parts of the overarching construct of transilience. Moreover, transilience is related to, yet distinct from, existing relevant constructs in the domain of human adaptation to adversities, such as self-efficacy, collective efficacy, and general resilience. In line with our expectations, when people strongly perceive transilience they don’t seem to downplay the threat posed by an adversity, which indicates that transilience is
an adaptive response, as denial of the adversity is typically considered maladaptive (Carver et al., 1989). However, the findings in this regard were not fully consistent (i.e., in some studies we found a positive relationship, in others no significant relationship, and in one study a small negative relationship), and we did not test this specifically in the context of COVID-19. As such, more research is needed to understand the relationship between transilience and perceived risks associated with an adversity.

**People Perceive Transilience in the Face of Large-Scale Contemporary Adversities**

*Transilience is Perceived across Different Adversities and Countries*

Next, we wanted to examine whether people indeed perceive transilience in the face of contemporary adversities. We expected that, on average, people perceive they can persist, adapt flexibly, and positively transform in the face of adversities, despite variations in specific risks and in the level of severity of the relevant threat. In general, we found that people perceive transilience in the face of different adversities and across socio-political contexts with different specific vulnerabilities and with varying levels of threat severity.

In Chapter 2, we tested to what extent people perceive transilience in the face of climate change risks in the US, in the UK, and in a specific municipality in the Netherlands. As expected, we found that people on average perceive they can be transilient in the face of climate change risks, across contexts that face various types of risks (e.g., The Netherlands is particularly vulnerable to flooding, whereas different regions in the US face different climate-related risks depending on the specific location; Clayton et al., 2016; Ministerie van Infrastructuur en Milieu, 2016). This suggests that people generally perceive they can do more than ‘bounce back’ to the status quo in the face of climate change, and that they acknowledge the possibility for positive change as well.

In Chapter 3, we tested whether people also perceive transilence in the face of the COVID-19 pandemic, an adversity that, compared to climate change, posed a much more acute, direct, and immediate threat for people's lives. In line with our expectations, we found that people perceive transilience in the face of COVID-19 too, across different countries (i.e., both Italy and the Netherlands), and at different points in time; notably, these were contexts in which the severity of the threat posed by COVID-19 and in the governmental policies implemented to limit the spread of the virus differed (Capano et al., 2020). As such, our results suggest that people perceive they can do more than ‘bounce back’ even in the face of very acute and severely threatening adversities, like a sudden pandemic of a deadly virus. Notably, our longitudinal study revealed that the levels of transilience significantly increased over time in the Netherlands, where the second time point was characterised by higher severity and acuteness.
of the threat posed by the COVID-19 pandemic and by more restrictive containment measures implemented by the Dutch government, compared to the first time point. Thus, transilience may be subject to change, and it may be that the exposure to an increasingly more severe adversity can increase transilience. More research is needed to test whether transilience becomes higher when people are exposed to a certain adversity for longer time and when the threat of such adversity becomes more severe.

Transilience is Perceived also at the Collective Level
We assumed that transilience can be perceived, not only at the individual level, but also at the community level, as large-scale adversities have impacts also on communities, rather than on individuals in isolation; besides, individual efforts may not be sufficient to adapt to such collective threats (cf. Chen, 2015). Hence, in Chapter 4 we tested whether people perceive they can be transilient in the face of climate change risks as a community (i.e. collective transilience). We also tested whether a message that highlights the risks posed by climate change to the community would enhance collective transilience, compared to a message stressing that climate change poses risks to individuals and their household. This hypothesis was based on research showing that when people are reminded that they are facing a certain threat as a group (i.e. they perceive that it is “us” against the threat; Drury, 2018), they are more likely to show collective resilience and to engage in actions that serve the interests of the group (as opposed to individual interests; Drury, 2018; Drury et al., 2019; Ntontis et al., 2020).

As expected, the results showed that people on average perceive collective transilience across different countries (i.e. the US and The Netherlands) that face different climate change risks (i.e., flooding in The Netherlands, wildfires in the West-coast of the US, sea level rise on the South-East coast of the US; Clayton et al., 2016). Yet, our attempt to enhance collective transilience was unsuccessful. These results suggest that people perceive they can do more than ‘bounce back’ also as communities, across different threats. However, it may be that making people aware of climate change risks for their community is not an effective way to foster collective transilience. It should be noted, though, that we did not include a control condition, hence it may also be that the two conditions, which both made people aware of climate change risks, were too similar to find a difference. As such, more research is needed to understand which messages and interventions are effective in enhancing (collective) transilience.

All in all, the findings presented in this PhD dissertation indicate that transilience may tap into a fundamental aspect of human capacity to adapt to a wide range of adversities, as it can be displayed regardless of the specific ways in which adversities manifest, and even in the face of very severe threats. Importantly, our results do not imply that
we should minimise the serious and unprecedented threat posed by contemporary adversities (Lagadec & Topper, 2012). Rather, our findings challenge the dominant perspectives on human adaptation to adversities, which tend to focus on finding ways to either maintain/recover what we currently have (see Luceño-Moreno et al., 2020) and/or to minimise the negative consequences that adversities have on people (Fritze et al., 2008; Manning & Clayton, 2018; Doherty, 2018). Transilience broadens and complements these perspectives on human adaptation, by expanding the concept of adaptation beyond preserving the status quo, and by highlighting the potential for finding new opportunities and beneficial change amidst the adverse events that people encounter. As such, this PhD dissertation suggests that human (perceived) capacity to adapt to adversities is in line with a prominent definition of adaptation, namely “moderating or avoiding harm and finding new opportunities” (IPCC, 2014b).

Higher Transilience Promotes Adaptation Actions, but Not in All Contexts

Transilience Predicts Individual Adaptation Actions, if People have some Freedom to Act

We expected that the more strongly people perceive they can persist, adapt flexibly and positively transform in the face of an adversity, the more likely they are to engage in a wide range of actions to adapt to the threats posed by such adversity. Our findings generally show that higher transilience indeed promotes different types of adaptation behaviours, in the face of different risks and across different contexts (i.e., it is a ‘general antecedent’ of adaptation actions; cf. van Valkengoed, 2022). However, our findings also suggest that transilience may not predict adaptive actions when people’s freedom to act is seriously restricted.

In Chapter 2 we examined the relationship between transilience and a wide array of adaptation actions in the context of climate change risks. As expected, the results across four studies conducted in different countries (i.e., the US, The Netherlands and the UK) showed that higher transilience in the face of climate change risks increases the likelihood that people engage in various adaptation behaviours, including incremental actions (i.e., aiming to preserve the status quo), transformative actions (i.e., aiming to challenge the status quo and create new opportunities; Wilson et al., 2020), individual actions (i.e., aiming to protect individuals and their household) and collective actions (i.e., aiming to work with and for others to protect the local community). We also found that higher transilience was associated with more support for adaptation policies (both incremental and transformative) and more political collective action (e.g., protesting to demand more adaptive actions and policies; van Zomeren & Iyer, 2009), although this last relationship was not statistically significant in some studies. Thus, it seems that transilience can promote a wide range of adaptation actions across different contexts in which people face various types of climate change risks. Yet, individual transilience may not always promote collective action aimed to urge others beyond oneself to act.
In Chapter 3, we examined the relationship between individual transilience and a wide array of adaptation actions in the context of the COVID-19 pandemic. We expected that higher transilience in the face of COVID-19 promotes various adaptive responses, including individual behaviours aiming to protect oneself and collective behaviours aiming to protect others from the virus. Notably, we expected the relationship between transilience and adaptation actions to uphold despite variations in the seriousness, severity, and acuteness of the threat posed by the pandemic, and despite different policy responses to limit the spread of the virus across different countries and time periods. As expected, the results from The Netherlands showed that higher transilience increases the likelihood that people engage in both individual and collective adaptation behaviours to limit the spread of COVID-19; notably, these relationships were robust across different stages of the pandemic. Additionally, we found preliminary evidence that transilience at a given time may causally influence both individual and collective adaptation behaviours later in time. Yet, in contrast to our expectations, higher transilience did not promote adaptation behaviours in Italy, where the restrictions implemented by the national government severely limited people’s freedom of choice. This suggests that transilience may be less likely to promote adaptation actions when the context severely limits people’s freedom to engage in adaptation behaviours.

**Collective Transilience Predicts Community-Based and Individual Adaptation Actions**

We aimed to study whether transilience can promote also community-based adaptation, which implies that people act within and in the interest of their community. Although Chapters 2 and 3 suggested that individual transilience may promote adaptation also at the collective level, we assumed that perceiving transilience at the individual level may not be enough to increase the likelihood that people engage in behaviours to protect their community from climate change risks. Instead, we proposed that particularly collective transilience, which reflects the extent to which an individual perceives that their community (including themselves) can persist, adapt flexibly, and positively transform in the face of climate change risks, is relevant to promote community-based adaptation efforts.

In Chapter 4 we showed, first, that people are generally not very likely to engage in community-based adaptation behaviour to protect their community from climate change risks. Still, as expected, higher levels of collective transilience increased the likelihood that people engage in a wide range of community-based adaptation actions, including incremental actions (e.g., buying sandbags together with others to protect the local area from floods), transformative actions (e.g., joining a community initiative to reshape the local neighbourhood, by replacing concrete with trees and bushes, to protect the community against heatwaves and floods), support for local adaptation policies, and even intentions to be engaged in a real-life local community initiative.
for climate change adaptation in The Netherlands (e.g., interest to join the initiative). The results showed that both individual and collective transilience were positively related to individual as well as community-based adaptation intentions. However, when both were considered, collective transilience was the sole significant predictor of all individual and community-based adaptation actions. This suggests that perceiving one’s community to be transilient may be particularly powerful to encourage a wide range of adaptation actions.

All in all, the findings presented in this PhD dissertation indicate that when people strongly perceive that they, as individuals and as a community, can be transilient in the face of an adversity, they are more likely to engage to take concrete actions to adapt to that adversity. Notably, we studied a wide array of behaviours, aiming to adapt to different adversities (i.e., climate change and COVID-19), at different levels (i.e., individual and collective), including incremental and transformative actions, as well as support for policies. Hence, we provide substantial evidence that when transilience is high, people are generally more likely to take different actions to adapt to an adversity, across different contexts and risks and at different levels.

At the same time, our findings suggest that contextual factors may moderate, and even hinder, the extent to which transilience can promote adaptation actions. Specifically, our findings suggest that transilience may not promote adaptation actions in a context that severely limits people’s freedom of choice (see Chapter 3, Study 1). This finding is in line with the A-B-C model (Guagnano et al., 1995; Stern, 2000), which suggests that the relationship between psychological factors and behaviour depends on the level of contextual constraints; according to the model, psychological factors are less predictive of behaviour when contextual constraints are high (in which case people cannot act in line with their motivations and beliefs) or when contextual constraints are very low (in which case everyone would engage in the behaviour anyway). Thus, while showing that transilience may be a ‘general antecedent’ of adaptation behaviours, this PhD dissertation also highlights a potential boundary condition, notably the level of restrictiveness of the context. In this regard, our findings suggest that the basic principle behind the A-B-C model may apply to transilience as well. More research is necessary to better understand the influence of contextual factors on the association between perceived transilience and adaptation actions.

This PhD dissertation also highlights the importance of understanding how to motivate people to engage in adaptation actions specifically for the sake of protecting people’s own communities from the threat of an adversity, as people do not seem likely to engage in such community-based adaptation actions (see Chapter 4). Furthermore, our research suggests that perceiving transilience at the collective level may hold
particular relevance in predicting widespread adaptation to an adversity. Considering that the adversities we studied (i.e., climate change, COVID-19 pandemic) typically have implications for entire communities (cf. Chen, 2015), the perceived capacity to adapt at the collective level may be particularly empowering, as it is probably not sufficient that individuals adapt to such collective threats on their own (cf. Van Zomeren et al., 2008, 2010). Yet, it should be noted that we did not study whether collective transilience can also be a powerful predictor of examples of political collective action (e.g., protesting, signing a petition), which were not consistently predicted by individual transilience (see Chapter 2). Hence, whether collective transilience is a better predictor of other forms of collective action, compared to individual transilience, needs to be further tested in future research. Generally, more research is required to understand the relative importance of collective versus individual transilience in promoting different adaptation actions across different types of adversities and contexts.

**Higher Transilience Promotes Mental Health, but Not in All Contexts**

We expected that higher transilience may enhance mental health, because transilience reflects that people perceive they are capable to carry on, to find multiple options to adapt, and to change for the better by dealing with an adversity. Indeed, our findings generally show that higher transilience is associated with better mental health, as reflected in subjective well-being and personal positive change derived from the confrontation with the adversity. However, our findings also suggest that transilience may not promote mental health in a context that severely restricts people’s freedom of choice.

In Chapter 2 we examined the relationship between transilience and indicators of mental health in the context of climate change risks. As expected, the findings across two studies conducted in the US and the UK showed that, the more strongly people perceive transilience in the face of climate change risks, the higher their levels of subjective well-being. Additionally, exploratory results in the UK suggested that higher transilience is associated with a higher degree of personal positive change (e.g., being able to do better things with one’s own life) because of the confrontation with climate change.

In Chapter 3 we examined the relationship between transilience and indicators of mental health in the context of the very severe threat posed by the COVID-19 pandemic. Again, as expected, the results showed that higher transilience increases the likelihood that people report a higher degree of personal positive change because of the confrontation with COVID-19, across different countries (i.e., Italy and The Netherlands), which reflected different levels of threat emergency and distinct national policies implemented to deal with the virus. Additionally, as expected, higher
transilience increased the likelihood of higher subjective well-being across different moments in time in The Netherlands, which also reflected different levels of threat severity and national restrictions. Furthermore, we found preliminary evidence that higher transilience at a given time may enhance subjective well-being later in time, indicating that transilience may be causally related to subjective well-being. However, contrary to our expectations, higher transilience did not seem to promote subjective well-being in Italy, where the restrictions implemented by the national government severely limited people’s freedom of choice. This suggests that when the context severely limits people’s possibility to act, transilience may become less relevant to promote well-being.

All in all, our findings across the chapters of this dissertation support our rationale that transilience may promote mental health in the face of adversities. Importantly, this seems to be the case across varying levels of threat severity, including different adversities (i.e. climate change and the COVID-19 pandemic), countries and moments in time. However, it is noteworthy that higher transilience may not enhance well-being in highly restrictive contexts (see Chapter 3), where individuals cannot act according to what they desire, and hence engage in activities that support their well-being (e.g., meeting up with friends or family, leaving the house to go for a long walk). In such a restrictive context, psychological factors supporting well-being, like transilience, may become less relevant. Notably, whether and how contextual barriers influence the relationship between psychological factors (e.g., transilience) and well-being, to the best of our knowledge, remains understudied. Hence, the influence of contextual factors on the relationship between transilience and well-being represents a promising venue for future research on how to promote mental health in the face of adversities.

5.3 KEY OPEN QUESTIONS

Based on the findings presented in this PhD dissertation, multiple interesting questions arise. In the following sections we discuss two key overarching open queries for future investigation, which we believe are the most compelling in order to advance our understanding of human transilience in the face of adversities. Within each overarching query, we discuss some specific open questions.

Understanding the Generalizability of Our Findings

Is Transilience Relevant across Other Adversities and Countries?

While we studied transilience across different adversities, we focused on climate change risks and the COVID-19 pandemic. Furthermore, we conducted our studies in WEIRD countries (Wester, Educated, Industrial, Rich and Democratic). As such, it remains open to what extent people perceive transilience, and the extent to which transilience
promotes adaptation actions and mental health, in the face of other adversities and in other countries and cultures than those studied in this PhD dissertation.

Future studies could adapt the transilience scale presented in this dissertation, both at the individual and at the collective level, to study transilience in other domains such as personal adversities (e.g., injuries or illnesses), natural disasters, or economic crises. Moreover, future investigations could further test how experiencing one adversity may influence transilience, adaptation actions, and mental health related to other adversities. Notably, in one of our studies we explored and found that showing higher transilience in the face of one adversity (i.e., COVID-19) may enhance adaptive capacity (i.e., resilience) and intention to adapt to another adversity (i.e. climate change; see Chapter 3). This implies that higher transilience in one domain may allow people to perceive they are capable to adapt in general, and in turn be more likely to engage in adaptation actions and display better mental health in the face of other adversities. As such, transilience may be conceptualised as a general perceived adaptive capacity that is relevant across many different adversities. In this regard, it is important to understand whether people can perceive transilience also on a general level (i.e., in the face of ‘adverse events in life’), and to examine the degree to which this general transilience relates to transilience in the face of specific adversities, as well as to adaptation actions and mental health in the context of such specific adversities.

Moreover, future studies could investigate the role of transilience in other countries, especially developing countries in Africa and Asia. This is particularly relevant as non-WEIRD countries are most vulnerable to contemporary adversities such as climate change, and hence face a more urgent need to adapt (Madhav et al., 2018; Mertz et al., 2009; de Souza et al., 2015; Thomas et al., 2020). Considering that in those countries people are more likely to have direct experience with adversities like climate-related hazards and epidemics, it is important to examine whether the levels of transilience are higher or lower compared to those found in the countries we studied in this PhD dissertation. Additionally, it is important to understand whether transilience promotes adaptation actions and well-being also in non-WEIRD countries, given that people’s freedom to act may be more limited by constraints such as poverty, lack of resources, or inadequate infrastructure (see de Souza et al., 2015). Notably, our findings suggest that the extent to which the context is restrictive may influence the strength of the relationships between transilience, adaptation actions and mental health, respectively (see Chapter 3), suggesting that transilience is less predictive in contexts and among groups that have less freedom to act. Based on our results, it may be that transilience does not promote adaptation actions and mental health in developing countries where people are severely limited in their possibility to act. Still, it should be stressed that in this PhD dissertation we did not formally examine which factors and variables influence
transilience and/or moderate the extent to which it relates to relevant outcomes; as such, this remains an interesting question for future research.

**Understanding Variables and Factors Influencing Transilience**

**Which Factors Influence Transilience?**

To advance our understanding of human transilience in the face of adversity, it is important to study which individual, social and contextual factors may influence transilience. Such factors may either strengthen (or weaken) transilience, which in turn may encourage (or inhibit) people to engage in adaptation actions and to display good mental health. Alternatively, such factors may moderate the relationship between transilience and adaptation actions, or the relationship between transilience and mental health.

First, future research could examine which individual variables affect transilience, such as personality factors or demographic characteristics. It may be that certain personality styles, such as having a strong tendency to commit to whatever one is doing, to believe that one can influence events in life and to consider moments of change as challenges rather than threats (all characteristics of so-called ‘hardiness’; Kobasa et al., 1982) strengthen transilience in the face of an adversity (cf. Maddi, 2005). Additionally, certain demographic variables, such as age, may influence the extent to which people perceive transilience in the face of adversities. For instance, older people tend to be more resilient in the face of life stressors (Bonanno et al., 2007), including the COVID-19 pandemic (Holinge et al., 2020), due to more life experience and capacity to regulate emotions. Yet, other studies suggest that age may moderate the relationship between resilience and relevant outcomes, such as experiencing psychological distress (Matzka et al., 2016). As such, more research is warranted to determine whether and how individual factors influence transilience.

Second, future studies could examine to what extent social factors, like perceived social support, influence transilience. Interactions within local communities can offer emotional support, encouragement, and enhance the perceived possibility for collective problem-solving (Feeney & Collins, 2015; Jennings & Bamkole, 2019; Thoits, 2011). As such, having strong social ties and a strong sense of perceived social support may impact the extent to which people develop and maintain transilience in the face of adverse events. Indeed, studies have consistently shown that social support can promote resilience, both at the individual (Bonanno et al., 2007) and at the community level (Ntontis et al., 2021), as well as people’s capacity to grow after the confrontation with adverse events (Prati et al., 2009). At the same time, some studies suggest that social support may moderate the relationship between resilience and mental health outcomes (Li et al.,
2021; Khan & Husain 2010). Hence, future studies can examine which social factors are related to transilience in the face of adversities, and in what way.

Third, future research could examine how contextual factors, such as cultural values or national policies, affect transilience. Our findings suggest that contextual factors, notably very restrictive national policies, may moderate the extent to which transilience relates to adaptation actions and mental health indicators, respectively (see Chapter 3). Future studies can examine how these and other contextual factors may influence the level of transilience, or the relationship between transilience, adaptation actions and well-being. For example, the extent to which members of a community can access capital, credit and insurance may likely affect their individual and collective transilience (cf. Cinner et al., 2018), as well as the relationship between transilience and adaptation actions and mental health. Such financial assets allow community members to develop and/or adopt different technologies in order to adapt to adverse events. For example, in some coastal societies where climate change has led to a shift in the fish species available, community members have used local financial savings and credits to purchase new fishing gear that allows them to target the new fish species (Sumaila et al., 2011), as well as to store fish better during farther ashore fishing endeavours (Cinner et al., 2013). As such, it may be that certain contextual features may help individuals to perceive transilience in the face of an adversity. Importantly, identifying the key determinants of transilience can also inform the design and test of interventions aiming to target such determinants and, as a result, foster transilience (and in turn promote adaptive responses).

**How Can We Enhance Transilience?**
Given the finding that transilience increases the likelihood of adaptation actions and mental health, it is crucial to understand whether we can intentionally foster transilience. For that purpose, two main approaches may be possible. First, as mentioned above, interventions aiming to target the key determinants of transilience could be designed and tested, once more knowledge about such factors is available. Alternatively, interventions could attempt to directly elicit the perceived capacity to persist, adapt flexibly and positively transform in the face of adversity (i.e., transilience). With respect to this last approach, different intervention strategies could be tested in future studies.

One possible approach could be to prompt individuals to reflect on their past experiences of persisting, adapting, and positively transforming in the face of adversities. For example, participants could be invited to describe how they navigated and grew from a specific past adversity, like the first wave of the COVID-19 pandemic. Specific instructions could be provided to reflect specifically on the three components of transilience (e.g., “list at least two ways in which you changed for the better due to
the confrontation of the COVID-19 pandemic”; “describe the multiple ways you found to adapt to the national lockdown”). By reflecting on such past experiences, and especially by recalling personal examples of persistence, adaptability and transformability, participants may realise that they have shown the capacity to adapt and thrive in the face of past challenges, which in turn may enhance their transilience in the face of present and future challenges. This approach is consistent with research showing that information about one’s previous accomplishments (i.e., mastery experience; Bandura; 1989; 1997) can increase people’s perceived capacity to achieve specific tasks (i.e., their self-efficacy; Bandura, 1997).

Another possible strategy to elicit experiences of transilience in the present moment could be the use of gamification techniques, such as smartphone apps and virtual reality. Participants could be exposed to a simulated adversity, and then guided through a process of finding ways to persist, adapt flexibly and positively transform by dealing with such an adversity; they could also receive feedback on their performance (e.g., scoring points related to transilience) as well as guidelines on how they can improve their levels of transilience. For instance, participants could be exposed to a situation where they own a house with a backyard, and encouraged to increase the greenery in it to help protect themselves and their community from flooding. Prompts and suggestions could be provided to the participant in order to find ways to replace tiles and concrete with bushes and trees, as well as feedback on the beneficial opportunities (e.g., “you just learned something new about gardening, well done!” or “you asked your neighbours to plant a tree together, improving your relationship with them, and increasing protection against flooding for yourself and your community!”). By undergoing such virtual experiences of transilience in the face of adversity, participants may be able to develop a sense of their capacity to persist, adapt flexibly and positively transform in the face of a specific adversity, thus fostering transilience in the face of real-life adversities (cf. Douglas & Brouer, 2021).

To test the effectiveness of these interventions strategies in fostering transilience, future studies could employ experimental designs, where participants are randomly assigned to either an experimental group (where they undergo the intervention) or a control group. Comparisons between the levels of transilience across both groups would shed light into the extent to which the intervention succeeded in fostering transilience. Longitudinal designs could also be used to examine the pre- and post-intervention levels of transilience in both experimental and control groups. Importantly, by focusing on whether transilience can be boosted, future research can provide valuable knowledge into the extent to which transilience is a stable (i.e., a trait) or malleable (i.e., a state) construct, and into how individuals and communities can actively cultivate and strengthen their transilience in the face of contemporary adversities.
These studies can also examine whether enhancing transilience affects the extent to which transilience promotes adaptation actions and mental health.

5.4. PRACTICAL IMPLICATIONS

The research presented in this PhD dissertation holds significant practical implications. Policymakers and practitioners can leverage on our findings that people perceive transilience, and that higher transilience increases the likelihood of adaptation actions and mental health, when developing strategies and policies to deal with adversities like climate change and pandemics. Specifically, incorporating transilience in such processes would imply to move beyond damage control and to also foster opportunities for persisting, adapting flexibly, and changing for the better.

One promising approach may be to integrate transilience-focused initiatives within community-based disaster response and preparedness programs (Johnston et al., 2022). In areas prone to natural disasters, such as hurricanes or flooding, transilience principles could be implemented by emphasizing and leveraging on the capacity of individuals and communities to show persistence, adaptability and transformability in response to the risks in their local environment. Such transilience-focused initiatives can complement traditional ‘bouncing back’ approaches focusing on, for example, rebuilding and reinforcing infrastructure, establishing warning systems, and creating evacuation plans. For instance, community members could be trained in specific techniques and resources helping them carry on when they are hit by a flood, develop and try multiple ways to adapt to such threat, and come up with (and aim for) positive changes that can be derived from the process of adaptation to flood risks. Examples of such potential positive changes may include novel, useful knowledge and skills that can be shared with other members and future generations, the development of values that are more in harmony and respect with the surrounding natural environment, or an increase in social cohesion and support within the community, all of which could be derived from engaging together in activities to adapt to the unavoidable risks in the local area. By incorporating transilience principles in disaster preparedness and recovery programs in the face of different adversities, policymakers and practitioners may likely encourage communities to take a wide range of concrete actions for adaptation while also supporting the mental health and overall quality of life of community members.

Transilience principles could also be incorporated in campaigns aiming to promote adaptation to large-scale adversities, including climate change risks and future epidemics. For example, in the context of climate change, campaigns aimed at promoting urban greening could make explicit how individuals can persist, adapt flexibly, and positively transform by engaging in such climate-adaptive actions. Such
campaigns can highlight the various ways in which greening can be implemented and the benefits and growth opportunities associated with these actions, such as increased knowledge and new skills or a more pleasant living environment. Based on our research, it may be that messages focused on transilience may be more powerful in encouraging people to take action to adapt, and in enhancing their mental health, compared to messages that refer exclusively to the local threats (cf. McLoughlin, 2021; see Chapter 4). Additionally, it is plausible that focusing on transilience at the community level may be particularly powerful to promote widespread adaptation action across different levels. This is based on our finding that collective transilience appeared to be the only relevant predictor of both individual and community-based adaptation, when considering also individual transilience. By integrating transilience in adaptation policy packages, policymakers and practitioners can empower individuals and communities, helping them not only recover from immediate impacts, but also thrive and evolve in the face of an adversity.

5.5. CONCLUSION

In this PhD dissertation we have introduced the novel concept of transilience as the perceived capacity to persist, adapt flexibly, and positively transform when confronted with an adversity. A series of studies conducted across a range of socio-political contexts, which vary in the severity and types of threats encountered, as well as in the policies implemented to mitigate their negative impacts, revealed a consistent observation: individuals perceive transilience amidst various large-scale adversities, such as climate change and the COVID-19 pandemic, and they do so both at the individual and at the community level. Importantly, we generally found that individuals with higher levels of transilience are more likely to engage in adaptation actions and to exhibit better mental health, provided they have some freedom of choice over their behaviours. Our research indicates that, also when adapting to contemporary adversities, people perceive they can change for the better, rather than merely “bouncing back” to pre-adversity conditions (cf., Davoudi et al., 2013). As such, transilience opens up pathways for individuals to adapt to adversities also by trying and developing alternatives, by proactively seeking beneficial opportunities and undergoing positive transformations.

The term “crisis” has a fascinating etymology, originating from the ancient Greek words krísis and krínō, which signify ‘turning point’ and ‘decision’ (www.etymonline.com). We may never be able to evade crises entirely, and it is important to develop ways and to find tools to limit the negative consequences that crises can have on our lives. At the same time, it is imperative to remember that crises inherently represent decisive moments, which may invite us to reassess our present conditions, challenge them,
and evolve into improved versions of ourselves and our communities. Rather than perceiving crises solely as stumbling blocks, we can try to embrace them also as essential stepping stones towards societal progress.