

**Understanding Conspiracy Beliefs in Times of Societal Change: Exploring the Role of Psychological Traits and Well-Being in Conspiracy Theory Mentality**

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### Abstract

**Purpose:** Conspiracy theories are increasingly prevalent and pose dangers for society. Hence, this study aimed to contribute more insights into the psychological traits that might have an association with conspiracy theories, addressing the lack of consensus and mixed results in studies. Thus, need for cognitive closure, learned helplessness as well as societal change concerns were chosen to contribute more clarity on their association with conspiracy theory mentality, which is the tendency to believe in conspiracy theories. Furthermore, the study explored whether poor well-being (stress, social well-being, and self-esteem) mediates the relationship between the constructs and conspiracy theory mentality since its role in conspiracy theory mentality has been overlooked so far.

**Method:** To test these associations, an online questionnaire was developed including scales that measured all constructs. 110 participants (female = 79, male = 31) between the ages of 18 and 71 were recruited with convenience sampling, snowball sampling, and random sampling methods, including students from the University of Twente and contacts. The data was analyzed in R studio performing multiple linear regressions and mediation analyses.

**Results:** Significant positive effects of need for cognitive closure ( $p < 0.01^{**}$ ) and societal change concerns ( $p = 0.049^*$ ) on conspiracy theory mentality were found. Stress seemed to be significantly positively associated with conspiracy theory mentality ( $p = 0.034^*$ ) as the only well-being subfactor. Lack of control (a subfactor of learned helplessness) ( $p < 0.01^{**}$ ) and societal change concerns ( $p = 0.025^*$ ) showed a positive association with stress. However, a mediating effect of stress within the relationship of the constructs and conspiracy theory mentality could not be confirmed.

**Conclusion:** In this study the well-being subfactors stress, social well-being, and self-esteem did not mediate the relationship between the constructs and conspiracy theory mentality. However, the fact that stress seems to be associated with both the constructs and conspiracy theory mentality independently, suggest a need for further research into why stress may be associated with conspiracy theory mentality.

*Keywords:* Conspiracy Theories, Conspiratorial Beliefs, Need for Cognitive Closure, Learned Helplessness, Societal Change Concerns, Well-being

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## 1. Introduction

The phenomenon of conspiracy theories has already existed for centuries and officially received its name by the philosopher Karl Popper in the 1950s (Coady, 2021). It is still of immense interest for scientific research since conspiracy theories continue to occur repeatedly in different cultures and contexts. One recent event was the Covid-19 pandemic that led to many different conspiracy theories and types of misinformation (Mousoulidou et al., 2023). Covid-19 related conspiracy theories ranged from accusations that the Bill and Melinda Gates foundation had a secret masterplan to monitor humans by injecting microchips within vaccines (Islam et al., 2021) to claims that radiation of 5G cellphone towers cause Covid-19 incidents (Flaherty et al., 2021). Meanwhile, other people share the misbelief that an HIV prescribed drug is the actual factor that causes an AIDS diagnosis instead of HIV itself (Kalichman, 2009). Even more far-reaching, there are also groups such as QAnon, which assumes that a circle of American actors, democrats, and other government servants have formed a child sex trafficking ring and perform satanic rituals. QAnon supporters also praise Donald Trump, believing that he was chosen by God to stop other people's actions and they claim that these people collaborate against the former president (Conner, 2023; Hoseini et al., 2021).

History has illustrated that conspiracy theories can have serious consequences. Zeng et al. (2022) give an overview about the role of the Internet in shaping those conspiratorial ideas. They emphasize that conspiracy theories, mainly spread on social media, make it possible to change many people's perceptions or to find like-minded people. This increases the chance that one's views are confirmed by others (Zeng et al., 2022). They also stress that conspiracy theories can interfere with mitigation in crisis situations and the implementation of public health measures as seen during the Covid-19 pandemic. In one study set up by Van Prooijen et al. (2021), Covid-19 conspiracy supporters were shown to engage in behaviors that could result in dangerous health consequences: Conspiracy believers often rejected Covid-19 testing or did not comply with Covid-19 rules. Additionally, they warn that misinformation diminishes confidence in governments and scientific research. In the case of QAnon, followers participated in the Capitol attack or showed similar harmful behaviors in other situations to demonstrate their views (Conner, 2023; Hoseini et al., 2021). Considering the prevalence and potential dangers of conspiracy theories, it is important to explore why these beliefs are held by certain people. Thus, the following paragraphs will provide an overview of factors that have already been tested and might be of effect to start believing in conspiracy theories.

One overall pattern that has been observed in many studies is the fact that conspiracy theories seem to flourish in times of changes and uncertainty. Van Prooijen and Douglas (2017) describe that external crisis situations have an impact on individuals' emotions, exposing them to emotions such as lack of control, anxiety, or unpredictability. Some people try to avoid or minimize these feelings by searching for sense in the current situation, which conspiracy theories may help them with (Prooijen & Douglas, 2017). Generally, it appears that conspiracy theories "(...) stimulate a sense of meaning and purpose (...) that is psychologically rewarding" (Van Prooijen, 2022, p.2). Similarly, Bowes et al. (2023) found an association between three main patterns and conspiracy theory mentality, showing that threat perceptions were highly predictive of conspiratorial beliefs. The other two patterns referred to either having strange beliefs or being hostile and putting yourself above others.

Moreover, researchers have also pointed to the role of unjust world beliefs in conspiracy theory beliefs. For people who believe that the world is unfair and that they cannot change certain situations because influential societal groups are in control over certain occurrences, crisis situations can extend the likelihood of conspiracy theory endorsement (Furnham, 2021). Similarly, to the perception of injustice, it has also been found that the lack of trust in other institutions and people can increase conspiracy theory acceptance (Bowes et al., 2023). Dirzyte (2023) argues that negative views towards others as well as the perception that others are not trustworthy intensifies conspiracy theory affirmation.

Based on the literature discussed, there are several factors that are related to higher conspiracy theory mentality (Douglas et al., 2016). Many of these factors like threat perception, perception of injustice, lack of trust and search for meaning arise in times of changes and crisis situations and can then lead to some people becoming more likely to believe in conspiracy theories. However, the insights so far are not yet sufficient to explain fully why conspiracy theories are increasingly accepted by the general population (Douglas et al., 2016). Thus, this study dives into factors that have not been studied much yet to advance research insights in this field. The following paragraphs will clarify the current's study focus, motive for and potential contribution of this research.

The current study focuses on the independent variables societal change concerns, emotion dysregulation, need for cognitive closure and learned helplessness and on the dependent variable conspiracy theory mentality. The variable societal change concerns was chosen to measure how much fundamental changes in society affect worry in people. It constitutes a relevant variable considering the fast-paced and ever-changing world we live in. Then, the three psychological traits were added because so far, much research has focused on

external factors and circumstances surrounding conspiracy theories (i.e., uncertainty, threat experiences, perception of injustice etc.). Less research, however, has focused on whether personality traits have an association with conspiracy theories and the research that exists often shows inconsistent findings. Combining societal change concerns and the psychological traits in one research study is done to further understand how much people worry about societal changes and how they behave in or cope with different situations. Having to deal with coping problems caused by the psychological traits, might make people more prone to conspiracy theories, especially in uncertain situations. Thus, it is tested whether there is an association between societal change concerns, these traits, and increased conspiracy theory adoption.

To address an additional research gap, well-being is another variable that is investigated in this study. Some studies point to an association of well-being, with emotion dysregulation and learned helplessness (Nuvvula, 2016; Saxena et al., 2011). Research on well-being and conspiracy theory mentality is limited, focusing mainly on the effect conspiracy theories have on well-being, not the other way around (van Prooijen et al., 2021). Thus, well-being as a mediator has not been investigated yet. This might be the case because due to the still on-going uncertainty of factors associated with conspiracy theories, much research is still focusing on identifying direct relationships between certain factors with conspiracy theory adoption. Consequently, this research study investigates the direct links between the variables and tries to make the potential mediating role of well-being in the relationship between societal change concerns, need for cognitive closure, emotion dysregulation, and learned helplessness with conspiracy theory mentality clearer.

### **Research Question**

The research question that will be addressed in this research project is: “To what extent are emotion dysregulation, need for cognitive closure, learned helplessness, societal change concerns and well-being associated with conspiracy theory mentality?” More specifically, the following sub-questions will be examined: “To what extent are emotion dysregulation, need for cognitive closure, learned helplessness, and societal change concerns related to higher conspiracy theory mentality and “To what extent do the well-being subfactors stress, social well-being and self-esteem mediate the relationship between these variables and conspiracy theory mentality?”

## 2. Theoretical Framework

The theoretical framework starts with a conceptualization of conspiracy theory mentality, societal change concerns and the psychological traits. Furthermore, it will be addressed how the latter constructs relate to conspiracy theory mentality. As a next step, well-being as an overall construct will be defined and is then narrowed down to emphasize the subfactors of wellbeing that will be focused on in this study. These subfactors of well-being will be related to societal change concerns, the three psychological traits and conspiracy theory mentality to finally discuss a potential mediating role of well-being in the relationships between the constructs and conspiracy theory mentality.

### 2.1 Conspiracy Theories and Conspiracy Theory Mentality

Several conceptualizations of conspiracy theories have developed over time. Generally, it is said that conspiracy theories are claims about powerful people interfering with public affairs with the intention to fulfil their own, often hostile interests in a concealed way. (*Identifying Conspiracy Theories*, n.d.). Supporters of conspiracy theories usually do not believe that the event at hand is a natural occurrence or a coincidence (Evans, 2020). Further, these type of beliefs are associated with ideas that explain an event from a more exciting perspective and deny explanations that are often more realistic (Douglas et al., 2016). The European Commission names six principles that characterize conspiracy theories and their believers (*Identifying Conspiracy Theories*, n.d.):

- (1) “An alleged, secret plot.“
- (2) “A group of conspirators.“
- (3) “‘Evidence’ that seems to support the conspiracy theory.“
- (4) “They falsely suggest that nothing happens by accident and that there are no coincidences; nothing is as it appears and everything is connected.“
- (5) “They divide the world into good or bad.“
- (6) “They scapegoat people and groups.“

Further it is said that “conspiracy theories enable an alternative reality in which perceivers (a) can defend a fragile ego by perceiving themselves and their groups as important, (b) can rationalize any of their beliefs and actions as legitimate, and (c) are entertained through the opportunity to uncover a mystery in an exciting tale” (Van Prooijen, 2022). These beliefs often give people meaning, explanations and help to make sense of

situations that have high levels of uncertainty and incongruence (Douglas et al., 2017; Van Prooijen, 2022).

From this explanation of conspiracy theories, the concept conspiracy theory mentality is derived. In research, this is also often referred to as conspiracy theory mentality or conspiracy theory mentality. However, in contrast to these two conceptualizations, conspiracy theory mentality focuses on general conspiracy theory mindsets (Imhoff et al., 2022). It measures and reflects the tendency to which people are convinced about conspiracy theories generally, focusing on broader conspiratorial ideas instead of specific events (Imhoff et al., 2022).

## **2.2 Societal Change Concerns**

Many different changes challenging society and the entire world have occurred in recent years (Barchielli et al., 2022). News increasingly report on natural catastrophes, delinquencies, terrorist attacks, war etc. (Hoog & Verboon, 2019). Research has shown that the daily exposure of distressing news in media increases concerns and anxiety (Hoog & Verboon, 2019; Kellerman et al., 2022). For example, climate change forces governments to adopt policies and humans in the entire world to change their ways of living and behaviour in order to protect the world in the best way possible and reduce further climate catastrophes (Arikan & Günay, 2020). In relation to this topic, a study about the public concern for climate change revealed that a significant number of people were worried about climate change in all the 47 countries included in the study (Kvaløy et al., 2012). The same study also stressed that people are aware of global warming issues and its seriousness, however, it is particularly challenging for many people to understand what is happening and to comprehend the scientific explanations behind it (Kvaløy et al., 2012). Further, it is problematic that individuals are exposed to fake news on a regular basis, and it is difficult for many people to distinguish fake information about events and society from real information, especially when emotions are used instead of reasoning (Saling et al., 2021). Similar results as in the aforementioned study were established in a study about preoccupations concerning 21<sup>st</sup>-century concerns, in which it could be seen that individuals, particularly young adults, were concerned with current issues such as Climate change, Covid-19 pandemic, and the war between Russia and Ukraine (Barchielli et al., 2022). The worry, in turn, caused many participants to feel stressed, anxious, or depressed (Barchielli et al., 2022). Van Prooijen and Douglas (2017) also showed that crisis situations and change in society are related to an increase in conspiracy theory adoption (Van Prooijen & Douglas, 2017). Thus, the variable



societal change concerns will be included in the present study to investigate the different degrees to which individuals worry about societal and global changes and the association of the variable to well-being and conspiracy theory mentality. It is assumed that these worries are associated with lower levels of well-being and higher levels of conspiracy theory beliefs.

*H1: Societal change concerns are positively related to conspiracy theory mentality.*

### **2.3 Emotion Dysregulation**

Emotion regulation can be described as “(a) awareness and understanding of emotion, (b) acceptance of emotions, (c) ability to control impulsive behaviors and behave in accordance with desired goals when experiencing negative emotions, and (d) ability to use situationally appropriate emotion regulation strategies flexibly to modulate emotional responses as desired to meet individual goals and situational demands. The relative absence of any or all these abilities would indicate the presence of difficulties in emotion regulation, or emotion dysregulation” (Gratz & Roemer, 2004, p.42-43).

Research has shown that people sometimes have coping problems in the face of uncertain events due to the threatening nature, and the arising of negative emotions in such events (Molenda et al., 2023). Marchlewska et al. (2021) showed that in the face of events that cause stress, participants who have difficulties in dealing with the stress and used maladaptive coping strategies such as avoidance coping, also often believed conspiracy theories. Since stress as a variable will be discussed later, it is important to draw a line between the emotion dysregulation variable and stress here. Emotion dysregulation will be investigated as a trait, considering challenges in dealing with emotions that people have intrinsically and that are stable over time. Moreover, emotion dysregulation entails different experiences that make managing emotions difficult of which stress can be part, but it is not the only experience. For example, it can also include emotional sensitivity or impulsive emotional reactions (Fitzpatrick et al., 2023). Stress, on the other hand, will be looked at as a state, changing over time. Stress and emotion dysregulation can potentially affect each other but they are still distinct constructs.

Related to this, Molenda et al. (2023) demonstrated that higher emotion dysregulation was predictive of increased belief in conspiracy theories. However, similar research on this association is limited yet (Molenda et al., 2023). Consequently, this was further explored in the present research project. It is expected that people, who have problems to regulate and deal with their emotions, are more likely to embrace conspiracy theories.

*H<sub>2</sub>: Emotion dysregulation is positively related to conspiracy theory mentality.*

## **2.4 Need for Cognitive Closure**

Researchers have suggested that people use shortcuts to find answers and avoid uncertainty in ambiguous situations due to a need for cognitive closure. Need for cognitive closure is conceptualized as the “desire for predictability, preference for order and structure, discomfort with ambiguity, decisiveness, and close-mindedness” (Webster & Kruglanski, 1994, p.1049). More concretely, “it has effects on decision making and has been associated with more rapid decision making, higher reliance on heuristics or biases for decision making, reduced tolerance for ambiguity, and reduced interest in searching for alternatives” (Raglan et al., 2014, p.1). Previous research has presented mixed results on the effect of need for cognitive closure on conspiracy theory mentality. One experimental study that was centered on the investigation of a relationship between need for cognitive closure and conspiracy theory beliefs, established a positive relationship between the two variables. Participants were presented with a conspiratorial claim that the EU deliberately sent refugees to Poland to fulfill a secret plan which was supposed to cause turbulences and to result in more control over the country (Marchlewska et al., 2017). They showed that participants with higher levels of need for cognitive closure tended to favor conspiratorial descriptions for events when the causes of the events were unresolved and therefore ambiguous and when conspiratorial explanations were available for the given context (Marchlewska et al., 2017). However, another study could not find a relationship between need for cognitive closure and conspiracy theory mentality (Leman & Cinnirella, 2013). However, it might be important to consider that the study by Leman and Cinnirella (2013) only used a very small sample size ( $N = 30$ ). Thus, it is not impossible that the effect could be different with a larger number of participants. Furthermore, up to this day the research conducted on the need for cognitive closure is not extensive. In the present research study, it is assumed that people with the need for cognitive closure are more likely to embrace conspiracy theories as they might have an internal motivation to reduce the experience of uncertainty often present in socio-political situations and conspiracy theories might help them with that.

*H<sub>3</sub>: Need for cognitive closure is positively related to conspiracy theory mentality.*

## 2.5 Learned Helplessness

The learned helplessness theory presents another mechanism that could be a predictor for difficulties in coping successfully with uncertain events and consequently might direct people towards conspiracy theories ideations. Learned helplessness is described as “a state in which nothing a person opts to do affects what is happening. It is the quitting or the give up response that follows the conviction that whatever a person does doesn’t matter” (Nuvvula, 2016, p.426).

Although during the last years, researchers have dedicated their research progressively towards problems in coping strategies and their connections with conspiracies, there is still much to explore. Farhart et al. (2022) claim that elevated levels of learned helplessness are associated with conspiratorial thinking, however, there is no more research on this concept yet. It could be that people with higher levels of learned helplessness perceive a lack of control or ability to change a current personal, social, or political event and therefore become passive since they feel like their attempts are useless. Turning towards conspiracy theories might restore a feeling of control since conspiracy theories give them sense in those situations. Hence, in the present research study a scale for learned helplessness is included in order to collect more evidence for or against an association between learned helplessness and conspiracy theories mentality.

*H4: Learned helplessness is positively related to conspiracy theory mentality.*

## 2.6 Well-being

Generally, well-being can be conceptualized as “a state of happiness and contentment, with low levels of distress, overall good physical and mental health and outlook, or good quality of life“ (APA Dictionary of Psychology, 2018). However, well-being encompasses many different subfactors. Maslow’s hierarchical “pyramid” of needs model describes that flourishing of well-being depends on the degree to which six universal needs of humanity - physiological, safety, belongingness and love, esteem, self-actualization, and self-transcendence – are fulfilled (Lomas & VanderWeele, 2022). The Gallup Organization, which conducted research on well-being facets all around the world, concluded five subfactors of well-being, namely, career wellbeing, social wellbeing, financial wellbeing, physical wellbeing and community wellbeing (Rath & Harter, 2010, as cited in O’Reilly, 2013). More concretely Rath and Harter (2010, as cited in O’Reilly, 2013) describe “Wellbeing is about the combination of our love for what we do each day, the quality of our relationships, the

security of our finances, the vibrancy of our physical health, and the pride we take in our contribution to our communities” (p.1). Huppert and So (2013), in turn, conceptualize well-being as consisting of “competence, emotional stability, engagement, meaning, optimism, positive emotion, positive relationships, resilience, self-esteem, and vitality” (p.842). It becomes evident that well-being is a multidimensional variable with many different subfactors one can focus on. Thus, for this research project it becomes important to consider how well-being is related to both the psychological traits emotion dysregulation, need for cognitive closure, and learned helplessness as well as societal change concerns and conspiracy theory mentality. Moreover, it is essential to determine which of the aforementioned subfactors of well-being specifically may play a role in mediating the hypothesized relationship between societal change concerns or the psychological traits and conspiracy theories mentality.

### ***2.6.1 Well-being and Societal Change Concerns***

The present research project attempts to provide more insight into whether the chosen variables are related to concrete aspects of well-being. This research project is committed to the subfactors stress, social well-being and self-esteem and their potential association with the independent variables. First, the relationship between societal change concerns and the subfactors of well-being needs to be discussed.

**Stress.** Stress is often associated with many inconvenient circumstances. Due to its nature of causing issues, societal developments and issues have proven to cause stress (Randle et al., 2017). Stress occurs especially in the face of uncertainty and when changes occur that cause individuals’ struggle to deal with the developments (Peters et al., 2017). Although the relationship between societal change concerns and stress is already established in research, the current research paper aims to address how the effect of stress may impact the relationship between societal change concerns and conspiracy theories mentality.

**Social Well-being.** The continuing rise of societal and global issues have also shown to impact social wellbeing. Much research focused particularly on the implications of the Covid-19 crisis on social well-being due the isolation and conflicts (Fatahi et al., 2021). In this research project it will be investigated if already simply worrying about these global changes might impact social well-being in some sense.

**Self-esteem.** The last well-being subfactor self-esteem has not been associated explicitly with societal change concerns yet. However, due to the fact that societal and global change issues become increasingly part of everyone’s life, the associated concerns about these

developments might make people doubt their own abilities to deal with the changes leading to a decrease in self-esteem.

*H5: Societal change concerns are positively related to (a) stress and negatively related to (b) social well-being, and (c) self-esteem.*

### **2.6.2 Well-being and Psychological Traits**

In the previous paragraph the relationship between societal change concern and well-being was discussed. It will further be considered how the psychological traits relate to well-being and the specified well-being subfactors. Research on emotion regulation dysfunctions and need for cognitive closure revealed a negative relationship between both individual variables and well-being (Saxena et al., 2011; White, 2021). Most research on learned helplessness covers a small scope such as the effects of learned helplessness within occupational contexts or school achievements. In a school children study it was demonstrated that well-being was notably influenced by learned helplessness (Sarairah, 2024). This is also seen in work life where learned helplessness can impact both physical and mental health (Tayfur, 2012). Moreover, some of the psychological traits have also been associated with the well-being subfactors before.

**Stress.** In a study testing the implications that the Covid-19 crisis had for people with a high need for cognitive closure, it was shown that people high in need for this trait experienced increased anxiety and stress (White, 2021). This is an effect that can also be assumed to occur in people with emotion regulation difficulties. Emotion regulation and stress have been confirmed to be clearly related and can affect each other since they both apply to emotional responses (Langer et al., 2020; Wang & Saudino, 2011). It is also seen that emotional regulation forms part of emotional responses in distressing experiences and that stress usually appears in the face of an irritating emotional experience (Wang & Saudino, 2011). This implies that effective emotion regulation is decisive for dealing with situations in which stress arises (Langer et al., 2020).

Meanwhile, learned helplessness on the other has hardly been subjected to concrete well-being factors in humans. Since existing research has not examined the role of learned helplessness for stress experiences yet, in this research project it is investigated whether learned helplessness could also be related to stress. This is expected, because people with high levels of learned helplessness usually fail repeatedly to act in situations and consequently develop the conviction that they do not have control over events, which makes them stop

trying even when they could change a situation (*APA Dictionary of Psychology*, 2018; Nuvvula, 2016). This could possibly affect individuals' well-being by increasing their stress due to perceptions of lack of control over certain situations and repeated experience of failure.

**Social Well-being.** Social well-being encompasses "One's feelings of belongingness and content by being a part of social groups and/ or by establishing positive and meaningful social relationships" (Ray & Majumdar, 2022). Van't Wout et al. (2010) emphasized the importance of emotion regulation within and for social interactions. Usually, individuals have different motives and goals in social groups and adapt their emotional self-regulation strategies, accordingly; occasionally even if they go against their personal motives (Porat et al., 2020). Thus, here it is expected that people who have difficulties to regulate their emotions might experience difficulties in social relations as well because they might be confronted with rejection when their emotional responses do not fit to others' expectations.

In the case of need for cognitive closure, existing research about its relationship with social well-being can barely be found (Pariße et al., 2023). Pariße et al. (2023) tried to reduce this gap in research by focusing on social skills and prosocial behavior in high school students high in need for cognitive closure. In this study, it was established that individuals high in need for cognitive closure showed less prosocial behavior and impaired social skills because of their difficulties to take others' perspectives and to display empathy. This points to important implications that need for cognitive closure might affect individuals' personal and group well-being significantly (Pariße et al., 2023).

Similarly, for learned helplessness research on its association with social well-being is lacking. It is assumed here that people with high levels of learned helplessness have lower social well-being since perceptions of failure and lack of motivation and control might lead them to withdraw from social relationships. However, since there is no research demonstrating this assumption yet, this research project devotes to examine whether this is true. The same accounts for reducing the lack in research of the association of emotion dysfunctions and need for cognitive closure with social well-being.

**Self-esteem.** Previous research has shown that emotion regulation and related concepts such as mindfulness are related to increased self-esteem (Bajaj et al., 2016; Gomez et al., 2018). This is in line with other research confirming that, in turn, difficulties to regulate emotions effectively decreases self-esteem (Antunes et al., 2021). Need for cognitive closure has not been subjected to research on self-esteem. Nevertheless, based on the conceptualization of need for cognitive closure, it is expected that when people high in this trait make quick judgments resulting from the need to have a feeling of certainty, which turn

out to be false, they may struggle to accept that their need for certainty caused their false judgments, and they might end up doubting themselves for these mistakes made. This will be verified in this research project.

For learned helplessness research on its relationship with self-esteem is also limited. One study with students demonstrated that learned helplessness and student's self-reported expectations about academic accomplishments were negatively linked with each other (Valås, 2001). No other research has focused on the effect of learned helplessness on overall self-esteem. Here, we assume that when people with high levels of learned helplessness have the impression that they constantly fail to solve something, it potentially affects their self-esteem. They might consider themselves as incompetent and stop trying altogether because they think they will fail in the future as well.

*H<sub>6</sub>: Emotion dysregulation is positively related to (a) stress and negatively related to (b) social well-being, and (c) self-esteem.*

*H<sub>7</sub>: Need for cognitive closure is positively related to (a) stress and negatively related to (b) social well-being, and (c) self-esteem*

*H<sub>8</sub>: Learned helplessness is positively related to (a) stress and negatively related to (b) social well-being, and (c) self-esteem*

### **2.6.3 Well-being and Conspiracy Theories Mentality**

In the following it will be explored whether the well-being subfactors that were associated with the aforementioned psychological traits, are also related to conspiracy theory mentality in previous research and the reasons why there could be an association if not already established. Research on conspiracy theories and their potential predictors have found an association between well-being and conspiracy theories acceptance. A study by Dirzyte (2023) showed differences in general well-being for people who were prone to conspiracy theories and those who were not. Participants in this study, who had lower well-being scores, were also more likely to believe in conspiratorial ideas.

Furthermore, the aforementioned relations of the psychological traits with stress have also been found for conspiracy theories mentality. This association with stress was found in health care workers who thought that the Covid-19 virus was a deliberately man-made pandemic. They had higher results on a stress and anxiety scale, and they were less happy in their jobs and life generally compared to those that did not have these beliefs (Chen et al., 2020). Similarly in another study, participants that indicated higher levels of stress on a scale,

were more likely to believe in conspiracy theories, especially in the face of stressful events (Swami et al., 2016). This might be explained through the fact that these events are accompanied by perceptions of uncertainty and life-threatening experiences (van Prooijen & Jostmann, 2013). Conspiracy theories, in that case, are thought to provide clear and simple explanations for stressful events and thus reduce the uncertainty and resulting stress experienced (Swami et al., 2016).

Other research studies inquired the correlation between well-being in social relationships and conspiratorial beliefs. Political suspiciousness and conspiracy theories appear to have the potential to worsen various forms and aspects of social relationships like a decrease in trusting others, group cooperation and prosocial behavior or an increase in conflicts with others (van Prooijen et al., 2022). The question of whether the relationship also exists the other way around (i.e., reduced social well-being predicts conspiracy theory mentality instead of conspiracy theory mentality predicts reduced social-well-being), should also be explored. Graeupner and Coman (2017), demonstrated that individuals who were experiencing higher social exclusion in personal events were also more likely to accept conspiracy theories. They also point out the continuous cycle that this yields in which experiences of social exclusion can steer individuals towards conspiracy theories and the believe of those to even greater social rejection. Nevertheless, the mechanism of social exclusion as a potential predictor has not been thoroughly explored yet in conspiracy theories research.

Lastly, conspiratorial beliefs were also related to low self-esteem in research studies (Abalakina-Paap et al., 1999). Abalakina-Paap et al. (1999) argue that people with low self-esteem might follow certain conspiracy theories as it can help them to refrain from self-blame and instead blame other people for problems or circumstances. Another explanation could be that conspiracy theories give people the possibility to enhance their low self-esteem because it gives them the impression that they know about certain things that others do not know about contributing to feelings of uniqueness (Biddlestone et al., 2021).

*H<sub>9</sub>: (a) stress is positively and (b) social well-being, and (c) self-esteem are negatively related to conspiracy theory mentality.*

#### **2.6.4 Well-being as Mediator**

From the aforementioned discussion of existing research on well-being, several patterns between the psychological traits: emotion dysfunction, need for cognitive closure,



and learned helplessness as well as societal change concerns and well-being have been made clearer. Additionally, the relationship between well-being and conspiracy theories was inspected. However, no research yet has focused on how well-being plays into the relationships between the three individual psychological traits or societal change concerns and conspiracy theory mentality. Therefore, in the present research study it is assumed that well-being (i.e., its subfactors stress, social well-being, and self-esteem) mediates the relationship between the psychological traits and conspiracy theory mentality as well as between societal change concerns and conspiracy theory mentality. More concretely, in this study's contexts, it is expected that individuals who have high levels of emotion dysregulation, need for cognitive closure, learned helplessness, and societal change concerns will experience higher stress, lower social well-being and lower self-esteem because of their challenges with these traits in life. When they experience stress, difficulties in social interactions or social rejection, and negative self-perceptions, they might turn to conspiracy theories to reduce stress, to avoid their social difficulties and to find other more similar and likeminded people or to re-establish a higher self-worth. Most importantly, relevant for all three psychological traits and societal change concerns, conspiracy theories might help them to gain a sense of control. Figure 1 depicts all the relationships described in the previous paragraphs and the hypotheses that will be tested in this study. Figure 2 further illustrates the hypotheses related to the mediation analyses of well-being.

*H<sub>10</sub>: (a) stress, (b) social well-being and (c) self-esteem mediate the relationship between societal change concerns and conspiracy theory mentality.*

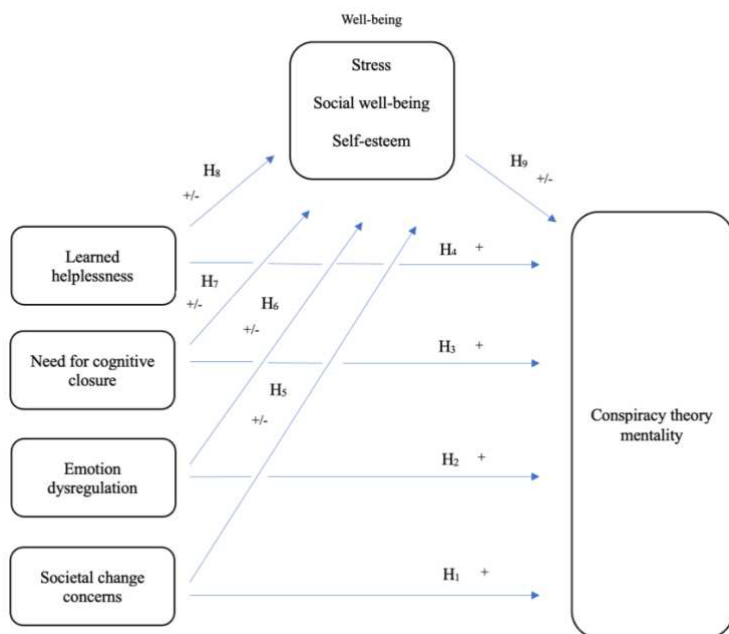
*H<sub>11</sub>: (a) stress, (b) social well-being and (c) self-esteem mediate the relationship between emotion dysregulation and conspiracy theory mentality.*

*H<sub>12</sub>: (a) stress, (b) social well-being and (c) self-esteem mediate the relationship between need for cognitive closure and conspiracy theory mentality.*

*H<sub>13</sub>: (a) stress, (b) social well-being and (c) self-esteem mediate the relationship between learned helplessness and conspiracy theory mentality.*

**Figure 1**

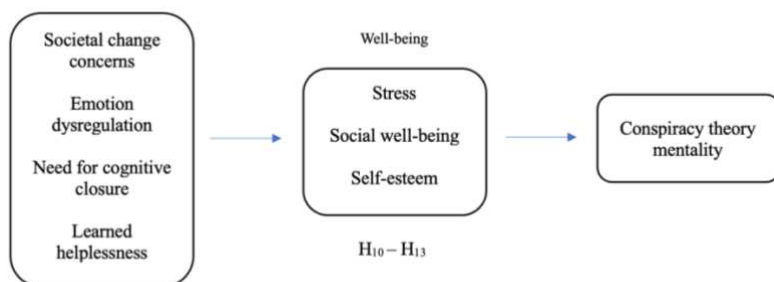
*Research Model*



*Note.* + indicates the positive direction of the hypothesized relationships. +/- indicates that stress has a positive association with the other constructs while social well-being and self-esteem have a negative association with the other constructs.

**Figure 2**

*Research Model with Well-Being as a Mediator*



### 3. Methods

#### 3.1 Research Design

The research aimed to assess whether there is an association between societal change concerns, need for cognitive closure, emotion dysregulation, learned helplessness, well-being, and the dependent variable conspiracy theory mentality. Thus, a cross-sectional correlational quantitative study with an anonymous online survey was conducted on the platform Qualtrics. The survey included eight scales covering the different variables. Before the process of data collection started, the ethical committee of the University of Twente (UT) had approved the survey.

#### 3.2 Participants

Participants were recruited with convenience sampling and snowball sampling methods, asking them to forward the survey to other contacts. Further, a random sampling method within the population of Behavioral, Management, and Social Science (BMS) department of students was used. This allowed to also reach other to the researcher unknown participants that could participate in this study choosing among many different studies accessible on the UT's SONA System, a test subject pool of the UT. Additionally, small leaflets were distributed on tables in some buildings at the University of Twente to recruit even more participants. The survey was provided to participants through a link or QR code on social media, Sona System, and the leaflets, and could only be filled in online.

The inclusion and exclusion criteria only required English proficiency to ensure that participants were fully able to understand and respond to the questionnaire and participants needed to be at least 18 years to give their own voluntary consent. The study was mainly based on a German population because it was conducted in a university in the Netherlands with many German students and most contacts of the researcher are German as well. However, it also covered participants from various other countries.

In total, 121 individuals participated in the survey of which 110 could be used for the analysis. The data of 11 participants was removed due to missing answers or because participants were underaged. After exclusion, the sample included 79 female participants and 31 male participants. The age range was between 18 and 71 ( $M = 30.13$ ,  $SD = 14.51$ ). 65% ( $N = 72$ ) of the participants completed secondary education (high school), 17% ( $N = 19$ ) completed a bachelor's degree, 15% ( $N = 17$ ) completed a master's degree and 2% ( $N = 2$ ) had a PhD. 66% ( $N = 73$ ) of participants were German, 9% ( $N = 10$ ) of participants were Dutch, and 25% ( $N = 27$ ) of participants had another nationality. Other nationalities included

Spain, Sri Lanka, England, India, Sudan, Brazil, France, China, Pakistan, Italy, Poland, Australia, USA, and Ukraine. This shows that the sample is to some degree representative covering a wide range of different characteristics such as different nationalities and education. However, it still needs to be considered that the representativeness could be even stronger when more types of genders, lower educational levels and more participants generally would be included to increase the variation in characteristics that is found in our real population.

### **3.3 Measures**

A questionnaire with eight scales was developed (Appendix A). The scales covered items for the variables emotion dysregulation, need for cognitive closure, learned helplessness, societal change concerns, social well-being, stress, self-esteem and conspiracy theory mentality. Most of the constructs were measured by combining both items drawn from existing scales and self-formulated items that were constructed with close consideration of the in-research established conceptualizations to ensure that items reflect and measure precisely what the concept stands for. This was a deliberate decision for several reasons. Firstly, many established scales are way too lengthy or extensive often including more than 30 items for each construct. It has been demonstrated that longer studies often resulted in lower completion rates and that keeping surveys short does not affect reliability substantially (Kost & Correa da Rosa, 2018). Some scales were also not applicable to the context of the current study because they were created for culturally specific populations or specific contexts. Other scales simply included items for the constructs with slightly different conceptualizations from the ones used here. Participants indicated their response to the items on a Likert scale ranging from 1 to 5 (strongly disagree to strongly agree). There was only one adaptation for the conspiracy theory mentality scale. Participants were asked to answer the items in this scale on a Likert scale ranging from 1 to 5 (not plausible at all to very plausible). The following sections will describe the selection of scales for each construct in more detail.

#### ***3.3.1 Scale for Emotion Dysregulation***

The emotion dysregulation scale assessed individuals' difficulties to understand, accept, and control their emotions as well as to choose effective emotional responses to achieve desired goals in different situations. Some items were selected from The Difficulties in Emotion Regulation Scale Short Form (DERS-SF), which has "excellent psychometric properties" (Kaufman et al., 2015), while other items were self-formulated. In total, the scale

of emotion dysregulation included six items such as “When I am upset, I become irritated with myself for feeling that way” (DERS-SF) and “It is difficult for me to understand my emotions” (self-formulated).

### ***3.3.2 Scale for Need for Cognitive Closure***

The scale of need for cognitive closure assessed the degree to which the trait to prefer certainty and order, to struggle with ambiguity and to form impressions and opinions quickly, which are often based on heuristics or biases that leave out the consideration of alternatives, is found in participants. A total of six items was included in this scale. Several statements from The Need For Closure Scale (NFCS) (Roets & Van Hiel, 2007; Webster & Kruglanski, 1994) were chosen (e.g., “I dislike unpredictable situations”). The NFCS has good psychometric properties (Roets & Van Hiel, 2011). Moreover, new items were added (e.g., “I make rapid decisions about people and events.”) that matched the conceptualization.

### ***3.3.3 Scale for Learned Helplessness***

The learned helplessness scale examines the degree to which individuals show the trait of giving up further attempts to change a situation when they repeatedly face uncontrollable stressful situations and get the impression that no matter what they try to do, they cannot control or impact what is happening. Seven items including items from the Learned Helplessness Scale (LHS) developed by Quinless and Nelson (1988) and found in an article by Ward (2020) as well as self-formulated items were incorporated into the scale. The LHS provided a reliability of 85% when tested with a sample of 241 adults (Quinless & Nelson, 1988). Examples of items were: “When I do not succeed at a task, I do not attempt any similar tasks because I feel that I would fail them also” (LHS) and “When I fail to solve a problem repeatedly, I stop trying completely” (self-formulated).

### ***3.3.4 Scale for Societal Change Concerns***

The scale for societal change concerns was operationalized to measure the feeling individuals experience with regards to society and whether people experience troubling uncertainty or feelings of difficulties to make sense of events in society. No existing scale was found that covered this precisely. Hence, five items for this scale were designed that explored these concerns and experiences covering statements such as “I think global events are hard to make sense of” or “I struggle to understand what happens in the world”.

### ***3.3.5 Scale for Social Well-being***

Continuing with well-being, first a scale for social well-being was created to examine the satisfaction of participants within their social groups and interactions. Solely self-formulated items were determined since there was a lack of scales for social well-being and none of the existing scales were applicable to this study's context. Social well-being was measured with six items, one of them being "I have good and meaningful social relationships".

### ***3.3.6 Scale for Stress***

For the stress scale that was supposed to measure whether people experience emotions related to stress, the already established and validated Perceived Stress Questionnaire (Shahid et al., 2011) was used. However, it was shortened by only using six items of the scale. The scale demonstrated an internal consistency  $> .9$  and a test-retest reliability of .82 (Levenstein et al., 1993). Here the original items were written in second person pronouns (e.g., "You have many worries" or "Your problems seem to be piling up"). Since all other items in the scales for this research project were written in the first-person point of view, the chosen items from the Perceived Stress Questionnaire were reformulated to keep consistency and to avoid confusing participants (e.g., "I have many worries" or "My problems seem to be piling up").

### ***3.3.7 Scale for Self-esteem***

The scale for self-esteem, measuring individuals' levels of confidence in their own worth and abilities, was also completely assessed with one existing scale, the Rosenberg Self-Esteem Scale (Rosenberg, 1965). This scale shows good psychometric properties validated among a sample of 503 adults from the US (Sinclair et al., 2010). Again, a selection of five items from this scale was made to reduce the number of questions within the survey (e.g., "I feel that I have a number of good qualities.").

### ***3.3.8 Scale for Conspiracy Theory Mentality***

Lastly, the scale for conspiracy theory mentality was developed. It measured the degree to which people have a conspiratorial mindset by assessing how plausible they think certain conspiratorial claims are. The scale included existing items that were selected from the Generic Conspiracist Beliefs Scale, which shows good psychometric properties (Brotherton et al., 2013). Additionally, some newly constructed items were added. These covered topics such as government activities, small group plots, personal information, diseases etc. In total,

the scale was made up of nine items. Examples for the items were “The rapid spread of certain viruses and/or diseases is the result of the deliberate, concealed efforts of some organization” (Generic Conspiracist Beliefs Scale) and “The actual causes of certain events are often covered up by the government“ (newly developed item).

### **3.4 Procedure**

In the beginning of the questionnaire participants were provided with information about the study’s purpose, participation rights, confidentiality, and contact details in the case of questions or remarks. Participants were asked to give consent to participate in this research project to ensure they agree with the provided information. Then, they needed to indicate some demographic data including their gender, age, highest level of education obtained, and their country. Subsequently, participants were provided with items that measured each variable (Appendix A). After having answered the first set of items, they could click to proceed and were then presented with new items measuring the next variable. The first section of the questionnaire started with assessing emotion dysregulation, the second section dealt with need for cognitive closure, the third with learned helplessness and the fourth with societal change concerns. Then, for the following three sections, participants were asked to give answers about their well-being, including the scales social well-being, stress, and self-esteem and finally for the last section the conspiracy theory mentality of participants was assessed. For every scale a short descriptive sentence was included at the top of the scale (e.g., “In the following you are asked to indicate how much you agree to statements relating to your social life. Please respond to these statements as honest as possible on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).”) to tell participants what they are supposed to do. At the end of the survey, participants were thanked for their participation and if wished they could be redirected to the Sona System of the University of Twente to collect their 0.25 points for participation.

### **3.5 Scale Construction**

After data collection, the reliability and validity of the questionnaire was examined in SPSS and R studio by applying a Principal Component Analysis (PCA) to the entire survey (see Appendix B). This allowed to investigate whether the scales were successfully set up measuring individual constructs.

First, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and the Bartlett’s test of sphericity were calculated for the entire scale to assess appropriateness of the

use of a PCA. This yielded a KMO value of 0.73, indicating good suitability for a PCA and the Bartlett's test of sphericity was significant,  $\chi^2(1225) = 3391.40$ ,  $p < .001$ , demonstrating very good suitability for PCA.

Subsequently, the loadings for every item on the principal components were calculated to assess the correlation between the items and the underlying factors. Since the first PCA resulted in a very large number of principal components, items with insufficient loadings below 0.3 or confounding effects were excluded. This was the case when items had high loadings on several principal components and the difference between the loadings was below 0.2. This step was repeated several times to see how loadings and number of principal components were changing when certain items were removed. In the end, the entire scale of emotion dysregulation was excluded. For the other scales, only single items were excluded. In total, 16 items were excluded, while 34 were kept (see Table Appendix B). One significant observation could be made with the learned helplessness scale. Some items of learned helplessness had high loadings on one principal component, other items on another principal component. Through the inspection of item formulations, it became evident that the learned helplessness scale measured two aspects. Consequently, the learned helplessness scale was further divided into two scales: Lack of control and avoidance of (repeated) failure.

After conducting the PCA, the reliability of the scales was inspected by calculating the Cronbach's alpha coefficients. All scales yielded alpha results between .68 and .9 (see Appendix B), indicating acceptable to good internal consistency reliability. This underlines that the questionnaire used for this research indeed measured reliably the constructs investigated here.

Finally, with the retained items eight variables measuring a specific (sub-)construct were created for the regression analyses, all representing the total scale scores of participants on the items of a specific construct. A revised set of hypotheses excluding emotion dysregulation and including the subscales of learned helplessness is determined. Moreover, Figures 3 and 4 show the revised model that will be investigated.

*H<sub>1</sub>: Societal change concerns are positively related to conspiracy theory mentality.*

*H<sub>2</sub>: Need for cognitive closure is positively related to conspiracy theory mentality.*

*H<sub>3</sub>: (a) Lack of control and (b) avoidance of repeated failure are positively related to conspiracy theory mentality.*

*H<sub>4</sub>: Societal change concerns are positively related to (a) stress and negatively related to (b) social well-being, and (c) self-esteem.*



*H<sub>5</sub>: Need for cognitive closure is positively related to (a) stress and negatively related to (b) social well-being, and (c) self-esteem.*

*H<sub>6</sub>: (a) Lack of control and (b) avoidance of repeated failure is positively related to (a) stress and negatively related to (b) social well-being, and (c) self-esteem.*

*H<sub>7</sub>: (a) stress is positively and (b) social well-being, and (c) self-esteem are negatively related to conspiracy theory mentality.*

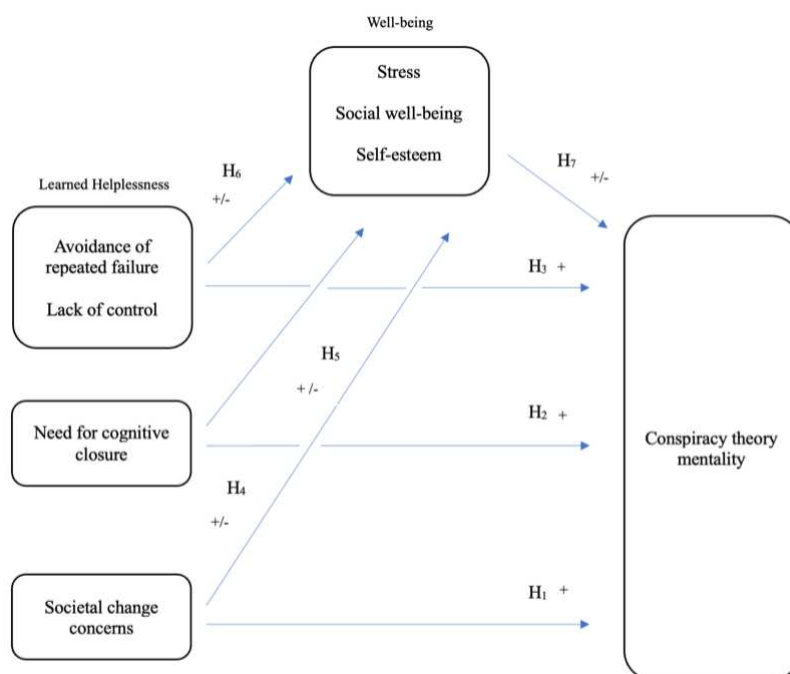
*H<sub>8</sub>: (a) stress, (b) social well-being and (c) self-esteem mediate the relationship between societal change concerns and conspiracy theory mentality.*

*H<sub>9</sub>: (a) stress, (b) social well-being and (c) self-esteem mediate the relationship between need for cognitive closure and conspiracy theory mentality.*

*H<sub>10</sub>: (a) stress, (b) social well-being and (c) self-esteem mediate the relationship between (a) lack of control and (b) avoidance of repeated failure and conspiracy theory mentality.*

**Figure 3**

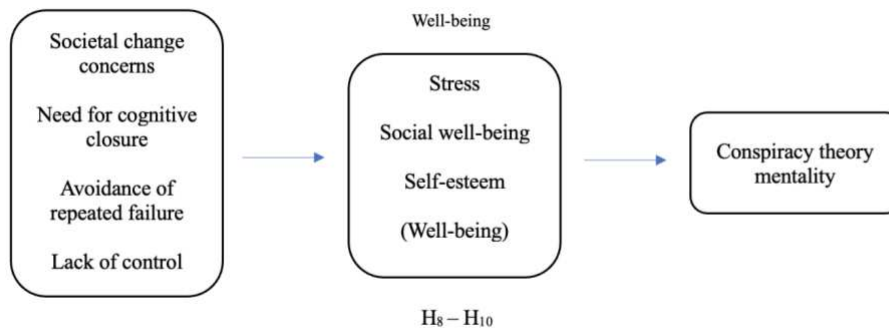
*Revised Research Model*



*Note.* + indicates the positive direction of the hypothesized relationships. +/- indicates that stress has a positive association with the other constructs while social well-being and self-esteem have a negative association with the other constructs.

**Figure 4**

*Revised Research Model with Well-Being as a Mediator*



### 3.6 Data Analysis

Data obtained from the questionnaire was analyzed with the software RStudio. First, descriptive statistics of participants were analyzed with the R stats package. Then, assumptions testing was done applying the R packages stats, ggplot2, and car. Scatterplots or residual plots were created for the linearity, independence, and equal variance assumptions. An additional Durbin-Watson test was done for the independence assumption. Furthermore, for the normality assumption, histograms of the residuals for the models were created, and the Shapiro-Wilk test was conducted. This was followed by an investigation of the correlations between the different constructs using the Spearman rank correlation coefficient, which was calculated with the stats package in R. Subsequently, the multiple linear regression analyses were conducted again using the RStudio stats package (functions: lm, summary, and confint). First, the associations of need for cognitive closure, learned helplessness and societal change concern with conspiracy theory mentality were determined. Then, the relationship of need for cognitive closure, learned helplessness and societal change concern with the well-being subfactors were investigated. Additionally, the association between the well-being subfactors and conspiracy theory mentality was tested for. If linear relationships could be found, a mediation analysis was conducted by using the R mediation package (functions: lm and mediate) to calculate and compare the mediation effect of well-being in the relationship between the aforementioned constructs and conspiracy theory mentality to the direct effect of the independent variable on the dependent variable. The results were interpreted based on the obtained p-value. For all the linear relationships and mediation tests, a significance level of  $\alpha = 0.05$  was chosen.

## 4. Results

### 4.1 Descriptive Statistics

The means, standard deviations, and confidence intervals of each scale in the questionnaire were calculated to get insight into the responses of the sample (see Table 1).

**Table 1**

*Mean, Standard Deviations, and Confidence Intervals for the Scales*

Scale	<i>M</i>	<i>SD</i>	Median	95% CI	
				<i>LL</i>	<i>UL</i>
Need for cognitive closure	2.67	1.05	2	1.83	3.52
Avoidance of repeated failure	2.73	1.23	2	2.27	3.20
Lack of control	2.35	1.20	2	2.18	2.53
Societal change concerns	3.42	1.15	4	2.75	4.09
Social well-being	4.18	0.88	4	3.71	4.65
Stress	3.22	1.20	4	2.85	3.59
Self-esteem	4.16	0.78	4	3.90	4.41
Conspiracy theory mentality	2.94	1.32	3	2.54	3.34

*Note.* *M* = Mean, *Sd* = Standard deviation, CI *LL* = Confidence Interval lower limit, CI *UL* = Confidence Interval upper limit. Measured on a five-point scale (1 = strongly disagree, 5 = strongly agree).

On average, the psychological traits, need for cognitive closure and learned helplessness (lack of control and avoidance of (repeated) failure) were experienced to some degree among participants. For need for cognitive closure, there is some variation in participants' answers as shown by a relatively wide confidence interval, however, the median is included in the confidence interval and the mean, and median are not too different from each other. This hints at relatively symmetry. Both lack of control and avoidance of repeated failure showed a little bit more variability in answers. Their middle values lay below the lower bound of confidence intervals, pointing to right skewness.

The mean of societal change concerns reflected that on average worries about social and political developments are present among participants. There is some variation in answers as shown by the standard deviation and width of the confidence intervals but the median lays within the confidence interval. Thus, no extreme skewness is expected.

On average participants indicated high levels of self-esteem and social well-being, with only little variation in the responses. The middle values are included in both confidence intervals and the mean and median are almost identical, pointing to relatively symmetric distribution. Furthermore, a relatively high amount of stress was experienced by

the participants on average with only small differences among participants. The median for stress is higher than the mean and higher than the upper bound of the confidence interval, demonstrating that half of the participants indicated stress levels above 4 and potential left skewness of the data.

Lastly, participants responses displayed that on average participants believed in the conspiracy theories to some extent with only small differences in agreement. The middle value is very close to the mean and is included in the confidence interval, so relative symmetry can be expected. This result is valuable because having participants that believe in conspiracy theories is necessary to be able to test the hypotheses about whether the different construct have an association with conspiracy theory beliefs.

## **4.2 Correlations**

In the next step, the correlations between the scales were determined (see Table 2). Due to the violation of the normality assumption found during assumptions testing, the Spearman rank correlation coefficient was used as correlation method due to its robustness in the face of the violation of the normality assumption (Schober et al., 2018).

**Table 2***Spearman Correlation Coefficients Between all Scales*

Scales	1	2	3	4	5	6	7	8
1. Need for cognitive closure	–							
2. Avoidance of repeated failure	<b>.41***</b>	–						
3. Lack of control	<b>.27**</b>	<b>.45***</b>	–					
4. Societal change concerns	<b>.31***</b>	<b>.39***</b>	<b>.30**</b>	–				
5. Social well-being	-.09	-.05	<b>-.27**</b>	-.10	–			
6. Stress	<b>.26**</b>	<b>.35***</b>	<b>.44***</b>	<b>.37***</b>	<b>-.23*</b>	–		
7. Self-esteem	-.01	-.18	<b>-.30**</b>	.03	<b>.28**</b>	<b>-.31***</b>	–	
8. Conspiracy theory mentality	<b>.35***</b>	<b>.25**</b>	.14	<b>.30**</b>	-.03	<b>.19*</b>	-.03	–

*Note.* \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Firstly, avoidance of repeated failure and lack of control have the strongest correlation which is logical since they are both sub-variables of learned helplessness. Furthermore, need for cognitive closure has significant positive correlations with both these sub-variables. Moreover, all these three traits correlate moderately positively with societal change concerns.

Next, regarding the correlations between the psychological traits and societal change concerns with social well-being, only lack of control shows a significant negative relationship with social well-being. Turning to stress, this variable has significant moderate positive relationships with both psychological traits and societal change concerns and a significant weak negative relationship with social well-being. The last well-being subfactor self-esteem shows a significant moderate negative correlation with lack of control. Furthermore, self-esteem shows a significant moderate negative correlation with stress and a significant positive correlation with social well-being.

Lastly, there is a significant moderate positive correlation between conspiracy theory mentality and need for cognitive closure as well as societal change concerns. Conspiracy theory mentality also displays a significant weak positive correlation with avoidance of repeated failure. Contrary, when looking at the correlations with the well-being subfactors, conspiracy theory mentality only has a significant weak positive correlation with stress.

### **4.3 Hypotheses Testing**

Multiple linear regressions for all relationship paths in the model were conducted to determine whether the hypotheses can be confirmed. In case that the relationship between the independent variable and the mediator variable as well as the relationship between the mediator variable and dependent variable could be confirmed, an additional mediation analysis was done to check whether the main effect gets weaker when the mediator is included.

#### ***4.3.1 Psychological Traits, Societal Change Concerns and Conspiracy Theory Mentality***

The first mediation analysis was done for hypotheses one to three assuming that societal change concerns, need for cognitive closure, and learned helplessness positively relate to CT mentality (see Table 3). The initial regression model was significant,  $F(4, 105) = 5.697$   $p < 0.01$ . and explained a moderate proportion of the variance in conspiracy theory mentality (adjusted  $R^2 = 0.15$ ). The main effect of need for cognitive closure and societal change concerns on conspiracy theory mentality was significant, indicating that they positively predicted CT mentality. Contrary, the results showed no statistically significant

association for either of the learned helplessness subfactors (avoidance of repeated failure and lack of control) with CT mentality. Consequently, hypotheses one and two can be retained. Hypothesis three is rejected.

**Table 3**

*Multiple Linear Regression for the Psychological Constructs on Conspiracy Theory Mentality*

Scales	Estimate	SE	<i>t</i> (105)	<i>p</i>
Need for cognitive closure	0.88	0.299	2.67	< <b>0.01</b> **
Avoidance of repeated failure	0.09	0.199	0.452	0.652
Lack of control	-0.08	0.249	-0.33	0.742
Societal change concerns	0.39	0.198	1.99	<b>0.049</b> *

*Note.* Adjusted R-squared = .15  $F(4, 105) = 5.697$ ,  $p < 0.01$ .

\* $p < .05$ . \*\* $p < .01$ .

#### **4.3.2 Psychological Traits, Societal Change Concerns, and Well-being**

The hypotheses four to six stated that societal change concerns, need for cognitive closure, and learned helplessness are positively related to stress and negatively related to social well-being and self-esteem. The associated multiple regression analyses are shown in Table 4, 5, and 6.

**Relationship With Social Well-being.** The regression model for social well-being was insignificant,  $F(4, 105) = 2.243$ ,  $p = 0.069$  and explained a weak proportion of the variance in social well-being (adjusted R squared = 0.04). The main effect of lack of control was significant, showing a negative relationship with social well-being. Need for cognitive closure, avoidance of repeated failure and societal change concerns showed no significant relationship with social well-being.

**Relationship With Stress.** The regression model for stress was significant,  $F(4, 105) = 9.439$ ,  $p < 0.01$  and explained a moderate proportion of the variance in stress (adjusted R squared = 0.24). The main effect of lack of control and societal change concerns on stress was significant, showing a positive relationship with stress. Need for cognitive closure and avoidance of repeated failure had no significant relationship with stress.

**Relationship With Self-esteem.** The regression model for self-esteem was significant,  $F(4, 105) = 4.569$ ,  $p < 0.01$  and explained a moderate proportion of the variance in self-esteem (adjusted R squared = 0.12). The main effect of lack of control on self-esteem was

significant, indicating a negative relationship with self-esteem. Need for cognitive closure, avoidance of repeated failure and societal change concerns had no significant relationship with self-esteem.

To summarize, the hypotheses four to six stating that societal change concerns, need for cognitive closure, and learned helplessness positively relate to stress and negatively relate to social well-being and self-esteem could be partially confirmed. The hypotheses could be confirmed for the relationships between lack of control and each well-being subfactor as well as for societal change concerns and stress.

**Table 4**

*Multiple Linear Regression for the Psychological Constructs on Social Well-Being*

Scales	Estimate	SE	t(105)	p
Need for cognitive closure	0.07	0.095	0.697	0.488
Avoidance of repeated failure	0.06	0.063	0.892	0.374
Lack of control	-0.24	0.079	-2.97	< <b>0.01</b> **
Societal change concerns	0.02	0.063	0.258	0.797

*Note.* Adjusted R-squared = .04 F(4, 105) = 2.243 , p = 0.069.

\*\* p < .01.

**Table 5**

*Multiple Linear Regression for the Psychological Constructs on Stress*

Scales	Estimate	SE	t(105)	p
Need for cognitive closure	0.16	0.185	0.888	0.377
Avoidance of repeated failure	0.1	0.123	0.799	0.426
Lack of control	0.5	0.154	3.253	< <b>0.01</b> **
Societal change concerns	0.28	0.123	2.272	<b>0.025</b> *

*Note.* Adjusted R-squared = .24 F(4, 105) = 9.439 , p < 0.01.

\* p < .05. \*\* p < .01.



**Table 6***Multiple Linear Regression for the Psychological Constructs on Self-Esteem*

Scales	Estimate	SE	t(105)	p
Need for cognitive closure	-	0.119	0.015	0.988
Avoidance of repeated failure	-0.1	0.079	-1.276	0.205
Lack of control	-0.33	0.099	-3.301	< <b>0.01**</b>
Societal change concerns	0.13	0.079	1.689	0.094

Note. Adjusted R-squared = .12 F(4, 105) = 4.569, p < 0.01.

\*p < 0.01.\*\*p < .01.

#### 4.3.3 Well-Being and Conspiracy Theory Mentality

The last regression model for well-being on conspiracy theory mentality was insignificant,  $F(3, 106) = 1.793$ ,  $p = 0.153$  and explained a weak proportion of the variance in conspiracy theory mentality (adjusted R squared = 0.02). The main effect of stress on conspiracy theory mentality was significant, indicating a positive relationship. Social well-being and self-esteem do not significantly relate to conspiracy theory mentality. Hence, hypothesis seven can be partially retained.

**Table 7***Multiple Linear Regression for Well-being Subfactors on Conspiracy Theory Mentality*

Scales	Estimate	SE	t(106)	p
Social well-being	0.18	0.322	0.573	0.568
Stress	0.34	0.156	2.147	<b>0.034*</b>
Self-esteem	-0.02	0.262	-0.08	0.936

Note. Adjusted R-squared = .02 F(3, 106) = 1.793 , p = 0.153.

\*p < .05.

#### 4.3.4 Well-Being as a Mediator Within the Relationships

After analysing the linear relationships within the model, the potential mediator effect of well-being was investigated. In the previous analyses, an association between the independent variables and the mediators could only be found for lack of control with all three well-being subfactors and societal change concerns with stress. Furthermore, an association between the mediators and the dependent variable was only discovered between stress and

conspiracy theory mentality. Since no relationship between need for cognitive closure and stress was found, it can already be said that hypothesis nine assuming that well-being mediates the relationship between need for cognitive closure and conspiracy theory mentality can be fully rejected. However, based on the results, hypothesis eight stating that stress, social well-being, and self-esteem mediate the relationship between societal change concerns and conspiracy theory mentality still needed to be assessed. This was also the case for hypothesis ten stating that stress, social well-being, and self-esteem mediate the relationship between lack of control and avoidance of repeated failure with conspiracy theory mentality. The mediation analysis only needed to be done for lack of control but not for avoidance of repeated failure because it showed no significant association with stress in the previous analysis. Consequently, a mediation analysis with stress as the mediator was done for the relationship between the independent variables lack of control and societal change concerns and the dependent variable conspiracy theory mentality. Since the normality assumption was violated, a nonparametric bootstrapping that does not rely on the normality assumption was used for the mediation analyses to make results more accurate.

#### **Societal Change Concerns and Conspiracy Theory Mentality Mediated by Stress.**

The first mediation analysis that was done examined the relationship between societal change concerns and conspiracy theory mentality mediated by stress (see Table 8). The societal change concerns variable has a significant direct effect on conspiracy theory mentality, which can also be seen by the total effect. The indirect effect is not significant, indicating that stress does not mediate the relationship between societal change concerns and conspiracy theory mentality. The insignificant p-value for proportion mediated confirms this further. Thus, hypothesis eight is rejected.

**Table 8**

*Mediation Analysis for Societal Change Concerns on Conspiracy Theory Mentality Mediated by Stress*

	Estimate	95% CI		<i>p</i>
		<i>LL</i>	<i>UL</i>	
ACME	0.08	-0.066	0.26	0.280
ADE	0.53	0.153	0.89	< <b>0.01**</b>
Total Effect	0.61	0.246	0.93	< <b>0.01**</b>
Prop. Mediated	0.14	-0.119	0.54	0.278

*Note.* ACME = Average Causal Mediation Effect, ADE = Average Direct Effect, Total Effect = sum of direct and indirect effects (overall effect of Independent Variable on Dependent Variable), Proportion Mediated = proportion of total effect mediated by the mediator.

Sample Size Used: 110, Simulations: 1000

\*\* $p < .01$ .

**Lack of Control and Conspiracy Theory Mentality Mediated by Stress.** The second mediation analysis that was conducted pertained to the association between lack of control (learned helplessness) and conspiracy theory mentality mediated by stress. No direct nor indirect effect of lack of control on conspiracy theory mentality was found (see Table 9). Consequently, the total effect and proportion mediated were also insignificant. Thus, stress did not seem to mediate the relationship between lack of control and conspiracy theory mentality. Hypothesis ten is rejected.

**Table 9**

*Mediation Analysis for Lack of Control on Conspiracy Theory Mentality Mediated by Stress*

	Estimate	95% CI		<i>p</i>
		<i>LL</i>	<i>UL</i>	
ACME	0.20	-0.012	0.48	0.062
ADE	0.14	-0.386	0.65	0.582
Total Effect	0.34	-0.192	0.81	0.220
Prop. Mediated	0.6	-5.092	4.47	0.246

*Note.* ACME = Average Causal Mediation Effect, ADE = Average Direct Effect, Total Effect = sum of direct and indirect effects (overall effect of Independent Variable on Dependent Variable), Proportion Mediated = proportion of total effect mediated by the mediator.

Sample Size Used: 110, Simulations: 1000

## 5. Discussion

### 5.1 Main Findings

The purpose of the current study was to examine whether the constructs need for cognitive closure, learned helplessness (avoidance of repeated failure and lack of control) and

societal change concerns are related to conspiracy theory mentality. It also aimed to provide new research findings addressing the lack of research concerning the role of well-being as a mediator.

Firstly, the results confirmed the hypothesis that need for cognitive is positively related to conspiracy theory mentality. These results demonstrate that participants with high levels of need for cognitive closure were also more likely to endorse conspiracy theories. This result aligns with limited but notable research on this topic as described by Marchlewska et al. (2017). However, another study by Leman and Cinnirella (2013) also pointed to mixed results when testing this association in different situations. The current study adds up to this work by providing more insight into the association. The person high in need for cognitive closure tends to make decisions very quickly and based on heuristics and biases, which may reduce the likelihood of correct decision making (Raglan et al., 2014). These attributes might lead people to conspiracy theories when they do not start to think about other more likely scenarios in the first place. Clearly, the association between need for cognitive closure and conspiracy theory mentality found here is not enough to state that this connection is found reliably among other samples, however it is a beginning on which more research needs to build on.

Furthermore, the present study confirmed the hypothesis about a positive association between societal change concerns and conspiracy theory mentality. This suggests that people with more concerns about societal changes, also tended to agree more with conspiratorial statements. This association has not been investigated in this form yet in previous research. Similar research, however, has focused explicitly on people being in social crisis situations and this related to conspiracy theory endorsement (Van Prooijen & Douglas, 2017). Thus, even though in the present study the focus was more on concerns about global developments, the results show the same pattern. The association between societal change concerns and conspiracy theory mentality can potentially be attributed to their mutuality of often relating to uncertainty that can possibly lead to either simply concerns (i.e., societal change concerns) or in extreme cases to strange assumptions about what caused certain events (i.e., conspiracy theories).

Contrary, the results could not confirm the hypothesis that both subfactors of learned helplessness show a positive association with CT mentality. These results are particularly interesting because learned helplessness as an overall construct has not been studied in the context of conspiracy theory mentality before. While this also applies particularly to the subfactor avoidance of repeated failure, the subfactor lack of control had already been studied as an independent construct. Previous research has found mixed results for the latter variable

(Federico, 2022; Stojanov & Halberstadt, 2020). A plausible explanation why the current study did not find a significant relationship for lack of control and conspiracy theory mentality might be that the items measuring lack of control were estimating an individual's perceived self-control over the course of outcomes in life generally. If lack of control was investigated not in the sense of personal learned helplessness but more in a sense of helplessness in the face of specified global political and social developments results might look differently.

Next, the present study's findings supported the hypotheses that there is an association between need for cognitive closure, learned helplessness and societal change concerns with well-being to some extent. The results provided evidence for a positive association between societal change concerns and lack of control with stress. This signifies that participants with higher societal change concerns or higher lack of control were also more likely to have higher stress levels. The result for a positive association between societal change concerns and stress is in accordance with other studies as described by Randle et al. (2017). Conversely, no research has yet focused on the relationship between learned helplessness and stress in humans before. However, the current study's result for lack of control and stress is plausible because the experience of lack of control may lead people to feel stressed since they think their attempts to change a situation are futile. Contrary to these significant results, no association was found between need for cognitive closure and stress, refuting the hypothesis stated here. These results are fundamentally different from a study conducted by White (2021). She has found that college students with higher levels of need of cognitive closure also tended to have higher stress levels. One potential explanation for this discrepancy is that the previous study focused on a particular topic, the Covid-19 crisis, which may have a special effect on the relationship between need for cognitive closure and stress.

Due to the lack of exploration in research regarding the relationships between the constructs with social well-being and self-esteem, the results were particularly interesting. This also implied that the outcomes were completely open and could not be compared to previous research. Unfortunately, the results showed that there was only a negative association between lack of control with self-esteem and social well-being. This demonstrates that participants with higher levels of lack of control also often showed lower self-esteem or lower social well-being. For lack of control and social well-being the association was weakly negatively, indicating that the association is not particularly meaningful. Lack of control and self-esteem had a slightly moderate negative relationship. A plausible explanation for this might be that if individuals perceive low control over a certain outcome, their self-esteem

might decrease. They have the impression whatever they do cannot change the outcomes and this attacks their perception of their own abilities. Overall, this demonstrates that the constructs are not related to social well-being and self-esteem with lack of control being the only exception.

Furthermore, the results rejected that social well-being and self-esteem negatively relate to conspiracy theory mentality, but the evidence established a positive relationship between stress and conspiracy theory mentality. This indicates that participant with higher stress levels were also more likely to believe in conspiracy theories. This in line with previous studies (Marchlewska et al., 2021; Swami et al., 2016). This result adds up to the previous work on the association between stress and conspiracy theory mentality by providing more evidence for this association. A possible explanation is that in the face of stressful and terrifying developments conspiracy theories often serve as a possibility to minimize the stress and facilitate coping (Jutzi et al., 2020). Marchlewska et al. (2021) further stressed that the association between stress and conspiracy theory mentality exists particularly for those people that use avoidance coping with stress. These people focus on conspiracy theories to avoid dealing with the actual stressor and in conspiracy theories they find reasons and other people they can make responsible for the situation. Contrary, to earlier findings discussed in the literature review, no relationship for both social well-being and self-esteem with conspiracy theory mentality could be found (Abalakina-Paap et al., 1999; Biddlestone et al., 2021; Graeupner and Coman, 2017). However, for both social well-being and self-esteem, it needs to be pointed out that levels among the participants were very high. Thus, it could not be tested whether low social well-being and low self-esteem were associated with high conspiracy theory mentality because there were little participants with low social well-being and low self-esteem in the first place.

Consequently, a mediation analysis for social well-being and self-esteem was obsolete. However, we tested the hypotheses that stress mediates the relationship between lack of control and conspiracy theory mentality and between societal change concerns and conspiracy theory mentality. The results indicated that stress does not mediate the relationships.

## **5.2 Theoretical Contributions**

Despite the lack of a mediation effect of well-being, there were still interesting findings in this research. Firstly, the association between stress and conspiracy theory mentality is an especially compelling observation because the other well-being subfactors did not show an

association with conspiracy theories. This implies within well-being there are only certain factors that relate to conspiracy theories. This raises the question what they are and how they can be identified.

The positive association of need for cognitive closure and conspiracy theory mentality confirmed the results of some studies but contradicted the results of others, pointing to a need of further research on this relationship.

Studying the association between societal change concerns and conspiracy theory mentality has provided added value to this research field since research so far has only looked at how crisis situations themselves are associated with conspiracy theory mentality but not concerns about societal changes. This is an essential and interesting result because societal change concerns can be expected to affect more people regularly than being in actual crisis situations.

### **5.3 Practical Implications**

The results of the direct positive effects of need for cognitive closure, societal change concerns and stress on conspiracy theory beliefs should be considered when planning to minimize the risks that conspiracy theories can cause. Especially, in current times, in which many social and political developments occur, it needs to be ensured that the number of people drifting into the world of conspiracy theories is limited. Thus, this section will discuss some practical implications that could be taken to minimize the challenges that both the independent constructs and conspiracy theory mentality pose, assuming that there are similar underlying factors that reinforce both which would also explain why there is an associating between the two.

Firstly, this study and previous research have shown that several different factors are associated with conspiracy theory mentality, and it can be expected that there are many more. Thus, it is important that more education about conspiracy theories is offered in which people are informed about misinformation, risks of conspiracy theories etc. since it will help to foster critical thinking and to provide facts. This can be especially important for people with high levels of need for cognitive closure, societal change concerns and stress. High levels of these attributes are also often associated with difficulties in critical and rational thinking as well as in understanding or assessing the situation at hand accurately.

Moreover, although societal change cannot easily be prevented by the individual, it is important that governments provide information transparently to minimize societal change

concerns and uncertainty and further to reduce misinformation that might lead to conspiracy theory beliefs.

#### **5.4 Limitations**

Several limitations of the research and points for improvement can be mentioned. Firstly, it was difficult to get access to people that believe in conspiracy theories. Although the average score for conspiracy theory mentality was still relevant enough for analyzation and interpretation of results, results could still look differently when the study would have been done among a group of people that share high levels of conspiracy theory beliefs.

Related to the scope of participants, the study focused primarily on people with higher educational backgrounds. When asked about participants' background the questionnaire did not include the response option of "primary school" for those that did not finish higher education. Thus, the result may have been limited due to exclusion of this group of people. For example, it may be that people with lower education also have lower critical thinking abilities, making them even more likely to accept conspiracy theories without questioning these ideas.

Furthermore, during data analysis a few issues arose. It was found that the reliability for the scale of need for cognitive closure was relatively low. This could have implications for the truthfulness and correctness of results (Schrepp, 2020). For example, this could mean that some of the items do not actually test for need for cognitive closure. Consequently, results concerning this scale should only be interpreted with caution. Additionally, the normality assumption for the data was violated, which may affect the accuracy of effect estimation. However, it was still decided to use a linear model because much research has revealed that the violation of the normality assumption usually does not affect the results seriously (Knief & Forstmeier, 2021; Schielzeth et al., 2020). Moreover, other researchers emphasized that the sample size that this research project has gathered (110 participants) is considerable enough not to effect results greatly and using parametric models should be acceptable (Ghasemi & Zahediasl, 2012; Schmidt & Finan, 2018). This means that although the normality assumption was violated, the significant findings within this study can be considered relevant.

Additionally, running the multiple linear models the adjusted r-squared suggested that the variables only explain some of the variance in conspiracy theory mentality, indicating that the variables chosen for this research purpose only provided limited information about what kind of people believe in conspiracy theories. Meaning, based on this research alone, we cannot make absolute claims about what qualities in people are likely to effect beliefs in



conspiracy theories. This was to be expected because this is not a causation study. Nonetheless, as aforementioned, the model introduced in this study has never been investigated before, similarly some of the variables have not been looked at in the context of conspiracy theories. Hence, this novel research adds value to the overall field and the observations made in this study give fruitful ground for future research.

### **5.5 Recommendations for Future Research**

For future research it is relevant to explore the role of the individual constructs tested here further. A valuable contribution could be to investigate whether societal change concerns moderate the relationship between certain traits and conspiracy theory mentality. It might be the case that the effect of certain psychological traits on conspiracy theory mentality is stronger for people who have concerns about societal and political developments. Future research should also investigate the relationship between stress and conspiracy theory mentality more thoroughly. Obviously, it cannot be assumed that all stressed people have a high risk for adopting conspiracy theories. However, to understand why there might be an association more research needs to explore this.

Furthermore, even though there was no evidence here that the three specified well-being subfactors mediated the relationship significantly, other well-being subfactors possibly influencing conspiracy theory mentality should be explored. This could also help to increase the explanatory power of the independent variables in the model.

In relation to the continued need to explore predictors of conspiracy theory mentality, emotion dysregulation should not be disregarded. In the current study, emotion dysregulation was removed from analysis because of dissatisfactory PCA results. However, a new study could incorporate different items measuring emotion dysregulation to avoid that certain items are interpreted in multiple ways or that they measure several underlying constructs. Looking at subfactors of emotion dysregulation could help as well.

### **5.6 Conclusion**

Overall, the study highlights that there are several factors that have an influence on conspiracy theory mentality. Need for cognitive closure, societal change concerns and stress have a positive association with conspiracy theory mentality. The results suggest that the well-being subfactors social well-being, stress, and self-esteem do not mediate the relationship. Nevertheless, the current research project still has pointed out the complexity of the relationship between any construct and conspiracy theory mentality. Further studies

should be conducted to provide more insights into potential mechanisms that explain the relationship more successfully. Resulting from this study's contribution of the role of well-being in conspiracy theory mentality, special attention should be paid to the role of stress in future research to understand this association better and to reduce the number of people who might turn to conspiracy theories in the face of stressful situations.

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## Appendix A

### Questionnaire Investigating the Constructs

#### Assessing the relationship between individuals' psychological traits, well-being, and sense-making about socio-political developments

Thank you so much for your willingness to participate in my research! I conduct this study to write a Bachelor thesis in Psychology at the University of Twente (Enschede, the Netherlands). Before the questionnaire starts, I will give you some information about my study and ask you for your informed consent to participate.

#### Information about the study

With this questionnaire, I investigate how people make sense of current societal and political developments and how their sensemaking is connected to their personal well-being and other psychological traits. After a short set of background questions, you will be asked to react to statements on a five-point scale. For most questions, the scale is from completely disagree (1) to completely agree (5). For one set of questions, the scale is from not plausible at all (1) to very plausible (5). I would like to ask you to select the scale positions that best reflect your personal views. It will take about 10 minutes to complete the entire questionnaire.

#### Your rights as a respondent

Participation in this study is completely voluntary. If you wish to withdraw from the study, you are allowed to do so at any time and without explanation. If you have any questions or concerns, please feel free to contact me using the e-mail address below.

#### Confidentiality

The information gathered in this study remains confidential and will not be disclosed to anyone outside the research team. Moreover, all information from the questionnaire is anonymized. It will not be possible to relate specific results to you as a respondent. The questionnaires are only used for the purpose of this study. Once the research is concluded, the data will be disposed in accordance with the guidelines of the University of Twente.

#### Contact details for further information and questions regarding the study

Laura Marescha Schwarz. [l.m.schwarz@student.utwente.nl](mailto:l.m.schwarz@student.utwente.nl)

I confirm that I read and understand the information provided and that I agree to participate in this study.

- Yes  
 No

I understand that participation is entirely voluntary and that I have the right to withdraw from the research at any point.

- Yes  
 No

**The questionnaire starts with a number of background questions, which will help us to interpret the results.**

Which gender do you identify with?

- Female
- Male
- Other
- Prefer not to say

What is your age?

What is your highest level of education already obtained?

- High School
- Bachelor
- Master
- Ph.D.

Which country are you from?

- Germany
- Netherlands
- Other, namely:

Below, you will find six statements about how you experience your emotions. Please take your time to reflect on the statements and respond to them as honestly as possible.

Likert scale from completely disagree (1) to completely agree (5)

Q1: It is difficult for me to understand my emotions.

Q2: I have difficulties to accept my emotions.

Q3: When I am upset, I become irritated with myself for feeling that way.

Q4: When I'm upset, I have difficulty controlling my behaviors.

Q5: When I'm upset, I have difficulties to focus on desired goals.

Q6: When I'm upset, it takes me a long time to feel better.

Below, you will find six statements about how you deal with uncertain circumstances. Please take your time to reflect on the statements and respond to them as honestly as possible.

Likert scale from completely disagree (1) to completely agree (5)

Q1: I don't like situations that are uncertain.

Q2: I make rapid decisions about people and events.

Q3: I stick to my initial explanation for events instead of checking for alternative explanations.

Q4: I need clear explanations and answers within situations.

Q5: I stick to my initial decision instead of testing whether my decisions might be biased.

Q6: I dislike unpredictable situations.

Below, you will find seven statements about how you deal with problem-solving and control over situations. Please take your time to reflect on the statements and respond to them as honestly as possible.

Likert scale from completely disagree (1) to completely agree (5)

Q1: When I fail to solve a problem repeatedly, I stop trying completely.

Q2: I often have the impression that no matter what I do, it has no influence on the outcome.

Q3: I only accept tasks when I am sure that I will succeed at them

Q4: No matter how hard I try, things never seem to work out the way I want them to

Q5: When I do not succeed at a task, I do not attempt any similar tasks because I feel that I would fail them also

Q6: I feel like I have no control over events happening in my environment.

Q7: When I have the impression, I cannot solve a problem or event, my motivation to alter the situation decreases.

Below, you will find five statements about your view on society and the world nowadays. Please take your time to reflect on the statements and respond to them as honestly as possible.

Likert scale from completely disagree (1) to completely agree (5)

Q1: I think global events are hard to make sense of.

Q2: I think that we are living in confusing times.

Q3: I struggle to understand what happens in the world.

Q4: I have difficulties to estimate what is true and what is not in society.

Q5: I am worried about societal changes.

Below, you will find six statements about your social life. Please take your time to reflect on the statements and respond to them as honestly as possible.

Likert scale from completely disagree (1) to completely agree (5)

Q1: I have good and meaningful social relationships.

Q2: I rarely have conflicts with social contacts.

Q3: I am satisfied with the quality of my friendships.

Q4: I feel included within my social group.

Q5: Social interactions are easy for me.

Q6: I easily make friends.

Below, you will find six statements about problems and stress you might experience. Please take your time to reflect on the statements and respond to them as honestly as possible.

Likert scale from completely disagree (1) to completely agree (5)



Likert scale from completely disagree (1) to completely agree (5)

**Q1:** I have many worries.

**Q2:** I feel tense.

**Q3:** My problems seem to be piling up

**Q4:** I have trouble relaxing.

**Q5:** I feel I am doing things because I have to, not because I want to.

**Q6:** I am afraid for the future.

Below, you will find five statements about your self-perception. Please take your time to reflect on the statements and respond to them as honestly as possible.

Likert scale from completely disagree (1) to completely agree (5)

**Q1:** On the whole, I am satisfied with myself.

**Q2:** I am able to do things as well as most other people.

**Q3:** I take a positive attitude toward myself.

**Q4:** I feel that I have a number of good qualities.

**Q5:** I feel that I'm a person of worth, at least on an equal plane with others.

Below, you will find nine statements about your personal view on societal and political developments. Please take your time to reflect on the statements and respond to them as honestly as possible.

Likert scale from completely disagree (1) to completely agree (5).

**Q1:** The government deliberately lies to citizens by holding back certain information from society.

**Q2:** Certain significant world events have been the result of the activity of a small group who secretly manipulate world politics.

**Q3:** The actual causes of certain events are often covered up by the government.

**Q4:** Small groups of people are in possession of secret knowledge which would change our understanding of the world, and are deliberately keeping it hidden.

**Q5:** A lot of information about diseases and treatments is withheld from the public.

**Q6:** Secret organizations have access to large amounts of personal data on every citizen and sell it to the government.

**Q7:** The rapid spread of certain viruses and/or diseases is the result of the deliberate, concealed efforts of some organization.

**Q8:** Alternative explanations for events often correspond more to the truth than what is accepted by the majority of society.

**Q9:** Some acts of terrorism, which have resulted in the deaths of many civilians, have been secretly directed by government operatives.

**Thank you for your participation! Your answer has been recorded.**

If you came via the UT Sona system and want to collect your **0.25 credits** click on the link [Back to Sona](https://utwente.sona-systems.com/webstudy_credit.aspx?experiment_id=2958&credit_token=c5bf8c7e2dc24ec587e56fa64bcb8e7c&survey_code=${e://Field/id}) or copy-paste the link [https://utwente.sona-systems.com/webstudy\\_credit.aspx?experiment\\_id=2958&credit\\_token=c5bf8c7e2dc24ec587e56fa64bcb8e7c&survey\\_code=\\${e://Field/id}](https://utwente.sona-systems.com/webstudy_credit.aspx?experiment_id=2958&credit_token=c5bf8c7e2dc24ec587e56fa64bcb8e7c&survey_code=${e://Field/id}) into the search bar.

## Appendix B

### Principal Component Analysis

**Table B1**

*Principal Component Analysis: Loadings and Cronbach's Alpha*

Item/Principal Component	Cronbach's Alpha	1	2	3	4	5	6	7	8
<b>Conspiracy theory mentality</b>	0.9								
Item 3		.857							
Item 1		.806							
Item 8		.798							
Item 5		.788							
Item 7		.787							
Item 9		.707							
Item 2		.662							
<b>Stress</b>	0.86								
Item 2			.812						
Item 1			.796						
Item 4			.693						
Item 3			.674					.435	
Item 5			.656						
<b>Learned helplessness</b>	0.82								
Item 5				.784					
Item 7				.748					
Item 3				.733					.354
Item 1				.700					
<b>Self-esteem</b>	0.79								
Item 3					.773				
Item 4					.738				
Item 2					.681			-.390	
Item 5					.679				
Item 1			-.375		.559				
<b>Societal change concerns</b>	0.81								
Item 3						.764			
Item 1				.330		.737			
Item 2			.340			.717			
Item 4		.324				.669			
<b>Social well-being</b>	0.78								
Item 3							.862		
Item 4							.822		
Item 1							.756		

