Article

Politics, Personality, and Impulsivity Can Color People's Perceptions of—and Responses to—Hurricane Threats of Varying Severity

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Abstract

Theory and research suggest that objective features of a threatening situation and individual differences influence threat responses. We examine three ways individual traits may relate to a threat response: (a) directly and independent of objective threat features, (b) indirectly through relationships with threat perception, or (c) as moderators of the relationship between objective threat features and responses. Using integrative data analysis (IDA), we aggregated data across three studies examining hurricane preparation intentions. Analysis supported two of the potential pathways. Supporting the first path, both openness and extraversion had direct, positive relationships with preparation likelihood. Supporting the second path, agreeableness, conscientiousness, and social conservatism positively related to preparation likelihood through a positive relationship with threat perception, whereas impulsivity and sensation-seeking negatively related to preparation likelihood through a negative relationship with threat perception. This work shows the pivotal role individual differences play regarding responses to uncertain threats.

Keywords

judgment and decision-making, threat, personality, individual differences

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Researchers agree that risk and threat perceptions are informed not only by objective risk (e.g., actuarial data-like fatality rates or other situational characteristics like wind speed), but also by subjective factors (e.g., feelings of dread; Slovic, 1992). Indeed, compared with experts, lay people viewed their lives as more at risk from a nuclear weapon (only two have been used in war) than from being in a car accident (two have likely occurred since you started reading this article; Slovic et al., 1980). Since discovering subjective risk perception, researchers developed numerous theories and experiments to understand what influences it. The present research contributes to this larger literature by examining how individual differences like personality and political ideology can explain some of the variance in subjective risk and threat perception, threat-related intentions, and behavior in the context of hurricanes.

Hurricanes present people with an uncertain threat. Although advances in storm-tracking allow us to now have numerous days to anticipate a hurricane's arrival, many aspects remain unclear until the storm's landfall. Facing this threat means deciding whether preparation is necessary and, if so, how much is needed. These decisions involve determining the level of threat the storm presents and weighing the costs associated with both over- and underpreparing for it. As climate change progresses and disasters increase in intensity and frequency (Gutmann et al., 2018), developing a psychological understanding of how people make decisions under these uncertain threats is crucial. Furthermore, examining people's responses to uncertain weather threats can illuminate how psychological factors like individual differences in personality and political ideology might relate to the perceptions, intentions, and behaviors related to other types of uncertain threats like health and gun violence. Importantly, although the current article focuses on personality and political ideology differences, we expect that other individual differences (e.g., income or social network characteristics) might also relate to uncertain threat perceptions and responses.

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Regarding threat and subjective perceptions of that threat, extensive negativity bias research shows that people attend to and recall negative events and information more easily than positive ones (Baumeister et al., 2001; Rozin & Royzman, 2001). Similarly, research on attitudes shows that negativity's influences on behavior are stronger and last longer than those of positivity (Cacioppo et al., 1997). When making decisions under uncertainty, research on loss aversion shows that people weigh losses more heavily than gains (Tversky & Kahneman, 1991). Other research shows that severe events tend to seem more probable than non-severe events with similar base rates (Weber & Hilton, 1990). In research on perceptions of hurricane threats, people tend to overestimate the probability that a severe, Category-5 storm (vs. a less severe, Category-1 storm) will strike in a given location (Wu et al., 2014). Even as hurricane forecasts change, if people hear at some point that a hurricane was a severe, Category-5 storm, they show an anchoring-like bias whereby they fail to sufficiently adjust their expectations and intentions to prepare for the storm based on updated information that the storm is less severe (Losee et al., 2017). Studying variation in threat perception is important because it leads to differences in threat-related intentions. For example, people are more likely to prepare for hurricanes that they believe pose legitimate threats (Dash & Gladwin, 2007; Whitehead, 2009).

Despite a large body of evidence supporting negativity bias and demonstrating negativity bias in hurricane perception and intentions, people sometimes remain unprepared even for severe threats. Thus, theories developed both in weather (Lindell & Perry, 2012) and health (Rogers, 1975) research explain the importance of additional personal and situational factors that influence noncompliance, risk reduction, and threat perception. These theories explain that people form impressions of the threat and the potential actions they could take; these impressions then influence what people do. Prior research covers factors influencing people's perceptions and actions such as demographics (S. E. DeYoung et al., 2016; Lazo et al., 2015; Petrolia & Bhattacharjee, 2010), location (Reininger et al., 2013), and access to quality information (Liu et al., 1996). Indeed, the number of personal and situational factors examined in prior work is large (Sorenson, 2000).

Differential Responses to Threat

The present research extends prior theorizing by presenting yet another possibility—that individual differences also relate to people's threat perceptions and threat-related intentions and behaviors (Figure 1). Specifically, we propose that differences in personality and political ideology may influence threat-related intentions and behaviors through three possible paths: (a) directly and independent of objective features of the threat like its severity, (b) indirectly through their relationship with threat perception, and (c) as moderators of the relationship between an objective threat feature like severity and threat-related intentions and behavior. In the following sections, we outline the theoretical reasons why these pathways might exist and identify clusters of individual differences that correlated with threat-related variables in previous research—impulsivity and sensation-seeking, Big Five personality traits, and political ideology.

As stated above, many theories that explain responses to various threats implicate perception of the threat as an important step in the threat decision-making process (e.g., Lindell & Perry, 2012; Rogers, 1975). Thus, for an individual difference to relate to a threat-related intention or behavior, it may do so directly or indirectly through a relationship with perception. The current work contributes to these general models of threat response that stress the importance of individual differences in the threat-response process. Yet these general models often fail to show which specific individual differences are important and how they influence the threat-response process. Furthermore, although some research suggests that risk preference in and of itself is an individual difference (e.g., Blais & Weber, 2006; Frey et al., 2017), we opted to examine the role of specific individual differences—Big Five personality traits, impulsivity and sensation-seeking, and political ideology—in the threat-response process for which prior research sets a precedent.

Previous theorizing about Big Five traits—agreeableness, conscientiousness, extraversion, openness, and neuroticism—in relation to threat, such as the cybernetic Big Five theory (CB5T; DeYoung, 2015), suggests that researchers should observe reliable relationships between Big Five traits and threat responses. CB5T (DeYoung, 2015) posits that personality represents a cybernetic system or reliable pattern of behavior that constantly receives, interprets, and acts on feedback from the environment. Specifically, CB5T describes how personality should influence responses to "anomalies" or events that disrupt the use of one's typical characteristic adaptations (i.e., the behaviors that emerge as a result of one's traits). When an anomaly like a hurricane or some other uncertain threat approaches, CB5T argues that people's traits guide the process of "exploration" in which people will develop characteristic adaptations to this new situation. Thus, this theory argues that personality traits should give some reliable indication of the adaptations a person will select during one of these anomalies.

In a similar vein, the reinforcement sensitivity theory (RST), which outlines approach-avoidance systems guiding behavior, identifies personality as important in responses to, and interpretations of, aversive versus appetitive stimuli (Corr, 2004). This perspective focuses on the dimensions of neuroticism (vs. stability) and extraversion (vs. introversion) as the dimensions on which people differ in their interpretations of and responses to aversive versus appetitive stimuli but is not limited to these traits. In the context of uncertain threats like hurricanes, this theory supports the assertion that traits relate to both how a person might construe the threat and how they may respond to it.

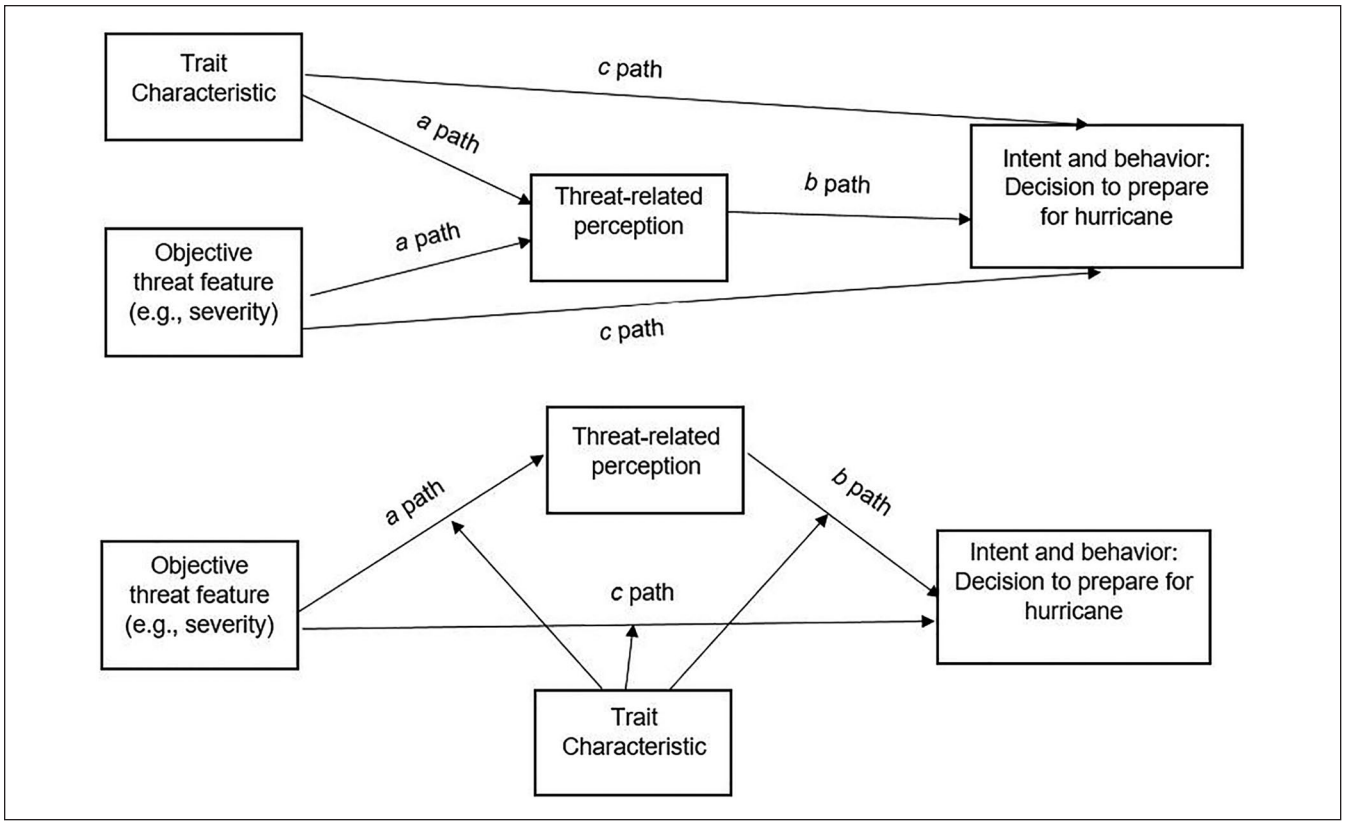

Figure 1. Top panel: An individual difference variable may relate to threat-related intentions and behavior either directly and independent of an objective threat feature or indirectly through its relationship with threat-related perception. Bottom panel: An individual difference may also moderate the relationship between an objective threat feature and threat perception and/or threat-related intentions and behavior.

The current research follows previous research establishing specific relationships between Big Five traits and responses to a variety of threatening stimuli. For example, high neuroticism is associated with increased risk-taking (Merritt & Tharp, 2013; Terracciano & Costa, 2004). In health contexts, conscientiousness relates to health intentions and perceived risk of severe consequences of not completing intended health behaviors (Conner & Abraham, 2001; Hampson et al., 2000). Furthermore, agreeableness (the Big Five trait most likely to have developed as an adaptation to an increasingly social world; DeYoung, 2015) positively correlates with perceiving social threats (White et al., 2012). Alternatively, some research finds that agreeable people have more positive attitudes toward diversity (Strauss et al., 2003) and immigrants (Dinesen et al., 2016; Vecchione et al., 2011), which can represent social threats. In the context of hurricanes, however, the relationship between agreeableness and threat perception and intentions may depend on the facet of agreeableness assessed. For example, the agreeableness facet of compliance may especially influence hurricane-related perceptions and behaviors (Costa et al., 1991).

Beyond Big Five traits, previous research sets a precedent for examining the relationship between impulsivity and sensation-seeking and threat responses. For example, people high in impulsivity and sensation-seeking—behaviors characterized by greater risk-taking—often have lower levels of threat perception and tend to ignore or dismiss approaching threats (Arnett, 1994; Lauriola et al., 2014; Nicholson et al., 2005). Although some research suggests a general inclination to weigh losses more heavily than rewards (Tversky & Kahneman, 1991), research on impulsivity and sensation-seeking shows that people high in these traits weigh rewards and losses differently (Kruschwitz et al., 2012). Importantly, the link between sensation-seeking and risk-taking behavior appears to be driven by weaker threat avoidance (rather than stronger reward approach; Zheng et al., 2019). In the case of the current work, however, it is less clear how sensation-seeking and impulsivity may relate to threat responses when preparing is neither inherently nor immediately rewarding.

Another line of inquiry sets a precedent for examining political ideology—the values, personality traits, and motivations related to a liberal or conservative ideology—in relation to threat responses. The uncertainty avoidance model (Jost et al., 2007) posits that greater uncertainty and threat avoidance predicts greater levels of political conservatism. Research also links political conservatism to individual

differences in negativity bias, suggesting that being more conservative relates to being more threat sensitive (Hibbing et al., 2014), especially for social conservatives and particularly when the threat is physical (Crawford, 2017). Other research suggests that conservatives (vs. liberals) tend to be more conscientious (Carney et al., 2008), resistant to change (Jost et al., 2007), and avoidance-oriented (Shook & Fazio, 2009).

Again, it is also possible that individual differences may directly relate to threat-related intentions and behaviors, such as hurricane preparation, because such behaviors represent direct expressions of those traits. For example, willingness to persevere and complete difficult tasks, like preparing for a hurricane, is characteristic of people high in conscientiousness (Costa et al., 1991). Greater risk-taking is also characteristic of people scoring high on impulsivity and sensation-seeking measures (Zuckerman, 1993).

A third possibility is that an individual difference may moderate the relationship between an objective feature of the threat and that feature's relationship with intentions and behaviors. Related to negativity bias, although people may perceive negativity more readily than positivity, there are likely meaningful individual differences in *how* readily people perceive negativity. For example, age may moderate negativity bias. As people age, negatively framed messages exert less of an impact on judgments (Sparks & Ledgerwood, 2019). Although we did not examine age as a moderator in the current work, it is possible that Big Five personality traits interact with severity to either augment or diminish the links between severity and hurricane-related intentions and behaviors. For example, people scoring high on neuroticism may not necessarily encounter more negative situations, but they do tend to construe the positive situations they encounter as less positive than others (Rauthmann et al., 2015). Similarly, people who report higher daily neuroticism report fewer positive and more negative social events, likely based on their perceptions of social situations (Hadden et al., 2017). Thus, personality traits may interact with severity in relation to risk or threat perception.

Overview of the Present Research

As shown in Figure 1, we propose that individual differences covary with differences in risk and threat perception along with threat-related behaviors. Individual differences may relate to hurricane-related behavior through one of three paths. First, individual differences may correspond to hurricane-related behaviors because they also relate to risk and threat perception, which correlate on their own with hurricane-related behavior. Second, individual differences may relate to hurricane-related behavior directly and independent of perception. Third, individual differences may moderate the relationship between an objective threat feature like severity and perception and intentions. We collected data to test these pathways in three separate studies. However, because these studies largely overlapped in terms of design and content, we decided to conduct an integrative data analysis (IDA; Curran & Hussong, 2009). IDA aggregates the data across all three studies, increasing sample size while controlling for study-level differences. In the following, we describe the method for each study or sample, the process we used to aggregate the three data sets, and the results from this single, aggregated data set.

Method

Study 1

Participants. We recruited 209 adult participants through Amazon's Mechanical Turk (MTurk; Buhrmester et al., 2016); 199 were Florida residents. Ten non-Florida residents completed the survey in error. Sampling hurricane-prone Florida residents was important because they have a stake in hurricane decision-making. We excluded from analyses three participants who responded "no" to the question, "In your honest opinion, should we use your data in our analysis of this study?" We also excluded one participant for incomplete responses, leaving 196 participants for analyses.

Design and measures. Participants completed (a) the measures described below in a randomized order, (b) an inventory of their past and expected future hurricane-related behaviors, (c) measures of their perceived likelihood of experiencing a hurricane, and (d) demographic items. The measures examined were part of a larger data set (see Open Science Framework [OSF] page for full survey: https://osf.io/qh2z8/).

Impulsivity and sensation-seeking. The 19-item Impulsivity and Sensation Seeking Scale (ImpSS; Zuckerman, 1993) measured impulsivity and sensation-seeking with true-or-false items (e.g., "I often do things on impulse" for impulsivity; "I like doing things just for the thrill of it" for sensation-seeking).

Political ideology. Two measures assessed participants' political ideology. The first was a single item (–3 = *mostly liberal* to 3 = *mostly conservative*). The second was the Social and Economic Conservatism Scale (SECS; Everett, 2013). Twelve items on a scale from (0 = *negative*, 100 = *positive*) separately measured people's feelings about social (e.g., "traditional values") and economic (e.g., "fiscal responsibility") conservative issues.

Big Five personality traits. Using a response scale from 1 (*very inaccurate*) to 5 (*moderately accurate*), the 20-item International Personality Item Pool (Mini-IPIP; Donnellan et al., 2006) measured the Big Five personality traits: agreeableness (e.g., "I feel others' emotions"), conscientiousness (e.g., "I like order"), neuroticism (e.g., "I get upset easily"),

openness (e.g., "I have a vivid imagination"), and extraversion (e.g., "I am the life of the party").

Behavior likelihood inventory. To measure hurricane-related behavior likelihood, participants completed a behavior inventory comprising items from Ready.gov, the United States' National Oceanic and Atmospheric Association's weather preparedness website (NOAA, 2014), such as "cover windows" or "learn evacuation routes," using a response scale of 0 (*not likely*) to 100 (*likely*). Focal items for this analysis were the eight that formed a single factor representing preparedness intentions (see the Supplemental Material on OSF page for factor-analytic results: https://osf.io/qh2z8/).

Threat perception. To measure perceived threat, participants used a 15-item checklist to indicate the safety concerns they had about hurricanes (e.g., *mold*, *looting*, and *fire*); we summed the number of checks. Participants then indicated the extent to which a list of 10 words (e.g., *thrilling*, *terrifying*) described hurricanes using a scale of 0 (*not accurate*) to 100 (*very accurate*). We took the average rating of the five threat words (i.e., *terrifying*, *scary*, *alarming*, *distressing*, and *something to avoid*) as descriptive of hurricanes to obtain a composite threat perception score.

Risk perception. Using a scale from 0 (*not likely*) to 100 (*highly likely*), participants rated their perceived likelihood of being in the path of a hurricane.

Demographics. Participants answered demographic questions, such as sex (56.6% female), age ($M = 35.70$ years, $SD = 35.70$), income, dwelling type, and zip code of residence. For income (US$), participants answered on scale from 1 (*US$0–US$9.9k*) to 11 (*US$100k and above*) in equal increments of US$10k, $Mdn = 4$ (≈US$35k), $M = 4.31$, $SD = 2.53$. For dwelling type, participants selected from "mobile home" (6.1%), "single-family home" (61.2%), "duplex" (4.1%), "apartment building" (21.9%), "townhouse complex" (5.1%), "motor home" (0.5%), or "other" (1%). Participant zip codes were classified as coastal (or not) depending on whether they bordered either the Atlantic Ocean or Gulf of Mexico; 68.4% resided in coastal zip codes and 31.6% did not.

Study 2

Participants. We recruited 328 adult Florida residents through MTurk. We excluded participants for one or all of three reasons: (a) responding "no" to the instructional manipulation check asking whether we should keep their data, (b) not being a Florida resident, and (c) having incomplete data. Although all participants responded "yes" regarding keeping their data, excluding participants who had non-Florida zip codes ($n = 30$) reduced our sample to 298 participants. No participants were excluded for missing data.

Design and measures. Study 2's design was the same as Study 1, except that it included an experimental manipulation of threat. Specifically, before participants completed the behavior likelihood inventory, they watched a hypothetical hurricane warning for either a Category 1, 3, or 5 storm (see videos on OSF page: https://osf.io/qh2z8/). The warning videos were black-and-white, with scrolling white text that included a computerized voice reading the text. Participants then completed the risk and threat perception measures and the behavior likelihood inventory in relation to the hurricane in the video. Thinking of this storm, people estimated how likely they were to perform the behaviors in the behavior inventory. All measures for Study 1 were also used in Study 2.

Participants also answered demographic questions such as sex (56.4% female, 42.6% male, 0.3% other), age ($M = 35.05$ years, $SD = 11.99$), income, dwelling type, and zip code of residence. For income (US$), participants answered on a scale from 1 (*US$0–US$9.9k*) to 11 (*US$100k and above*) in equal increments of US$10k, $Mdn = 4$ (≈US$35k), $M = 4.31$, $SD = 2.53$. For dwelling type, participants selected from "mobile home" (4.4%), "single-family home" (64.4%), "duplex" (3.7%), "apartment building" (16.8%), "townhouse complex" (9.4%), "motor home" (0.7%), or "other" (0.7%). Participant zip codes were classified as coastal (or not) depending on whether they bordered the Atlantic Ocean or Gulf of Mexico; 68.4% resided in coastal zip codes, 31.6% did not.

Study 3

Participants. We recruited 1,089 adult participants from southeastern coastal states (i.e., Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas) through Amazon's MTurk. Sampling hurricane-prone coastal residents was important because they have a stake in hurricane decision-making. We excluded from analyses 114 participants who did not finish the study ($n = 83$), responded "no" to the question, "In your honest opinion, should we use your data in our analysis of this study?" ($n = 24$), had a survey duration > 14 *SD*s above the mean duration of 32.6 min ($n = 2$), and who we suspected of being a "bot" for responses like "good" for all open-ended responses ($n = 5$). After excluding these participants, we had a sample of 975 participants.

Design and measures. Study 3 was largely similar in design to Studies 1 and 2, but did have some notable differences. First, to measure Big Five personality traits, Study 3 used the 44-item Big Five Inventory (BFI-44; John & Srivastava, 1999) rather than the Mini-IPIP (Donnellan et al., 2006) used in Studies 1 and 2. Participants who responded to BFI items used a response scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Second, this study measured the individual difference variables last, whereas Studies 1 and 2 measured them first.

Third, Study 3 was a larger study than Studies 1 and 2 in that it included several other individual difference measures, perceptual variables, and a tornado task in addition to the hurricane task. It also included only two (vs. three) conditions for the severity manipulation (Category 1 vs. 3; see OSF page for full survey: https://osf.io/qh2z8/). The sample comprised 60.8% women and 39.1% men (0.1% preferred not to respond) with a mean age of 38.48 years ($SD = 12.22$). In this sample, 76.6% of participants identified as White, 13.3% identified as Black/African American, 9.23% identified as Hispanic, 5.54% identified as Asian or Pacific Islander, 1.64% identified as Native American, Eskimo, or Aleut, and 0.2% identified as Middle Eastern or Arab American.

IDA

IDA is a framework for analyzing data from multiple studies in which the investigator has access to the raw data (Curran & Hussong, 2009). IDA, which uses raw or primary data, contrasts with meta-analysis, which relies on summary or secondary data (e.g., effect sizes; see Webster, 2019). In this way, IDA allows one to analyze data from all studies as a set while controlling for between-study differences. Using IDA, we aggregated the data from our three studies ($N = 1{,}469$) and created two contrast codes that controlled for study-level differences. The first code (Code 1) compared the average of Studies 1 and 2 with Study 3. The second code (Code 2) compared Study 1 with Study 2. Although Study 1 did not include a manipulation of severity like Studies 2 and 3, Study 1's participants were asked to imagine a Category 3 hurricane as they completed the hurricane perceptions items and their behavior likelihood inventory. Thus, when we aggregated, the severity manipulation—Categories 1, 3, and 5—varied across the three studies, with all participants from Study 1 receiving the Category-3 condition. Because of the increased sample size (and hence, statistical power) that IDA affords, we only interpret effects that have (partial) correlations $\geq .10$ in absolute magnitude. With a pooled sample of 1,469, we had $> .95$ power to detect effects of $|r| = .10$ or greater. Thus, we have chosen to consider effects of $|r| \geq .10$ as "significant," which, given our pooled sample size, roughly corresponds to setting $\alpha = .0001$ (two-tailed).

In addition to differing in study design (e.g., correlational vs. experimental), the three studies differed in other ways. For example, Studies 1 and 2 were conducted with only Florida residents, whereas Study 3 included participants from coastal counties in eight southeastern U.S. states (including Florida). Because the studies differed in multiple overlapping ways that would be difficult to disentangle, we will not directly interpret any significant effects of the two between-study contrast codes; however, we have included them in our IDA to control for any between-study differences—variance that does not directly concern our hypotheses. Nevertheless, in the spirit of transparency, we describe study-level differences in the "Discussion" section to provide possible insights for future research. Finally, a major strength of IDA is that it combines data from multiple studies, yielding greater power to detect effects and greater confidence in the observed relationships. This strength is particularly important for the current research, which, although theoretically supported, is largely exploratory in its focus on specific individual differences.

Results

Severity Mediation

We first examined the previously theorized relationship between a threat and threat response by testing whether the effect of the severity manipulation on preparation likelihood was mediated by the three perceptual variables (i.e., threat-word ratings, safety concerns, and risk perception; Table 1). Because the severity manipulation had three levels (Category 1, 3, or 5), we examined its linear (–1, 0, and 1) effect as the main predictor while controlling for its quadratic (1, −2, and 1) effect (Judd et al., 2017). We also controlled for the two study-level differences contrast codes (Code 1 and Code 2). The linear and quadratic effect of severity positively related to threat-word ratings and only the linear effect of severity related to preparation likelihood. Regarding threat-word ratings, the significant linear effect of severity indicates that people endorsed greater threat as severity increased from Category 1 to Category 5. The significant linear and quadratic effects of severity indicated a steeper increase in threat perception between Category 1 and Category 3 than between Category 3 and Category 5. Combined, the three perceptual variables partially mediated the relationship between linear severity and preparation likelihood. This total indirect effect was driven largely by threat-word ratings and safety concerns, whereas risk perception failed to reach significance by our $|r| \geq .10$ standard.

Zero-Order Correlations

First, using a data-driven approach to model building, we examined the zero-order correlations between the individual differences and preparation likelihood to examine which variables played a significant role in the threat-response process. We then used those significant correlates as predictors in subsequent models. Table 2 shows correlations between the two codes for the severity manipulation (linear and quadratic severity), the three perceptual variables (threat-word ratings, safety concerns, and risk perception), the individual difference variables, and preparation likelihood. We observed seven significant correlations (i.e., $|r|$s $\geq .10$) between individual differences and preparation likelihood: agreeableness, conscientiousness, extraversion, openness, social conservatism, impulsivity, and sensation-seeking.

Table 1. Mediation Results With the Linear Effect of Severity as the Predictor and the Three Perceptual Variables (Threat-Word Ratings, Safety Concerns, and Risk Perception) as Mediators.

Outcome	Predictor	*b*	r_p	95% CI
Threat-word ratings (*a* path)	Linear severity	0.97	.16	[.11, .21]
	Covariates			
	Quadratic severity	−0.47	−.19	[−.24, −.14]
	Code 1	0.10	.05	[.00, .10]
	Code 2	0.41	.08	[.03, .13]
Safety concerns (*a* path)	Linear severity	0.75	.09	[.04, .14]
	Covariates			
	Quadratic severity	−0.02	−.01	[−.06, .04]
	Code 1	−0.02	−.01	[−.06, .04]
	Code 2	0.26	.04	[−.01, .09]
Risk perception (*a* path)	Linear severity	0.42	.06	[.00, .11]
	Covariates			
	Quadratic severity	0.06	.02	[−.03, .07]
	Code 1	−0.22	−.09	[−.14, −.04]
	Code 2	0.14	.02	[−.03, .07]
Preparation intentions (*c* path)	Linear severity	1.32	.23	[.18, .28]
	Covariates			
	Quadratic severity	−0.15	−.07	[−.12, −.02]
	Code 1	0.30	.16	[.11, .21]
	Code 2	−0.22	−.05	[−.10, .00]
Preparation intentions (*c*′ and *b* paths)	Linear severity	0.82	.17	[.12, .22]
	Threat-word ratings	0.32	.38	[.33, .42]
	Safety concerns	0.19	.30	[.25, .35]
	Risk perception	0.11	.18	[.13, .23]
	Covariates			
	Quadratic severity	−0.01	.00	[−.05, .05]
	Code 1	0.30	.19	[.14, .24]
	Code 2	−0.42	−.11	[−.16, −.06]
Indirect effects (*a* × *b* path)		*b*	r_p	CI
Total		0.50	.16	[.11, .21]
Threat-word ratings		0.31	.13	[.08, .18]
Safety concerns		0.14	.10	[.05, .15]
Risk perception		0.05	.07	[.02, .12]

Note. $N = 1{,}469$. Partial correlations (r_ps) $\geq .10$ in absolute magnitude are significant. CI = confidence interval.

Mediation Analyses

Using the seven individual difference variables that had significant correlations with preparation intentions (i.e., conscientiousness, agreeableness, extraversion, openness, social conservatism, impulsivity, and sensation-seeking), we conducted seven separate mediation tests (Process Model 4; Hayes, 2017; see Table 3). Controlling for severity and between-study differences, models examining the direct relationship between each focal individual difference variable and preparation intentions revealed support for Path 1 (individual differences relate to threat response independent of severity) for all seven individual difference variables. Preparation intentions related *positively* to conscientiousness, agreeableness, extraversion, openness, and social conservatism, and *negatively* to impulsivity and sensation-seeking, independent of the effects of the severity manipulation and between-study differences. Note that most estimates remained consistent from the severity mediation model (Table 1) to each of the seven individual difference models (Table 3), indicating that these individual difference variables can relate to preparation likelihood independent of an objective threat feature such as hurricane severity.

Supporting Path 2 (individual differences relate to a threat response through their relationships with cognitions and perceptions), five of these relationships with preparation intentions were partially mediated by the total indirect effect comprising the three perceptual variables (threat-word rating, safety concerns, and risk perception; Table 4). Although all three perceptual variables comprised the total indirect

Table 2. Descriptive Statistics for—and Correlations Among—All Variables.

Variable	*M*	*SD*	α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Linear severity	−0.34	0.60																		
2. Quadratic severity	−0.58	1.50		**−.59**																
3. Threat-word ratings	5.98	2.79	.89	**.34**	**−.34**															
4. Safety concerns	7.46	3.43		**.14**	−.07	**.29**														
5. Risk perception	6.45	3.17		**.11**	−.02	**.12**	**.17**													
6. Extraversion	2.89	0.96	.86	−.01	−.01	.01	.07	.01												
7. Agreeableness	3.86	0.76	.82	.02	−.02	**.16**	**.17**	.09	**.31**											
8. Conscientiousness	3.87	0.79	.80	−.07	.01	**.12**	.09	.01	**.28**	**.34**										
9. Openness	3.74	0.78	.82	**.10**	−.08	.03	**.11**	.03	**.25**	**.23**	.09									
10. Neuroticism	2.62	0.93	.80	.002	.02	.01	−.02	.01	**−.36**	**−.30**	**−.46**	**−.14**								
11. Single-item political ideology	−0.29	1.85		−.04	.04	−.02	−.01	.01	.05	−.05	.09	**−.20**	**−.11**							
12. Social conservatism	57.93	.24.54	.87	−.01	.03	**.11**	**.11**	.08	**.13**	**.17**	**.22**	**−.13**	**−.19**	**.63**						
13. Economic conservatism	57.98	18.53	.65	−.01	.05	−.04	.01	.06	.06	.01	**.14**	−.07	**−.16**	**.60**	**.58**					
14. Impulsivity	0.24	0.25	.72	.04	−.02	**−.10**	−.04	−.04	**.14**	**−.12**	**−.33**	.08	.09	−.04	**−.14**	−.08				
15. Sensation	0.37	0.28	.85	.04	.01	**−.18**	−.04	−.01	**.24**	−.06	**−.23**	**.22**	−.01	−.07	**−.16**	−.01	**.59**			
16. Preparation likelihood	6.69	2.50	.89	**.30**	**−.28**	**.51**	**.40**	**.23**	**.14**	**.23**	**.22**	**.11**	−.08	.00	**.16**	.06	**−.11**	**−.10**		
17. Code 1 (Studies 1 and 2 vs. Study 3)	0.99	1.42		**−.40**	**.10**	−.07	−.07	**−.13**	**.14**	.05	**.24**	**−.15**	−.01	.06	−.01	−.04	−.07	−.05	.04	
18. Code 2 (Study 1 vs. Study 2)	0.07	0.58		.07	**.36**	.00	.05	.06	−.02	−.03	−.06	.01	.01	.03	.04	.01	.02	.04	−.09	**−.17**

Note. Boldface: Correlation ≥ .10 in absolute magnitude. Alphas are the mean across the three studies.

Table 3. Mediation Results Examining Each Individual Difference as a Predictor, Preparedness Intentions as the Outcome, and the Three Perceptual Variables (Threat-Word Ratings, Safety Concerns, and Risk Perception) as Mediators.

		Conscientiousness			Agreeableness			Extraversion			Openness			Social conservatism			Impulsivity			Sensation-seeking		
Outcome	Predictor	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI	*B*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI
Threat-word ratings (*a* path)	ID	0.47	.14	[.09, .19]	0.58	.17	[.12, .22]	0.00	.00	[−.05, .05]	−0.02	−.01	[−.06, .04]	0.01	.13	[.07, .18]	−1.24	−.12	[−.17, .17]	−1.84	−.20	[−.25, −.15]
	Covariates																					
	Severity linear	0.95	.15	[.10, .20]	0.93	.15	[.10, .20]	0.97	.16	[.10, .21]	0.97	.16	[.11, .21]	0.97	.16	[.11, .21]	0.98	.16	[.11, .21]	1.01	.16	[.11, .21]
	Severity quadratic	−0.48	−.19	[.14, .24]	−0.48	−.19	[−.24, −.14]	−0.47	−.19	[−.24, −.14]	−0.47	−.19	[−.24, −.14]	−0.48	−.19	[−.24, −.14]	−0.47	−.19	[−.24, −.14]	−0.46	−.19	[−.24, −.14]
	Code 1	0.04	.02	[−.03, .07]	0.09	.04	[−.01, .09]	0.10	.05	[.00, .10]	0.10	.05	[.00, .10]	0.11	.05	[.00, .10]	0.09	.05	[−.01, .10]	0.09	.05	[.00, .10]
	Code 2	0.43	.08	[.03, .13]	0.43	.09	[.03, .14]	0.41	.08	[.03, .13]	0.41	.08	[.03, .13]	0.39	.08	[.03, .13]	0.42	.08	[.03, .13]	0.43	.08	[.03, .14]
Safety concerns (*a* path)	ID	0.47	.11	[.06, .16]	0.77	.17	[.12, .22]	0.26	.07	[.02, .13]	0.43	.10	[.05, .15]	0.01	.11	[.06, .16]	−0.63	−.05	[−.10, .00]	−0.56	−.05	[−.10, .00]
	Covariates																					
	Severity linear	0.72	.09	[.04, .14]	0.69	.09	[.03, .14]	0.72	.09	[.04, .14]	0.74	.09	[.04, .14]	0.75	.09	[.04, .14]	0.75	.09	[.04, .14]	0.75	.09	[.04, .14]
	Severity quadratic	−0.02	−.01	[−.06, .04]	−0.02	−.01	[−.06, .04]	−0.02	−.01	[−.06, .04]	0.00	.00	[−.05, .05]	−0.02	−.01	[−.06, .04]	−0.02	−.01	[−.06 .04]	−0.01	.00	[−.05, .06]
	Code 1	−0.08	−.03	[−.08, .02]	−0.05	−.02	[−.07, .03]	−0.05	−.68	[−.07, .03]	0.02	.01	[−.05, .06]	−0.02	−.01	[−.06, .04]	−0.02	−.01	[−.06, .04]	−0.02	−.01	[−.06, .04]
	Code 2	0.28	.04	[−.01, .09]	0.29	.04	[−.01, .09]	0.26	.04	[−.01, .09]	0.26	.04	[−.01, .09]	0.24	.04	[−.01, .09]	0.27	.04	[−.01, .09]	0.27	.04	[−.01, .09
Risk perception (*a* path)	ID	0.19	.05	[−.01, .10]	0.39	.08	[.02, .13]	0.08	.03	[−.03, .08]	0.04	.01	[−.04, .06]	0.01	.08	[.03, .13]	−0.64	−.05	[−.10, .00]	−0.17	−.02	[−.07, .03]
	Covariates																					
	Severity linear	0.41	.05	[.00, .11]	0.40	.05	[.00, .10]	0.41	.05	[.00, .11]	0.42	.06	[.00, .11]	0.42	.06	[.00, .11]	0.43	.06	[.01, .11]	0.43	.06	[.01, .11]
	Severity quadratic	0.06	.05	[−.03, .07]	0.06	.02	[−.03, .07]	0.06	.02	[−.03, .07]	0.07	.02	[−.03, .07]	0.06	.02	[−.03, .07]	0.06	.02	[−.03, .07]	0.06	.02	[−.03, .07]
	Code 1	−0.25	−.10	[−.15, −.05]	−0.24	−.10	[−.15, −.05]	−0.23	−.09	[−.14, −.04]	−0.22	−.09	[−.14, −.04]	−0.22	−.09	[−.14, −.04]	−0.23	−.09	[−.14, −.04]	−0.23	−.09	[−.14, −.04]
	Code 2	0.15	.02	[−.03, .07]	0.16	.02	[−.03, .80]	0.14	.02	[−.03, .07]	0.14	.02	[−.03, .07]	0.13	.02	[−.03, .07]	0.14	.02	[−.03, .07]	0.14	.02	[−.03, .07]
Preparation likelihood (*c* path)	ID	0.68	.22	[.17, .27]	0.70	.23	[.18, .28]	0.31	.13	[.08, .18]	0.31	.11	[.06, .16]	0.02	.18	[.13, .23]	−1.13	−.12	[−.17, −.07]	−0.89	−.11	[−.16, −.06]
	Covariates																					
	Severity linear	1.29	.23	[.18, .28]	1.27	.23	[.18, .28]	1.29	.23	[.18, .27]	1.32	.23	[.18, .28]	1.32	.23	[.18, .23]	1.33	.23	[.18, .28]	1.34	.23	[.19, .28]
	Severity quadratic	−0.16	−.07	[−.12, −.02]	−0.16	.07	[−.12, −.02]	−0.15	−.07	[−.12, −.02]	−0.14	−.06	[−.11, −.01]	−0.15	−.07	[−.12, −.02]	−0.15	−.07	[−.12, −.02]	−0.15	−.07	[−.12, −.02]
	Code 1	0.21	.11	[.06, .16]	0.28	.16	[.10, .20]	0.27	.14	[.09, .19]	0.33	.18	[.13, .23]	0.31	.17	[.12, .22]	0.29	.16	[.11, .21]	0.30	.16	[.11, .21]
	Code 2	−0.19	−.04	[−.09, .01]	−0.19	.04	[−.09, .01]	−0.22	−.05	[−.10, .00]	−0.22	−.05	[−.10. .00]	−0.24	−.05	[−.10, .00]	−0.21	−.05	[−.10, .00]	−0.21	−.04	[−.09, .01]
Preparation likelihood (*c*' and *b* paths)	ID	0.42	.17	[.12, .22]	0.34	.13	[.08, .18]	0.25	.12	[.07, .17]	0.24	.10	[.05, .15]	0.01	.11	[.06, .16]	−0.55	−.07	[−.12, −.02]	−0.18	−.03	[−.08, .02]
	Threat-word ratings	0.31	.37	[.32, .41]	0.31	.37	[.32, .41]	0.32	.38	[.34, .43]	0.33	.38	[.34, .43]	0.31	.37	[.33, .41]	0.32	.37	[.33, .42]	0.32	.37	[.32. .41]
	Safety concerns	0.18	.29	[.24, .34]	0.18	.29	[.24, .33]	0.18	.29	[.24, .34]	0.18	.29	[.24, .34]	0.18	.29	[.25, .34]	0.19	.30	[.25, .35]	0.19	.30	[.25, .35]
	Risk perception	0.11	.18	[.13, .23]	0.11	.17	[.12, .22]	0.11	.18	[.13, .23]	0.11	.18	[.13, .23]	0.11	.17	[.12, .22]	0.19	.18	[.12, .22]	0.11	.18	[.13, .23]
	Covariates																					
	Severity linear	0.82	.17	[.12, .22]	0.82	.17	[.12, .22]	0.80	.17	[.12, .22]	0.82	.17	[.12, .22]	0.83	.17	[.12, .22]	0.11	.18	[.12, .22]	0.83	.17	[.12, .22]
	Severity quadratic	−0.01	−.01	[−.06, .04]	−0.01	−.01	[−.06, .04]	0.00	−.04	[−.05, .05]	0.01	.00	[−.05, .06]	−0.01	.00	[−.05, .06]	−0.01	.00	[−.05, .05]	0.00	.00	[−.05, .05]
	Code 1	0.24	.15	[.10, .20]	0.29	.19	[.14, .23]	0.27	.17	[.12, .22]	0.32	.20	[.15, .25]	0.30	.19	[.14, .24]	0.29	.19	[.14, .24]	0.30	.19	[.14, .24]
	Code 2	−0.39	−.10	[−.15, −.05]	−0.39	−.10	[−.15, −.05]	−0.41	−.11	[−.16, −.06]	−0.42	−.11	[−.16, −.06]	−0.42	−.11	[−.16, −.06]	−0.41	−.10	[−.15, −.05]	−0.41	−.10	[−.15, −.05]

Note. Each mediation test was run separately for each individual difference variable. The rows called "ID" refer to the individual difference listed at the top of the column. Code 1 refers to the variable controlling for differences between the average of Studies 1 and 2 versus Study 3. Code 2 refers to the variables controlling for the difference between Study 1 and Study 2. $N = 1{,}469$. Partial correlations (r_ps) ≥ .10 in absolute magnitude are significant. CI = confidence interval.

effect, risk perception did not account for a significant amount of variance in any model. For agreeableness, conscientiousness, and social conservatism, the total indirect effect was driven by threat-word ratings and safety concerns. For impulsivity and sensation-seeking, only threat-word ratings contributed significantly to the indirect effect. Furthermore, sensation-seeking's relationship with preparation intentions was fully mediated by the indirect effect of which threat-word ratings was the only significant contributor.

Although not the focus of our hypotheses in these models, hurricane severity and between-study differences had some significant effects (i.e., $|r|$s $\geq .10$) on the perceptual variables and preparation intentions. As in the original severity mediation model (Table 1), the linear and quadratic effects of severity were significant for threat-word ratings, but not safety concerns and risk perception. The significant linear and quadratic effects of severity for threat-word ratings suggested a steeper increase between Category 1 and Category 3 than between Category 3 and Category 5.

Significant study-level differences emerged across all seven models for risk perception and preparation likelihood. Regarding risk perception, the code comparing the average of Studies 1 and 2 with Study 3 (Code 1) indicated that risk perception scores were higher in Studies 1 and 2 than in Study 3. Regarding preparation likelihood, both Code 1 and Code 2 (comparison between Studies 1 and 2) were significant, showing that people reported being more likely to prepare in Study 3 compared with Studies 1 and 2, and that people reported being more likely to prepare in Study 1 than in Study 2. Because the three studies differed in multiple ways, it cannot be known whether this variation is meaningful or systematic. Including these predictors was, however, necessary for (a) testing the hypothesized linear effect of severity, and (b) controlling for between-study differences, thus allowing us to run an appropriate IDA.

Moderated Mediation Analyses

To test whether individual differences moderate the relationship between severity and preparation likelihood (Path 3), we examined seven moderated mediation models for each of the focal individual differences (Process Model 59; Hayes, 2017; Table 5). Across the seven models, none of these interactions had partial correlations $\geq .10$ in absolute magnitude (they ranged from .05 to .07). Thus, because we only considered effect sizes of $|r| \geq .10$ to be meaningful, we did not interpret these interactions further. In addition, we examined whether the indirect effects of the perceptual variables on the relationship between severity and preparation likelihood were moderated by the individual difference variables (Table 6).

The indirect effect of severity to preparation likelihood through the threat-word ratings remained significant at all levels of all individual difference variables with two exceptions—the 84th percentiles of impulsivity and sensation-seeking. (Process, Hayes, 2017, tests simple effects at the 16th, 50th, and 84th percentiles of the moderating variable, which roughly corresponds to −1, 0, and 1 *SD*s from its mean, assuming a normal distribution.) The indirect effect of safety concerns was only significant by the $|r| \geq .10$ standard in a few cases—at the 16th and 50th percentile of agreeableness and the 16th percentile of social conservatism. Because these differences do not appear systematic, we hesitate to interpret them as meaningful. The indirect effect of risk perception remained nonsignificant by the $|r| \geq .10$ standard. Importantly, the indirect effect of threat-word ratings, which made up the largest portion of the total indirect effect of severity on preparation likelihood, remained stable across the individual difference variables.

Discussion

In this research, we proposed that individual differences should relate to people's responses to uncertain threats. We found that higher agreeableness, conscientiousness, extraversion, openness, sensation-seeking, impulsivity, and social conservatism each related positively to people's perceptions of hurricanes and preparation intentions. The studies presented here collectively provide novel evidence in support of two of the three potential pathways we tested between individual differences and threat responses: (a) individual differences relate to threat response directly and independent of objective threat features (e.g., threat severity), and (b) individual differences relate to threat responses through their relationship with threat perception. Supporting the first path, both openness and extraversion had direct relationships with preparation likelihood. People who were higher in either openness or extraversion reported being more likely to prepare for a hurricane independent of the severity of the hurricane. Supporting the second path, we found that agreeableness, conscientiousness, and social conservatism positively related to preparation likelihood through a positive relationship with threat-word ratings, whereas impulsivity and sensation-seeking negatively related to preparation likelihood through a negative relationship with threat-word ratings. We discuss each individual difference in the following section.

An Individual Differences Perspective on Threat Perception and Behavior

Agreeableness, conscientiousness, and social conservatism all positively related to preparation likelihood, relationships that were partially mediated by threat perception. Thus, people who are more agreeable, conscientious, or conservative are more likely to perceive threat and thus more likely to report intentions to prepare for a hurricane. These relationships are largely consistent with prior literature. Regarding agreeableness, agreeable people are more compliant, which in its original meaning suggested an increased tendency to defer rather than fight in a conflict. Agreeable people are also more

Table 4. Indirect Effects of the Three Perceptual Variables (Threat-Word Ratings, Safety Concerns, and Risk Perception) From Each Individual Difference Variable to Preparation Likelihood.

	Conscientiousness			Agreeableness			Extraversion			Openness			Social conservatism			Impulsivity			Sensation-seeking		
Mediator	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI
Total	0.25	.16	[.10, .20]	0.36	.20	[.16, .25]	0.06	.04	[−.01, .09]	0.08	.05	[−.01, .10]	0.01	.15	[.10, .20]	−0.58	−.11	[−.16, −.06]	−0.71	−.15	[−.20, −.10]
Threat-word ratings	0.14	.13	[.08, .18]	0.18	.15	[.10, .20]	0.00	.00	[−.05, .05]	−0.01	−.01	[−.06, .04	0.004	.11	[.06, .16]	−0.39	−.11	[−.16, −.06]	−0.59	−.17	[−.22, −.12]
Safety concerns	0.09	.11	[.05, .16]	0.14	.15	[.10, .20]	0.01	.08	[.02, .13]	0.005	.09	[.04, .14]	0.001	.10	[.05, .15]	−0.12	−.04	[−.09, .01]	−0.11	−.05	[−.10, .00]
Risk perception	0.02	.04	[−.01, .10]	0.04	.08	[.03, .13]	0.05	.02	[−.03, .08]	0.08	.01	[−.04, .06]	0.003	.07	[.02, .12]	−0.07	−.05	[−.10, .00]	−0.02	−.02	[−.07, .03]

Note. $N = 1{,}469$. Partial correlations (r_ps) $\geq .10$ in absolute magnitude are significant. CI = confidence interval.

Table 5. Moderated Mediation Results Where Severity Was the Predictor, Preparedness Intentions Was the Outcome, the Three Perceptual Variables Were the Mediators, and the Individual Difference Was the Moderator.

		Conscientiousness			Agreeableness			Extraversion			Openness			Social conservatism			Impulsivity			Sensation-seeking		
Outcome	Predictor	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI
Threat-word ratings (*a* path)	Severity linear	0.93	.15	[.10, .20]	0.93	.02	[−.03, .07]	0.97	.15	[.10, .20]	0.98	.16	[.11, .21]	0.97	.16	[.11, .21]	0.99	.16	[.11, .21]	1.04	.17	[.12, .22]
	ID	0.51	.14	[.09,.19]	0.61	.16	[.11, .21]	−0.01	.00	[−.05, .05]	−0.06	−.02	[−.07, .03]	0.01	.11	[.06, .16]	−1.49	−.13	[−.18, −.08]	−2.15	−.21	[−.26, −.16]
	Severity × ID	0.16	.03	[−.02, .08]	0.10	.02	[−.03, .07]	−0.04	−.01	[−.06, .04]	−0.14	−.03	[−.08, .02]	0.00	.01	[−.04, .06]	−0.84	−.05	[−.10, .00]	−0.98	−.07	[−.12, −.02]
	Covariates																					
	Severity Quadratic	−0.46	−.18	[−.23, −.13]	−0.48	−.19	[−.24, −.14]	−0.47	−.19	[−.24, −.14]	−0.47	−.19	[−.24, −.14]	−0.48	−.19	[−.24, −.14]	−0.47	−.19	[−.24, −.14]	−0.45	−.18	[−.23, −.13]
	Code 1	0.04	.02	[−.03, .07]	0.09	.04	[−.01, .09]	0.10	.05	[.00, .10]	0.10	.05	[.00, .10]	0.11	.05	[.00, .10]	0.09	.05	[−.01, .10]	0.09	.05	[−.01, .10]
	Code 2	0.41	.08	[.03, .13]	0.43	.09	[.03, .14]	0.41	.08	[.03, .13]	0.40	.08	[.03, .13]	0.40	.08	[.03, .13]	0.42	.08	[.03, .13]	0.43	.08	[.03, .14]
Safety concerns (*a* path)	Severity linear	0.69	.08	[.03, .13]	0.69	.09	[.03, .14]	0.71	.09	[.04, .14]	0.74	.09	[.04, .14]	0.76	.09	[.04, .14]	0.75	.09	[.04, .14]	0.76	.09	[.04, .14]
	ID	0.42	.09	[.04, .14]	0.65	.13	[.08, .18]	0.23	.05	[.00, .10]	0.42	.09	[.04, .14]	0.01	.07	[.02, .13]	−0.58	−.04	[−.09, .01]	−0.57	−.04	[−.09, .01]
	Severity × ID	−0.17	−.02	[−.07, .03]	−0.40	−.05	[−.10, .00]	−0.13	−.02	[.03, .13]	−0.03	.00	[−.05, .06]	−0.01	−.03	[−.08, .02]	0.15	.01	[−.04, .06]	−0.06	.00	[−.05, .05]
	Covariates																					
	Severity quadratic	−0.04	.01	[−.04, .06]	−0.02	−.01	[−.06, .04]	−0.03	.01	[−.04, .06]	0.00	.00	[−.05, .05]	−0.02	−.01	[−.06, .04]	−0.02	−.01	[−.06, .04]	−0.01	.00	[−.05, .06]
	Code 1	−0.09	−.03	[−.08, .02]	−0.05	−.02	[−.07, .03]	−0.05	−.02	[−.07, .03]	0.02	.01	[−.05, .06]	−0.01	.00	[−.05, .06]	−0.02	−.01	[−.06, .04]	−0.02	−.01	[−.06, .04]
	Code 2	0.30	.04	[−.01, .09]	0.30	.04	[−.01, .10]	0.28	.04	[−.01, .09]	0.26	.04	[−.01, .09]	0.24	.04	[−.02, .09]	0.27	.04	[−.01, .09]	0.27	.04	[−.01, .09]
Risk perception (*a* path)	Severity linear	0.38	.05	[.00, .10]	0.39	.05	[.00, .10]	0.41	.05	[.00, .11]	0.43	.06	[.01, .11]	0.42	.06	[.00, .11]	0.42	.06	[.00, .11]	0.42	.06	[.00, .11]
	ID	0.13	.03	[−.02, .08]	0.39	.09	[.03, .14]	0.07	.02	[−.03, .07]	0.01	.00	[−.05, .05]	0.01	.07	[.02, .12]	−0.53	−.04	[−.09, .01]	−0.14	−.01	[−.06, .04]
	Severity × ID	−0.21	−.03	[−.08, .02]	0.01	.00	[−.05, .05]	−0.04	−.01	[−.06, .04]	−0.10	−.01	[−.06, .04]	0.00	.01	[−.04, .06]	0.41	.02	[−.01, .09]	0.10	.01	[−.05, .06]
	Covariates																					
	Severity quadratic	0.05	.02	[−.04, .07]	0.06	.02	[−.03, .07]	0.06	.02	[−.03, .07]	0.07	.02	[−.03, .07]	0.06	.02	[−.03, .07]	0.06	.02	[−.03, .07]	0.06	.02	[−.03, .07]
	Code 1	−0.25	−.10	[−.15, −.05]	−0.24	−.10	[−.15, −.05]	−0.23	−.09	[−.14, −.04]	−0.22	−.09	[−.14, −.04]	−0.22	−.09	[−.14, −.04]	−0.23	−.09	[−.14. −.04,]	−0.23	−.09	[−.14, −.04]
	Code 2	0.17	.03	[−.03, .08]	0.16	.02	[−.03, .08]	0.14	.02	[−.03, .07]	0.14	.02	[−.03, .07]	0.13	.02	[−.03, .07]	0.15	.02	[−.03, .07]	0.14	.02	[−.03, .07]
Preparation likelihood (*c'* and *b* paths)	Severity linear	0.80	.17	[.12, .22]	0.82	.17	[.12, .22]	0.79	.16	[.11, .21]	0.82	.17	[.12, .22]	0.81	.17	[.12, .22]	0.84	.17	[.12, .22]	0.83	.17	[.12, .22]
	ID	0.40	.14	[.09, .19]	0.30	.10	[.05, .15]	0.21	.09	[.04, .14]	0.23	.08	[.03,.13]	0.01	.13	[.08, .18]	−0.74	−.09	[−.14, −.04]	−0.15	−.02	[−.07, .03]
	Threat-word ratings	0.31	.37	[.32, .41]	0.31	.37	[.32, .41]	0.32	.38	[.34, .43]	0.33	.38	[.34, .43]	0.31	.37	[.32, .41]	0.31	037	[.33, .41]	0.32	.37	[.32, .41]
	Safety concerns	0.18	.29	[.24, .33]	0.18	.28	[.24, .33]	0.18	.29	[.24, .33]	0.18	.29	[.24, .34]	0.18	.29	[.25, .34]	0.19	.30	[.25, .34]	0.19	.30	[.25, .34]
	Risk perception	0.11	.18	[.13, .23]	0.11	.17	[.12, .22]	0.11	.18	[.13, .23]	0.11	.18	[.13, .23]	0.11	017	[.12, .22]	0.11	.18	[.13, .23]	0.12	.18	[.13, .23]
	Severity × ID	−0.11	−.03	[−.08, .02]	−0.13	−.03	[−.08, .02]	−0.14	−.04	[−.09, .01]	−0.07	−.02	[−.07, .03]	0.01	.07	[.02, .12]	−0.58	−.04	[−.09, .01]	0.12	.01	[−.04, .06]
	Threat × ID	−0.001	.00	[−.05, .05]	0.01	.01	[−.04, .06]	0.001	.00	[−.05, .05]	−0.04	−.04	[−.09, .01]	0.00	−.07	[−.12, −.02]	−0.16	−.05	[−.10, .00]	−0.16	−.06	[−.11, −.01]
	Concerns × ID	−0.01	−.01	[−.06, .04]	−0.01	−.01	[−.06, .04]	0.004	.01	[−.05, .06]	0.01	.01	[−.04, .07]	0.00	.00	[−.05, .05]	0.06	.02	[−.03, .07]	0.06	.03	[−.03, .08]
	Risk Perception × ID	0.02	.02	[−.03, .07]	0.002	.00	[−.05,.05]	0.01	.02	[−.03, .07]	0.01	.01	[−.04, .06]	0.00	−.01	[−.06, .04]	0.13	.06	[.00, .11]	0.11	.05	[.00, .11]
	Covariates																					
	Severity quadratic	−0.02	−.01	[−.06, .04]	−0.01	−.01	[−.06, .04]	−0.01	.00	[−.05, .05]	0.01	.01	[−.04, .06]	−0.20	−.01	[−.06, .04]	0.00	.00	[−.05, .05]	0.003	.00	[−.05, .05]
	Code 1	0.24	.15	[.10, .20]	0.29	.19	[.14, .23]	0.27	.17	[.12, .22]	0.32	.20	[.15, .25]	0.29	.19	[.14, .24]	0.30	.19	[.14, .24]	0.31	.19	[.14, .24]
	Code 2	−0.39	−.10	[−.15, −.05]	−0.39	−.10	[−.15, −.05]	−0.40	−.10	[−.15, −.05]	−0.42	−.11	[−.16, −.06]	−0.42	−.11	[−.16, −.06]	−0.41	−.10	[−.15, −.05]	−0.42	−.11	[−.16, −.06]

Note. Each test was run separately for each individual difference variable. The rows called "ID" refer to the individual difference listed at the top of the column. Code 1 refers to the variable controlling for differences between the average of Studies 1 and 2 versus Study 3. Code 2 refers to the variables controlling for the difference between Study 1 and Study 2. $N = 1{,}469$. Partial correlations (r_ps) $\geq .10$ in absolute magnitude are significant. CI = confidence interval.

Table 6. Indirect Effects (Severity Through the Perceptual Variables to Predict Preparation Likelihood) at the 16th, 50th, and 84th Percentile of Each Individual Difference Variable.

	Threat			Safety concerns			Risk perception		
Percentiles	*b*	r_p	95% CI	*b*	r_p	95% CI	*b*	r_p	95% CI
Conscientiousness									
16th	0.26	.10	[.04, .14]	0.14	.09	[.04, .14]	.07	.06	[.01, .11]
50th	0.06	.13	[.03, .13]	0.12	.08	[.03, .13]	.04	.05	[.00, .10]
84th	0.08	.11	[−.01, .09]	0.10	.04	[−.01, .09]	.02	.02	[−.03, .07]
Agreeableness									
16th	0.25	.09	[.10, .21]	0.18	.16	[.10, .21]	0.05	.03	[−.03, .08]
50th	0.29	.13	[.09, .19]	0.11	.14	[.09, .19]	0.04	.03	[−.03, .08]
84th	0.32	.10	[.04, .14]	0.07	.09	[.04, .14]	0.04	.03	[−.03, .08]
Extraversion									
16th	0.33	.11	[.02, .12]	0.14	.07	[.02, .12]	0.05	.07	[.01, .12]
50th	0.31	.13	[.03, .14]	0.13	.08	[.03, .14]	0.05	.07	[.01, .12]
84th	0.30	.10	[.01, .11]	0.11	.06	[.01, .11]	0.04	.03	[−.02, .09]
Openness									
16th	0.38	.12	[.02, .12]	0.14	.07	[.02, .12]	0.05	.07	[.01, .12]
50th	0.31	.13	[.04, .14]	0.14	.09	[.04, .14]	0.05	.07	[.01, .12]
84th	0.26	.10	[.02, .12]	0.14	.07	[.02, .12]	0.04	.03	[−.02, .09]
Social conservatism									
16th	0.33	.10	[.05, .15]	0.19	.10	[.05, .15]	0.04	.03	[−.02, .09]
50th	0.30	.13	[.04, .14]	0.14	.09	[.04, .14]	0.05	.07	[.01, .12]
84th	0.26	.10	[.01, .12]	0.10	.07	[.01, .12]	0.05	.07	[.01, .12]
Impulsivity									
16th	0.42	.14	[.02, .12]	0.11	.07	[.02, .12]	0.03	.04	[−.01, .09]
50th	0.36	.16	[.03, .14]	0.13	.09	[.03, .14]	0.04	.05	[.00, .10]
84th	0.21	.08	[.04, .14]	0.17	.09	[.04, .14]	0.07	.06	[.01, .11]
Sensation-seeking									
16th	0.48	.14	[.03, .13]	0.12	.08	[.03, .13]	0.04	.05	[.00, .10]
50th	0.35	.15	[.04, .14]	0.14	.09	[.04, .14]	0.05	.07	[.01, .12]
84th	0.20	.09	[.02, .12]	0.16	.07	[.02, .12]	0.06	.05	[.00, .10]

Note. $N = 1{,}469$. Partial correlations (r_ps) $\geq .10$ in absolute magnitude are significant. CI = confidence interval.

trusting, which in its original meaning indicated an increased tendency to see benevolent intent in the other (Costa et al., 1991). Thus, in the situation of a hurricane, a person who is agreeable, and thus more trusting and compliant, likely has a stronger tendency to perceive a situation and take action in line with what official sources recommend. In addition, research shows positive relationships between agreeableness and other threat perceptions (Strauss et al., 2003; White et al., 2012; Dinesen et al., 2016). Regarding conscientiousness, preparation is a behavior that is often characteristic of highly conscientious people (e.g., someone who is orderly, responsible, and dependable; John & Srivastava, 1999). Preparation allows conscientious people to be responsible and dependable because it can reduce the burden of recovery efforts that must be spent on those unwilling or unable to prepare.

Previous research has also hypothesized and observed relationships between conservatism and threat sensitivity (e.g., Hibbing et al., 2014; Jost et al., 2007). One caveat, however, is that emerging research also suggests that correlations between political ideology and threat are context-dependent. For example, researchers discovered that conservatives were more likely to demonstrate an avoidant learning style for novel stimuli when they learned about beans (Shook & Fazio, 2009), but liberals exhibited an avoidant learning style in the context of novel stimuli described as stocks (Fiagbenu et al., 2019). As such, although the current data are more in line with findings that conservatism is related to threat sensitivity, there may be other threat contexts where the relationship is the opposite or does not exist—a possibility we discuss later.

In addition, impulsivity and sensation-seeking negatively related to preparation intentions. Furthermore, these relationships were mediated by negative relationships with threat perception. People higher in impulsivity and sensation-seeking perceived less threat and were thus less likely to report intentions to prepare. This finding is consistent with existing research showing that highly impulsive and sensation-seeking people are less sensitive to losses and more likely to take risks (Lauriola et al., 2014; Zheng et al., 2019). The

relationships linking sensation-seeking and impulsivity with preparation intentions also suggest that people higher in sensation-seeking may have different goals regarding hurricane threat. It may be more important for high-sensation-seekers to experience the hurricane than it is for them to avoid it or prepare for it.

Finally, extraversion and openness positively related to preparation intentions, but these relationships were not mediated by threat perception. Both Big Five traits directly related to preparation intentions, independent of the severity effect. This relationship likely emerged because something about preparation is characteristic of openness and extraversion. Indeed, both extraversion and openness are described as active and approach-oriented traits (Corr, 2004; C. G. DeYoung, 2015; John & Srivastava, 1999). According to theorizing based in CB5T, uncertain threats or anomalous events create psychological entropy, which is a state of confusion that occurs when a situation does not match expectations. Traits influence the strategies one takes to reduce that entropy. Specifically related to extraversion and openness, increased psychological entropy may indicate one has an *opportunity* to transform an uncertain situation into one that is more predictable. And for this reason, people who are higher in these traits may be more willing to test different strategies to reach that goal (C. G. DeYoung, 2015).

Limitations and Implications

The present studies have multiple limitations. Aside from the severity manipulations, most variables were self-report and the study designs were correlational. In other words, the usual biases of self-report data (Paulhus & Vazire, 2007) and the limited causal claims regarding correlational data (Kenny, 2004) clearly apply here. As with any study, there is a chance that some of the results are false positives (Type I errors). Using IDA, however, afforded a much larger sample than each individual study alone, allowed for fewer tests (reducing the risk of multi-study Type-I errors), and offered some limited insight regarding whether differences in research design contributed to variability across the studies. Importantly, with this larger sample and controlling for these between-study differences, we observed stable effects. But our IDA did show some substantial variation in threat perception and preparation intentions across studies. Because the number of differences between studies exceeded the number of studies themselves (i.e., $k = 3$), we were unable to isolate and identify the precise source of the between-study variability. Nevertheless, in the following section, we describe each contrast code and the potential between-study differences each could represent.

Code 1 compared the average of Studies 1 and 2 with Study 3. This contrast code could represent differences in sampling location. For example, Studies 1 and 2 included participants only from Florida, whereas Study 3 included participants from coastal counties in eight southeastern U.S. states (including Florida). Another difference is the survey question order. Studies 1 and 2 asked about individual differences (i.e., Mini-IPIP, IMPSS, and Political Ideology) before the hurricane task. Study 3, however, presented the hurricane task before the individual difference measures. The studies also differed in the scales used. For example, Studies 1 and 2 used the Mini-IPIP (Donnellan et al., 2006) to measure Big Five traits, whereas Study 3 used the BFI-44 (John & Srivastava, 1999). Study 3 also had a larger analyzed sample ($N = 975$) compared with Studies 1 and 2 combined ($N = 494$). Code 2 compared Study 1 with Study 2. This contrast code could represent a difference in study design—correlational (Study 1) versus experimental (Study 2). Furthermore, Study 1 included verbal instructions for imagining a Category 3 hurricane, whereas Study 2 participants were randomly assigned to watch a video of a warning for a Category 1, 3, or 5 hurricane before completing the behavior likelihood inventory.

In conclusion, the number of between-study differences make it difficult to determine the source of the between-study differences. Although these differences are difficult to interpret, they provide paths for future investigations. For example, future research could systematically vary each of these potential differences while holding the others constant. Despite these limitations, the IDA analysis allows for a high-powered test of our focal variables, while controlling for the effects of between-study differences, thereby increasing our confidence in the results.

In addition to possible research-design influences, the present results may differ in other threat contexts. For example, our research failed to observe an often-theorized relationship between neuroticism and threat response (e.g., DeYoung, 2015). It is entirely possible that different personality traits predict responses to different threats. Perhaps a trait like neuroticism differentiates or predicts responses to health or social threats rather than to weather threats like hurricanes. Future research could examine how the relationships linking personality traits and threats might be context-dependent.

That our results may be context-dependent need not make our findings any less important. Indeed, this particular research can provide insights for weather researchers, who tend to focus on factors such as the severity of the storm (Whitehead et al., 2000), people's previous experience with hurricanes (Demuth et al., 2016), and how people process information about hurricanes (Lindell & Perry, 2012). The present research provides a creative and theoretically novel advancement: People's individual characteristics may influence the way that they see themselves at risk or under threat, and these perceptions may explain why some people prepare for severe threats, whereas others do not. This research is also unique because it uses an experimental manipulation of severity to compare the effects of these internal, subjective processes against more objective factors like storm severity.

Furthermore, our research shows that individual differences in personality and political ideology have real consequences for people's health and survival. Indeed, our research suggests that people who are more agreeable, conscientious, extraverted, open, and socially conservative are more likely to survive a hurricane with less damage than those who are lower in these traits or more socially liberal. Indeed, the possible implications of our findings are becoming increasingly clear as the COVID-19 pandemic unfolds. For example, early research shows that political ideology is an important predictor of adherence to social distancing recommendations from the U.S. Centers for Disease Control (Pew Research Center, 2020). Speaking to the context-dependency of our findings, people in more conservative U.S. counties were less likely to comply with state-issued social distancing orders, and thus may be at a greater risk of both contracting and spreading the virus (Painter & Qiu, 2020). Although speculative, this context-dependency may relate to causal beliefs. For example, U.S. conservatives who believe conspiracy theories about COVID-19 being a hoax were less likely to avoid crowds and wash their hands, whereas those who believed it was a bioweapon were more likely to stock food and wear masks (Imhoff & Lamberty, 2020).

Furthermore, because social distancing requires that people spend more time in their homes and avoid other people, it is likely more difficult to adhere to recommendations for people who are higher in action-oriented traits like extraversion and openness. Thus, people who are more open or extraverted may face and pose a greater risk.

Conclusion

The present study clearly shows that personality traits can be critical in understanding why some people react differently to the same information about hurricanes and threat severity. The current work corroborates and advances existing theories about hurricane threat responses (e.g., Lindell & Perry, 2012) that account for the social and environmental factors that influence people's judgments and decisions about uncertain threats. Adding an individual differences component to these theories can improve our ability to anticipate that people's judgment and decision-making process may not work the same way for every person. Practically, this work shows that some people—like those high in agreeableness and conscientiousness—need little convincing that a threat is imminent and that they should prepare. But this work also suggests that others—like those high in sensation-seeking—may need much more encouragement to both see a threat for what it is, and to take the necessary steps to protect themselves from harm.

Authors' Note

A portion of the data reported in this manuscript is also reported in the corresponding author's dissertation.

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Supplemental Material

Supplemental material is available online with this article.

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