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Fear and anxiety differ in construal level and scope

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ABSTRACT

The fear-anxiety distinction has been extensively discussed and debated among emotion researchers. In this study, we tested this distinction from a social-cognitive perspective. Drawing on construal level theory and regulatory scope theory, we examined whether fear and anxiety differ in their underlying level of construal and scope. Results from a preregistered autobiographical recall study ($N=200$) that concerned either a fear situation or an anxiety situation and a large dataset from Twitter ($N=104,949$) indicated that anxiety was associated with a higher level of construal and a more expansive scope than fear. These findings support the notion that emotions serve as mental tools that deal with different challenges. While fear prompts people to seek immediate solutions to concrete threats in the here and now (contractive scope), anxiety prompts them to deal with distant and unknown threats that require more expansive and flexible solutions (expansive scope). Our study contributes to a growing literature on emotions and construal level and points to interesting avenues for further research.

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Fear and anxiety have long interested scholars and practitioners across different domains. One question that is still debated among emotion researchers is whether fear and anxiety are truly distinct (Daniel-Watanabe & Fletcher, 2021). While much of this debate has focused on the fear-anxiety distinction from biological and physiological perspectives, less research has examined it from a social-cognitive perspective. To fill this gap, we draw on construal level theory (Trope & Liberman, 2010) and regulatory scope theory (Trope et al., 2021) to examine whether fear and anxiety differ in their underlying level of construal and scope.

Based on construal level theory, we propose that fear is a reaction to an immediate threat in the here and now, characterised by concrete mental representations (low-level construals, e.g. focusing on concrete physical properties of a threat). In contrast, anxiety is a reaction to a distant and ambiguous threat characterised by abstract mental representations (high-level

construals) that transcend the detailed and context-specific features of the here and now (e.g. focusing on the uncertainties of a looming economic crisis).

Moreover, regulatory scope theory (Trope et al., 2021), a recent extension of construal level theory, predicts that fear and anxiety help people address the challenges of near and distant threats by either contracting or expanding scope. An expansion in scope enables people to consider “a broader range of concerns across time, place, people, and counterfactual alternatives” (Lee & Fujita, 2022).

Overall, we aimed to investigate whether anxiety involves more abstract and distant construals of the emotion-eliciting threat than fear and whether anxiety relative to fear involves the consideration of more socially and temporally distant others. We took a multi-method approach, conducting a preregistered autobiographical recall study as well as analyzing a large dataset from Twitter. To our knowledge, this is the first study to compare fear and anxiety with respect to

abstraction and scope. Our study contributes to a relatively small but growing literature on emotions and construal level (Agerström et al., 2012; Bornstein et al., 2020; Doré et al., 2015; Moran et al., 2021) and highlights interesting avenues for further research.

Fear and anxiety

As opposed to dimensional models that conceptualise emotions along the dimensions of valence (i.e. negative to positive) and arousal (i.e. low intensity to high intensity) (e.g. Russell, 1980), discrete emotion theorists propose that specific emotions, even those of the same valence and arousal, serve unique functions (Ekman, 1992; Izard, 1992; Smith & Ellsworth, 1985). While it is easy to imagine how fear differs from other negative high-arousal emotions, such as anger, distinguishing fear from anxiety has proven to be a difficult task. Even the definition and operationalisation of fear itself are still debated among experts (Mobbs et al., 2019; Schaffner, 2020).

The elusive difference between fear and anxiety is understandable given their similarities. Both are negatively valenced and high in arousal. In addition, both are considered defensive and triggered by the threat of harm (Corr, 2008; LeDoux & Pine, 2016). Moreover, people tend to use the terms interchangeably in daily language—fear-related words are sometimes used to describe feelings of anxiety (e.g. “I am afraid I will not get a job”). Likewise, fear and anxiety have been considered two sides of the same coin. Izard and Tomkins (1966) wrote, “fear and anxiety are terms we shall use interchangeably on the conviction that there are no theoretically useful distinctions between them” (p. 99). Similarly, personality researchers have treated individuals prone to fear and anxiety as one and the same (e.g. Cloninger, 1987; Murray, 1938).

Well-known appraisal theories of emotion (Roseman, 1984; Smith & Ellsworth, 1985) do not distinguish between fear and anxiety but instead propose that fear is an emotion characterised by uncertainty and low control. Notably, some appraisal theories refer to uncertainty as an appraisal of fear rather than anxiety (Roseman, 1984).

Nevertheless, emotions researchers have made several attempts to dissociate fear from anxiety (Corr, 2008; Davis et al., 2010; LeDoux & Pine, 2016; Lippold et al., 2020; Perusini & Fanselow, 2015; Talisman & Rohrbeck, 2022). For instance, one of the most well-known models of neuroticism, the

reinforcement sensitivity theory of personality, recently went through a significant revision as a response to calls for a distinction between withdrawal-eliciting (fear) stimuli and approach-eliciting (anxiety) stimuli (Corr, 2008; McNaughton & Gray, 2000; Perkins et al., 2007).

Some emotion scholars view anxiety as more cognitive in nature than fear, which is more stimulus-bound (e.g. Barlow, 2000; Mineka et al., 1998). Indeed, fear-related physiological responses can become activated even before conscious experience of the emotion (LeDoux & Pine, 2016). The immediacy of a threat seems to be a key factor distinguishing fear from anxiety. LeDoux and Pine (2016) note the following:

Confusion also results from interchangeable use of the terms fear and anxiety. To avoid such confusion, we propose using a common distinction consistently—that the mental state term fear be used to describe feelings that occur when the source of harm, the threat, is either immediate or imminent, and anxiety be used to describe feelings that occur when the source of harm is uncertain or is distal in space or time (p. 1084).

Nevertheless, the fear-anxiety distinction is still debated (Daniel-Watanabe & Fletcher, 2021). The answer to whether they can be distinguished from each other may differ from one domain of emotion science to another. In the current study, we sought to examine whether any apparent differences between fear and anxiety emerge when studied from a social-cognitive perspective. Construal level theory (Trope & Liberman, 2010) and regulatory scope theory (Trope et al., 2021) serve as valuable frameworks as they make specific predictions about fear and anxiety that are yet to be tested.

Construal level and emotions

According to construal level theory (Trope & Liberman, 2010), events, people, and places can be construed along different levels of abstraction. For instance, the activity of mowing the lawn can equally well be represented as “Trim a grass surface” (low-level construal, concrete) as “Get the garden in order” (high-level construal, abstract). Moreover, greater distances generally generate higher levels of abstraction. For instance, imagining a temporally distant event (e.g. an event one year from now vs one week from now) is more likely to elicit abstract mental representations of that event. The ability to

engage in abstract thinking allows humans to traverse the here and now and to imagine alternative realities.

Construal level theory extends appraisal theories of emotion by distinguishing emotions based on their underlying level of construal (i.e. the level of abstraction in the mental representations involved in emotions). Furthermore, the theory makes explicit distinctions between fear and anxiety. Whereas the appraisal process involved in fear is characterised by a low-level construal of an emotion-eliciting event, the appraisal process involved in anxiety is characterised by a high-level construal of an emotion-eliciting event (Moran & Eyal, 2022; Trope & Liberman, 2010). Accordingly, fear constitutes a so-called “low-level construal” emotional experience, whereas anxiety constitutes a high-level emotional experience. In principle, the same event can give rise to the experience of fear or anxiety, depending on how the event is construed.

Although not relevant to the aim of the current study, it is worth noting that the relationship between emotion and construal level is bidirectional and recursive (e.g. see Agerström et al., 2012; Moran et al., 2021). That is, construal level can be either a cause or consequence of an emotional experience. For example, the more anxiety one feels, the more abstractly one might construe a negative event, and the more abstractly one construes a negative event, the more anxiety one might feel. This is also consistent with appraisal theories of emotion which treat the relationship between appraisals and emotion as recursive, each making the other more likely. Thus, the direction of this relationship is irrelevant. Rather, our goal is to test the idea that a discrete set of cognitive dimensions differentiates the emotional experience of fear and anxiety (see review by Ellsworth & Scherer, 2003).

Furthermore, psychologically distant threats raise distinct epistemic and regulatory challenges that require flexible solutions. In contrast to an immediate threat, a distant threat requires a strategy that can handle the different ways an event might unfold. The more distant a threat, the more variability people must deal with. Trope et al. (2021) recently introduced the regulatory scope framework, an extension of construal level theory, in which they propose that emotions are mental tools that deal with these challenges by expanding (vs contracting) scope. Trope et al. (2021) define scope as “the span of possibilities that one attempts to address in goal-directed behaviour” and further explain that “as scope

expands, people orient to an increasingly broader range of ends across time, places, people, and counterfactual alternatives” (p. 206).

Low-level emotions like fear are believed to contract scope to deal with the immediate needs of the here and now. In contrast, high-level emotions like anxiety are thought to expand scope to address the challenges of distant and ambiguous threats (Trope et al., 2021). Trope and colleagues (2020) explain that “fear [...] may focus us on immediate danger, whereas anxiety may motivate us more expansively to include avoidance of spatiotemporally remote, unlikely, and imaginary threats.” (p. 213). For instance, a person who is anxious about rising levels of unemployment might be considering outcomes in the distant future and how the threat might affect not only themselves but other people too. In contrast, a person who experiences fear when suddenly seeing a snake will consider how the threat may harm them in the here and now. Indeed, emotions are action dispositions that evolved to solve unique problems (Forgas, 2001; Scherer, 1982; Smith & Lazarus, 1990).

A few studies support the hypothesis that anxiety increases abstraction and scope. Of particular relevance to our current investigation is a study by Doré et al. (2015) that showed that the further away Tweeters were from a tragic event temporally and physically, the greater their use of anxiety-related words. In contrast, the use of sadness-related words decreased at greater distances. In a follow-up experiment, the authors showed that thinking about the abstract causes of the event increased anxiety. However, the study did not compare fear and anxiety.

High-level emotions, by their very nature, necessitate taking a distant perspective. Thus, adopting a distant and abstract perspective may even intensify high-level emotions. For instance, in a series of experiments, Bornstein et al. (2020) used an autobiographical recall task to manipulate emotions like fear and shame and instructed participants to recall and describe the event from a concrete or abstract perspective. Their study demonstrated that abstract processing decreased the intensity of fear but increased the intensity of self-conscious emotions like guilt and shame. However, their study did not include anxiety, as it focused on distinguishing between basic and self-conscious emotions.

These findings suggest that while distance and abstraction might reduce the intensity of fear, they may intensify anxiety. To our knowledge, no study

has directly compared the fear and anxiety distinction from a construal level or regulatory scope lens.

Overview of studies

We used a multi-method approach and conducted two studies to test two hypotheses: 1) anxiety is more abstract than fear, and 2) anxiety involves a more expansive scope (i.e. consideration of more distal places, people, and events) than fear. Study 1 compared fear and anxiety in a between-subject autobiographical recall study. We measured abstraction using a self-report scale and by performing text analysis on participants' written responses in the recall task. In Study 2, we downloaded a large dataset from Twitter to examine whether anxiety-related tweets contained more abstract language and broader scope than fear-related tweets.

Transparency statement

Both studies were approved by the Norwegian Center for Research Data (<https://www.nsd.no/en>) and the ethical review board at BI Norwegian Business School. We report how we determined the sample size, all data exclusions, all manipulations, and all measures collected in this study (Simmons et al., 2012). Data, code, and materials are available on the Open Science Framework (OSF) repository (<https://osf.io/qxwsz/>).

Study 1

The study received approval from the Norwegian Center for Research Data (reference: 219753) and ethical approval from the ethical review board at BI Norwegian Business School (reference: 012a). Participants provided their consent to participate. The preregistration can be accessed at <https://osf.io/ch6ax>.

Methods

Participants

A total of 200 participants (98 males, 99 females, three other/prefer not to answer; $M_{\text{age}} = 40.26$, $SD_{\text{age}} = 14.14$) were recruited from Prolific. We prescreened participants such that we only included those who were native/fluent English speakers, resided in the UK, were above 18 years old, had an approval rate of at least 98%, and had completed at least 50

submissions. We also ensured an equal gender distribution in our sample.

Our sample size was set a priori at 200, which was determined by the availability of financial resources. A sensitivity analysis using GPower 3.1.9.4 (Faul et al., 2007) indicated that with a sample size of 200 participants, $\alpha = .05$, power of .80, and a one-tailed test, we could detect an effect size of $d = 0.35$ or higher. Thus, our study should be able to capture effects observed in construal level studies that have used similar designs and measures (e.g. Grinfeld et al., 2021).

As per our preregistration, we excluded participants who spent < 2 min on the study, indicated low English proficiency (< 5 on a 7-point Likert scale), reported not being serious about filling in the survey (< 4 on a 5-point Likert scale), failed an attention check (did not type "213" in a text box), and those who did not follow the instructions in the autobiographical recall task. This left us with a final sample of 187 participants after exclusions (fear condition: $N_{\text{full sample}} = 105$, $N_{\text{excluded sample}} = 94$; anxiety condition: $N_{\text{full sample}} = 95$, $N_{\text{excluded sample}} = 93$).

Design and procedure

We used the Qualtrics™ platform to design and distribute the study to participants. The study employed a two-condition between-subjects design. After the consent form, participants were randomly assigned to recall and describe either a fear-related or anxiety-related event. Next, participants saw the description of the threat that they wrote about ("*Some final questions about your description of the event. Here is your description [participant's input]:*") and completed measures of abstraction and psychological distance. Finally, they completed manipulation checks, demographic questions (age and gender), an attention check, and a few funnelling questions. The Qualtrics file is available on the study's OSF page.

Manipulation of fear and anxiety

We adapted an autobiographical recall task from Bornstein et al. (2020) to induce fear and anxiety. The instructions were as follows:

Although most of the time people feel safe, sometimes they may experience fear [**anxiety**]. People experience fear [**anxiety**] when they are exposed to a threat that is clear and visible [**unclear and not visible**]. For example, you might be fearful [**anxious**] when you see a physical injury or encounter a dangerous animal [**about an exam, an uncertain event like the pandemic, or financial issues**]. Take a few moments to

recall a threat within the past six months that made you experience intense fear [**anxiety**]. Please note, it is important that you try your best to focus on a situation that made you feel fear [**anxiety**] and not other emotions. Once you have identified a specific event that made you very fearful [**anxious**], please describe the event in the text box below.

We provided participants with descriptions of fear and anxiety (i.e. “unclear/clear and visible/not visible”) as one might expect people to conflate them and use them interchangeably. Bornstein and colleagues (2020) isolated fear from anxiety by instructing participants to think of an event in which they experienced an “immediate danger and not in response to something that might happen in the future.” We found these wordings less suitable for our proposed test between fear and anxiety, particularly given our measure of psychological distance, which specifically asks about the physical distance, temporal distance, and hypotheticality of the recalled threat. We modified these wordings to reduce their potential effects on the dependent variables.

Measures

Perceived abstraction of threat. Participants rated their perceived abstractness of the recalled threat on a 9-point item (1 = Very concrete, 9 = Very abstract), which we adapted from Kahn et al. (2021):

We would like to ask you some questions about your description of the threat. The following question refers to the degree to which you experienced the threat that you wrote about as concrete or abstract. Concrete threats are defined as specific and tangible threats, whereas abstract threats are general and ambiguous. For example, “Bear attack in Sherwood Forest” is more concrete than “Attack by an animal”. Likewise, “major earthquake in Japan” is more concrete than “natural disaster”. Please note that we are not asking whether the threat was “real”, but rather to what extent your personal experience of the threat was one of a concrete threat (specific and tangible) or of an abstract threat (general and ambiguous).

As an additional test of abstraction, we analyzed participants’ use of abstract language during the autobiographical recall task. We used a concreteness dictionary developed by Brysbaert et al. (2014) to match words in participants’ written responses against words in the dictionary. The dictionary contains 40,000 commonly used English words rated by crowd-sourced workers on a 1 (abstract) to 5 (concrete) scale. The Brysbaert concreteness index for a response is the average concreteness score of words

in the written response from the autobiographical recall task. A higher Brysbaert concreteness index indicates more concrete language, whereas a lower Brysbaert concreteness index indicates more abstract language.

We expected a lower Brysbaert concreteness index score in the anxiety condition compared to the fear condition (i.e. less concrete language in the anxiety condition). We cleaned the code before computing the Brysbaert concreteness index. This included lower-casing the text, converting numbers to words, and removing punctuation and HTML links. Our analysis was based on code used in a study by Grinfeld et al. (2021), originally developed by Yeomans (2021). The Brysbaert concreteness index has been previously used in research examining language abstractness (e.g. Bhatia & Walasek, 2016; Joshi et al., 2020; Sneffjella & Kuperman, 2015; Yin et al., 2022). Algorithmic measures provide more reproducible and reliable results than human annotation (Yeomans, 2021).

*Perceived distance of threat.*¹ Since abstraction and psychological distance are positively correlated (Trope & Liberman, 2010), we also wanted to examine any potential differences in perceived distance from the recalled threat. We measured self-reported distance from the recalled threat using four items on a 7-point Likert scale (temporal distance: “How distant or close in time did the threat appear to you at the time of the event that you wrote about?”; social distance: “The threat may have caused you to think about yourself and/or other people. How socially close or distant did they appear to you at the time of the event that you wrote about?”; physical distance: “How far away from your location did the threat appear to you at the time of the event that you wrote about?”; hypotheticality: “How likely versus unlikely did the threat appear to you at the time of the event that you wrote about? In other words, did it feel like the threat was very likely to happen or very unlikely to happen?”).

Exploratory measures. We also preregistered the inclusion of self-reported fear and anxiety to explore whether the emotion groups would differ with respect to self-reported fear and anxiety. We included three items for fear ($\alpha = .94$) (“fearful”, “terrified”, “scared”) and three items for anxiety ($\alpha = .87$) (“worried”, “anxious”, “nervous”). Items were answered on a 7-point Likert scale (1 = Not at all, 7 = Very much). Self-reported fear was significantly higher in the fear group ($M = 5.84$) compared to the

anxiety group ($M = 4.31$), $t(185) = 7.40$, $p < .001$ (two-tailed), $d = -1.09$, 95% CI $[-0.78, -1.39]$. There was no significant difference in self-reported anxiety between the two groups ($M_{\text{fear condition}} = 5.89$, $M_{\text{anxiety condition}} = 5.92$), $t(185) = -0.18$, $p = .859$ (two-tailed), $d = 0.03$, 95% CI $[-0.26, 0.31]$.

In addition, we included recall ability as an exploratory check. Participants rated the item “To what extent were you able to recall the emotional experience that you wrote about?” on a 7-point Likert scale (1 = Not at all, 7 = Very much). There was no significant difference in recall ability between the two groups, $t(185) = 0.39$, $p = .699$ (two-tailed), $d = -0.06$, 95% CI $[-0.34, 0.23]$

Results

Hypothesis testing

To increase power, we tested our preregistered directional hypotheses using one-sided significance tests (Cho & Abe, 2013; Lakens, 2022). Accordingly, we report one-tailed p -values and 90% confidence intervals for these tests. For all other tests, we report two-sided p -values. A summary of the key dependent variables (perceived abstractness and distance of threat) in each condition is illustrated in Figure 1 and Figure 2. The results from the hypothesis testing are summarised in Table 1.

Abstraction. Self-reported abstraction was higher in the anxiety group ($M = 3.86$) than in the fear group ($M = 3.13$), $t(185) = -2.24$, $p = .013$ (one-tailed), $d = 0.33$, 90% CI $[0.09, 0.57]$. Similarly, the Brysbaert concreteness index was lower in the anxiety group ($M = 2.48$)

compared to the fear group ($M = 2.67$), $t(185) = 7.53$, $p < .001$ (one-tailed), $d = -1.11$, 90% CI $[-1.36, -0.85]$.

Psychological distance of threat. The emotion groups differed significantly in perceived physical distance and hypotheticality of the threat. Physical distance was higher in the anxiety group ($M = 2.26$) than in the fear group ($M = 1.67$), $t(185) = 2.72$, $p = .003$ (one-tailed), $d = 0.40$, 90% CI $[0.16, 0.64]$. Likewise, hypotheticality was higher in the anxiety group ($M = 2.82$) than in the fear group ($M = 2.45$), $t(185) = 1.71$, $p = .045$ (one-tailed), $d = 0.25$, 90% CI $[0.01, 0.49]$. No significant differences were found for temporal and social distance, although they were in the predicted direction.

Correlations. Next, we ran an exploratory correlation analysis to examine correlations among all the key variables (see Table 2).² All four dimensions of self-reported psychological distance correlated positively with each other, supporting construal level theory which states that these four dimensions are interrelated. Importantly, self-reported abstraction correlated negatively with the Brysbaert concreteness index ($r = -.18$, $p = .011$ (two-tailed)), providing evidence of convergent validity.

Self-reported abstraction correlated positively with self-reported temporal distance ($r = .16$, $p = .032$ (two-tailed)) and self-reported hypotheticality of recalled threat ($r = .30$, $p < .001$ (two-tailed)), suggesting that those who reported higher levels of mental abstraction also construed the threat as more hypothetical and temporally distant.

Discussion

Taken together, the results from Study 1 support the hypothesis that anxiety is more abstract than fear. These findings are in line with construal level theory (Trope et al., 2021; Trope & Liberman, 2010). First, participants in the anxiety group reported greater abstraction. In addition, written responses in the anxiety group contained significantly lower linguistic concreteness. Moreover, self-reported abstraction was negatively correlated with linguistic concreteness, providing evidence of convergent validity.

Fear and anxiety differed significantly in self-reported physical distance and hypotheticality, with the largest difference in physical distance. Fear and anxiety did not differ significantly on the other dimensions of self-reported distance, although the results were generally in the predicted direction.

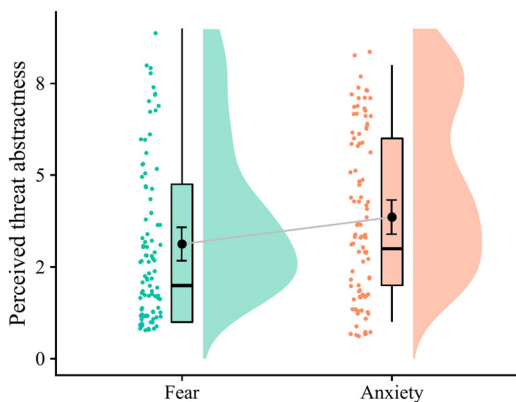


Figure 1. Raincloud plots illustrating threat abstractness in each condition (Study 1). Coloured fields display the distribution of responses. Boxplots display the median, first, and third quartiles. Black circles denote mean values. Error bars denote 90% confidence intervals.

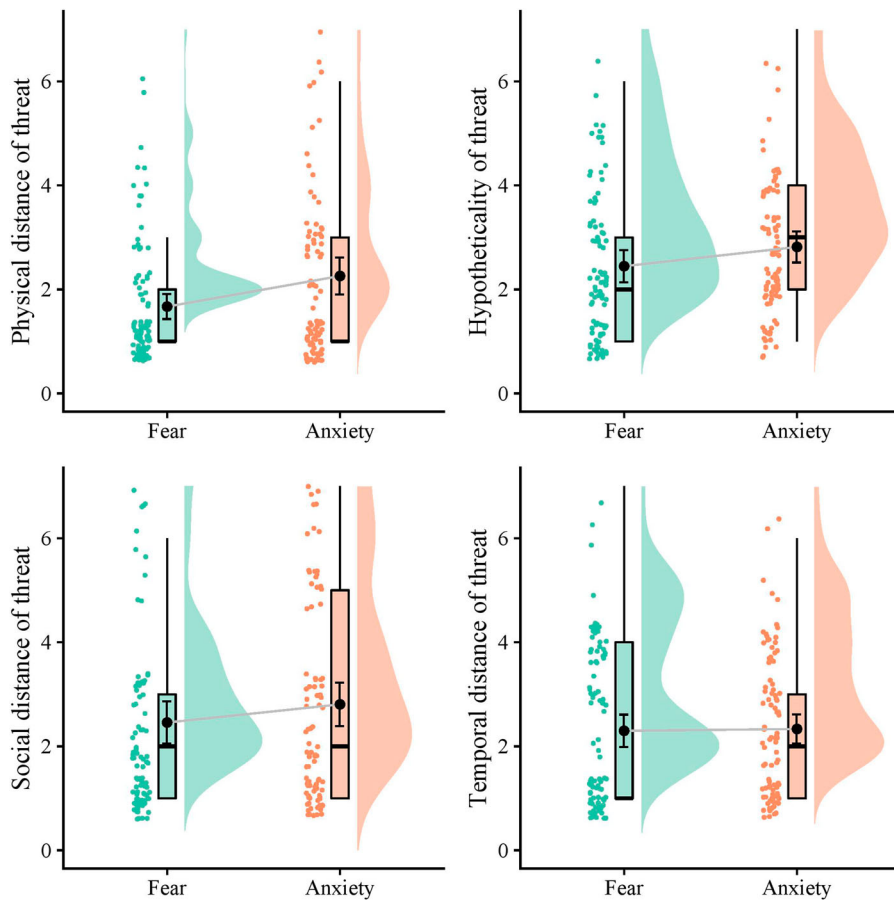


Figure 2. Raincloud plots illustrating perceived distance from threat in each condition (Study 1). Coloured fields display the distribution of responses. Boxplots display the median, first, and third quartiles. Black circles denote mean values. Error bars denote 90% confidence intervals.

Finally, while we found a significant difference in self-reported fear between the two groups, there was no significant difference in self-reported anxiety. Participants may have found it more difficult to distinguish between their experiences of anxiety. One reason might be that anxiety is more abstract and diffuse than fear, which is more robust to contextual variability.

A key limitation of the autobiographical recall task is that it included descriptions of fear and anxiety that may have influenced participants' responses. Specifically, participants in the anxiety condition may have reported greater abstraction because the description specified anxiety as a response to an unclear and uncertain threat. Thus, our hypotheses need to be tested using an alternative method that can account for such threats to validity. In the next study, we examine whether the findings from Study 1 generalise to a natural setting with fewer constraints.

Furthermore, we aimed to extend Study 1 by comparing fear and anxiety with respect to scope.

Study 2

We downloaded data from Twitter using the Twitter Academic API to test whether anxiety-related tweets involve language that is more abstract and more expansive in scope compared to fear-related tweets. Twitter data has been used previously in construal level studies (e.g. Bhatia & Walasek, 2016; Doré et al., 2015; Lent et al., 2017; Snefjella & Kuperman, 2015; Yin et al., 2022).

Using the *academictwitter* R package (Barrie & Ho, 2021), we requested 200,000 tweets–100,000 tweets for those containing fear-related phrases and 100,000 tweets for those containing anxiety-related words. For fear, we obtained tweets that included any of the following phrases: “I was scared”, “I felt

Table 1. Summary of independent sample t-tests (Study 1).

DV	<i>t</i>	<i>df</i>	<i>p</i>	<i>M</i> _{fear} (<i>SD</i>)	<i>M</i> _{anxiety} (<i>SD</i>)	<i>d</i>	90% CI
BCI	7.53	185	< .001	2.67 (0.18)	2.48 (0.17)	−1.11	−1.36, −0.85
Abstract	−2.24	185	.013	3.13 (2.23)	3.86 (2.23)	0.33	0.09, 0.57
Temporal	−0.17	185	.433	2.30 (1.52)	2.33 (1.36)	0.02	−0.22, 0.27
Social	−1.19	185	.118	2.46 (1.98)	2.81 (2.04)	0.17	−0.07, 0.42
Physical	−2.72	185	.003	1.67 (1.18)	2.26 (1.73)	0.40	0.16, 0.64
Hypothetical	−1.71	185	.045	2.45 (1.51)	2.82 (1.45)	0.25	0.01, 0.49

Note. BCI = Brysbaert Concreteness Index (a higher score indicates more concrete language, a lower score indicates abstract language). Abstract = perceived threat abstractness, Temporal = temporal distance of threat, Social = social distance of threat, Physical = physical distance of threat, Hypothetical = hypotheticality of threat. ...

scared”, “I feel scared”, “I am scared”, “I was afraid”, “I felt afraid”, “I feel afraid”, “I am afraid”, “I feel fear”, “I feel fearful”, “I felt fearful”, “I felt fear”. For anxiety, we obtained tweets that included any of the following phrases: “I was worried”, “I felt worried”, “I feel worried”, “I am worried”, “I was anxious”, “I felt anxious”, “I feel anxious”, “I feel anxiety”, “I am anxious”, “I am apprehensive”, “I feel apprehensive”, “I felt apprehensive”, “I felt apprehension”. We coded fear-related tweets as “0” and anxiety-related tweets as “1”. We excluded tweets that had both fear-related and anxiety-related phrases. Tweets were posted between July 28nd 2022 and October 1st 2022.

Following Study 1, we calculated the Brysbaert concreteness index. For this study, we calculated concreteness using R code from Johnson-Grey et al. (2020) that has been used in previous Twitter-based studies (e.g. Yin et al., 2022). Following Yin et al. (2022), we only included tweets that contained words from the Brysbaert et al. (2014) dictionary, resulting in a total of 143,362 tweets.

Next, we used the Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2015) software to calculate word categories related to scope. Specifically, we obtained the percentage of singular first-person pronouns (“I”), plural first-person pronouns (“we”),

third-person pronouns (“they”), and future-focused words. These categories served as proxies of social and temporal scope.

Consistent with previous Twitter-based studies (e.g. Hipson et al., 2021; Ghosh et al., 2018), we excluded retweets, duplicate tweets, and tweets with fewer than three words. The final dataset contained 104,949 tweets ($N_{fear\ tweets} = 47,571$, $N_{anxiety\ tweets} = 57,378$). Data and code are available on the OSF repository (<https://osf.io/qxwsz/>). The study was approved by the Norwegian Center for Research Data (reference number: 703328) and the ethical review board at BI Norwegian Business School (reference: 012b). We did not preregister this study and thus treat this as an exploratory study. Accordingly, we report two-sided *p*-values and confidence intervals.

Results

We ran five independent samples *t*-tests that varied with respect to the dependent variable (“I” pronouns, “We” pronouns, “They” pronouns, and Future-focused words). We entered the emotion variable (fear = 0, anxiety = 1) as the independent variable. As this was a large dataset, *p*-values are not very informative. We therefore focus on the effect sizes.

Table 2. Means, standard deviations, and correlations (Study 1).

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Emotion	0.50	0.50	–						
2. BCI	2.55	0.21	−.48**						
3. Abstract	3.49	2.26	.16*	−.18*					
4. Temporal	2.32	1.44	.01	−.09	.16*				
5. Social	2.63	2.01	.09	−.07	.13	.18*			
6. Physical	1.96	1.50	.20**	−.15*	−.05	.24**	.25**		
7. Hypothetical	2.63	1.49	.12*	−.09	.30**	.20**	.30**	.21**	–

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. * $p < .05$. ** $p < .01$. Emotion (0 = Fear, 1 = Anxiety), BCI = Brysbaert Concreteness Index, Abstract = perceived threat abstractness, Temporal = temporal distance of threat, Social = social distance of threat, Physical = physical distance of threat, Hypothetical = hypotheticality of threat. One-tailed *p*-values are shown for the preregistered hypotheses (all correlations under the first column).

The Brysbaert concreteness index was lower in anxiety tweets ($M = 2.59$) compared to fear tweets ($M = 2.51$), $t(104947) = 63.40$, $p < .001$ (two-tailed), $d = -0.39$, 95% CI $[-0.41, -0.38]$.

Furthermore, anxiety tweets were more expansive in their scope. Anxiety tweets contained a lower percentage of singular first-person pronouns ($t(104947) = 61.70$, $p < .001$ (two-tailed), $d = -0.38$, 95% CI $[-0.39, -0.37]$), a higher percentage of plural first-person pronouns ($t(104947) = -11.80$, $p < .001$ (two-tailed), $d = 0.07$, 95% CI $[0.06, 0.09]$), a higher percentage of third-person pronouns ($t(104947) = -13.20$, $p < .001$ (two-tailed), $d = 0.08$, 95% CI $[0.07, 0.09]$), and a higher percentage of future-focused words ($t(104947) = -4.03$, $p < .001$ (two-tailed), $d = 0.03$, 95% CI $[0.01, 0.04]$). The results are summarised in [Table 3](#). Taken together, anxiety-related tweets (vs fear-related tweets) were most strongly associated with concreteness and first-person pronoun usage. The other associations were very small and in one case close to zero.

Finally, we examined the correlations between the key variables. Consistent with construal level theory and regulatory scope theory, the Brysbaert concreteness index correlated positively with singular first-person pronouns ($r = .35$, $p < .001$), negatively with plural first-person pronouns ($r = -.03$, $p < .001$), negatively with third-person pronouns ($r = -0.04$, $p < .001$), and negatively with future-oriented words ($r = -0.04$, $p < .001$). Nevertheless, with the exception of the correlation between the Brysbaert concreteness index and singular first-person pronouns, these correlations are very small.

Discussion

Study 2 supported our hypothesised difference between fear and anxiety in construal level and scope. In a large dataset from Twitter, we found that the language in anxiety-related tweets was more abstract and broader in social scope. Anxiety-related (vs fear-related) tweets predicted greater linguistic concreteness and lower usage of singular first-person pronouns. The associations with the remaining social scope measures were very small, and the association with temporal scope was close to zero. Taken together, these results suggest that people who describe anxiety-related experiences in daily language transcend their own direct and immediate experience to a greater degree than those who describe fear-related experiences.

General discussion

Although both fear and anxiety are negative, intense, and concern the threat of harm, they may involve different cognitive and behavioural tendencies. Construal level theory proposes that emotions can be distinguished based on their underlying level of construal. High-level emotions involve abstract mental representations that include schematic and decontextualised information. Low-level emotions involve concrete mental representations that include detailed and context-specific information. Based on construal level theory (Trope & Liberman, 2010), we conceptualised anxiety as a high-level emotion because it involves an abstract construal of a threat, and fear as a low-level emotion because it involves a concrete construal of a threat.

A recent extension to construal level theory, the regulatory scope theory (Trope et al., 2021), proposes that emotions also serve as tools that either contract or expand scope to deal with different challenges. Due to their higher construal level, high-level emotions expand scope to consider more distant places, events, and people. Based on the regulatory scope theory, we hypothesised that anxiety (vs fear) would be associated with a more expansive scope. For instance, in contrast to fear, anxiety might involve the consideration of how a contagious virus will impact not only oneself but also other people.

We tested our hypotheses using a multi-method approach. First, we conducted an autobiographical recall study on fear and anxiety-related situations. Next, we obtained a large dataset from Twitter to examine whether tweets that contain anxiety-related phrases (vs fear-related phrases) are more abstract and more expansive in scope.

In Study 1, we found that participants who recalled an anxiety-eliciting event reported greater abstraction of the threat and greater psychological distance from the threat. The findings with respect to abstraction were consistent across self-reported and linguistic measures. We found mixed evidence on the measures of psychological distance from the recalled threat. Anxiety (vs fear) was significantly related to perceived physical distance and hypotheticality, but not social nor temporal distance.

Study 2 extended the findings from Study 1 by showing that anxiety-related phrases predicted greater abstraction and social scope in natural language.

Table 3. Summary of independent sample t-tests (Study 2).

DV	<i>t</i>	<i>Df</i>	<i>p</i>	<i>M</i> _{fear} (<i>SD</i>)	<i>M</i> _{anxiety} (<i>SD</i>)	<i>d</i>	95% CI
BCI	63.40	104947	< .001	2.59 (0.22)	2.51 (0.21)	−0.39	−0.41, −0.38
I	61.70	104947	< .001	14.5 (7.58)	11.70 (6.98)	−0.38	−0.39, −0.37
We	−11.80	104947	< .001	0.38 (1.62)	0.50 (1.82)	0.07	0.06, 0.09
They	−13.20	104947	< .001	0.59 (2.00)	0.76 (2.27)	0.08	0.07, 0.09
Future	−4.03	104947	< .001	1.60 (3.56)	1.68 (3.56)	0.03	0.01, 0.04

Note. BCI = Brysbaert Concreteness Index (a higher score indicates more concrete language, a lower score indicates abstract language), I = percentage of singular first-person pronouns “I”, We = percentage of plural first-person pronouns “we”, They = percentage of third-person pronouns “they”, Future = percentage of future-oriented words.

It is worth noting that the goal of our study was not to examine whether construal level is a cause or consequence of emotion but simply to examine whether fear and anxiety differ with respect to construal level and scope.

Theoretical and practical implications

Our findings present several implications for research. The distinction between fear and anxiety has been discussed at length among emotion scholars and is still under debate (Daniel-Watanabe & Fletcher, 2021; Davis et al., 2010; LeDoux & Pine, 2016; Lippold et al., 2020; Perkins et al., 2007; Perusini & Fanselow, 2015; Talisman & Rohrbeck, 2022). However, their differences have not been tested from a social-cognitive perspective.

Drawing on construal level theory (Trope & Liberman, 2010) and regulatory scope theory (Trope et al., 2021), we show how they can be meaningfully distinguished. This supports discrete emotions theory, which proposes that even emotions of similar valence and arousal may have unique cognitive and behavioural correlates. The present findings advance the discussion on the distinction between fear and anxiety, as it would appear that the differences between fear and anxiety stand out more or less clearly depending on which perspective one takes. Our study provides evidence that the social-cognitive perspective is one where their differences are more evident than from, for instance, a biological perspective (c.f. the review by Daniel-Watanabe & Fletcher, 2021).

Although a few studies have examined anxiety and fear from a construal level lens, they have only examined them separately, without direct comparison. For instance, Doré et al. (2015) found that tweets about a mass school shooting in the US contained more anxiety-related words the further away tweeters were from the event spatially and temporally. In a follow-up experiment, the authors found that

thinking about the event’s abstract causes (vs concrete details) increased anxiety. Similarly, Bornstein et al. (2020) examined how concrete vs abstract processing influences the intensity of low-level and high-level emotions. In one of their experiments, they examined fear using a similar autobiographical recall task as the one used in our first study. Concrete processing increased the intensity of fear, in line with the conceptualisation of fear as a concrete emotion (Trope et al., 2021; Trope & Liberman, 2010).

However, these studies did not compare fear and anxiety. In addition, only the study by Bornstein et al. (2020) measured construal level, and none of them examined scope. Using both self-report scales and text analysis, we demonstrate that fear and anxiety differ with respect to construal level and scope.

The positive relationship between anxiety and abstraction has implications for research on self-distancing (see reviews by Kross & Ayduk, 2017 and Powers & LaBar, 2019)—a tactic of emotion regulation that has been associated with various benefits. Distancing and abstraction regulate emotions by shifting focus away from the idiosyncratic details of the here and now that usually give rise to unwanted emotional responses. For instance, one might downregulate the fear of flying by thinking more objectively about the causes of the fear (“why am I feeling this way” as opposed to “how am I feeling?”), or by adopting the perspective of a socially distant person. An important question raised by our results is whether self-distancing is less effective in regulating anxiety than fear.

Self-distancing might indeed downregulate the intensity of fear by enabling people to abstract away from the concrete details of a threat in the here and now. However, it might be less effective in the downregulation of anxiety because anxiety itself is a response to an abstract threat. In some cases, the downregulation of anxiety may even require guiding people’s attention to the concrete aspects of the here and now. Future research should test whether self-distancing (vs self-

immersion) affects fear and anxiety differently. Indeed, consistent with construal level theory, studies suggest that distancing and abstraction are less effective in downregulating high-level emotions (see meta-analysis by Moran & Eyal, 2022).

Limitations

Our study has several limitations. First, in Study 1, we manipulated fear and anxiety using an autobiographical recall task. Recollections may be influenced by one's interpretation of fear and anxiety and may also be influenced by one's current emotional state. Furthermore, to ensure that participants would not conflate fear and anxiety, we provided them with brief descriptions, which some participants may have relied on too heavily. However, we found little evidence for this when going through participants' responses.

This is expected since we instructed participants to recall and describe a fear or anxiety-eliciting event, not an event that was clear and visible/unclear and not visible. Nevertheless, we hope to see future studies replicate our findings using other methods, for instance, by exposing participants to fear-evoking vs anxiety-evoking film clips (e.g. a clip showing a snake attack in the fear condition vs a clip showing ongoing climate change).

Second, we assessed participants' emotions only after the autobiographical recall task. A baseline assessment of emotion and/or a control condition would be useful in future research.

Third, while we found support for our hypotheses using a natural language corpus from Twitter, a useful direction for future studies would be to test whether these findings hold in other social media platforms. Although construal level studies that have relied on natural text corpora seem to find consistent results across platforms (e.g. Bhatia & Walasek, 2016; Yin et al., 2022), we hesitate to generalise our findings to other settings.

Summary and conclusions

Our findings indicate that fear and anxiety differ with respect to abstraction and scope. Anxiety involved a higher level of abstraction and a more expansive scope than fear, suggesting that anxiety transcends immediate experiences to a greater degree than fear. These findings contribute to a small but growing line of research on emotions and construal level and an ongoing debate concerning the distinction between

fear and anxiety. Construal level theory and regulatory scope theory offer new ways of understanding these emotions from a social-cognitive perspective.

Emotions are central to our understanding of human behaviour. They serve as tools that deal with different challenges. While fear is a concrete emotion that deals with immediate threats in the here and now, anxiety is an abstract emotion that deals with distant and unknown threats that require more expansive and flexible solutions.

Notes

1. As an exploratory analysis, we used the Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2015) software to calculate words related to scope. Specifically, we obtained the percentage of I-pronouns, they-pronouns, and future-focused words, serving as proxies of social and temporal scope. Fear and anxiety only differed in temporal scope. LIWC might not be well-suited for smaller datasets (as in the current study), as they are more likely to contain a small percentage of participants who use words that make up the LIWC categories of interest.
2. For an overview of correlations among all variables, see Table S1 in the supplementary file: <https://osf.io/qxwsw/>

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References

- Agerström, J., Björklund, F., & Carlsson, R. (2012). Emotions in time: Moral emotions appear more intense with temporal distance. *Social Cognition*, 30(2), 181–198. <https://doi.org/10.1521/soco.2012.30.2.181>
- Barlow, D. H. (2000). Unraveling the mysteries of anxiety and its disorders from the perspective of emotion theory. *American*

- Psychologist*, 55(11), 1247–1263. <https://doi.org/10.1037/0003-066X.55.11.1247>
- Barrie, C., & Ho, J. C. (2021). Academictwitter: An R package to access the Twitter academic research product track v2 API endpoint. *Journal of Open Source Software*, 6(62), 3272. <https://doi.org/10.21105/joss.03272>
- Bhatia, S., & Walasek, L. (2016). Event construal and temporal distance in natural language. *Cognition*, 152, 1–8. <https://doi.org/10.1016/j.cognition.2016.03.011>
- Bornstein, O., Katzir, M., Simchon, A., & Eyal, T. (2020). Differential effects of abstract and concrete processing on the reactivity of basic and self-conscious emotions. *Cognition and Emotion*, 35, 1–14. <https://doi.org/10.1080/02699931.2020.1848804>
- Brysbaert, M., Warriner, A. B., & Kuperman, V. (2014). Concreteness ratings for 40 thousand generally known English word lemmas. *Behavior Research Methods*, 46(3), 904–911. <https://doi.org/10.3758/s13428-013-0403-5>
- Cho, H.-C., & Abe, S. (2013). Is two-tailed testing for directional research hypotheses tests legitimate? *Journal of Business Research*, 66(9), 1261–1266. <https://doi.org/10.1016/j.jbusres.2012.02.023>
- Cloninger, C. R. (1987). A systematic method for clinical description and classification of personality variants: A proposal. *Archives of General Psychiatry*, 44(6), 573–588. <https://doi.org/10.1001/archpsyc.1987.01800180093014>
- Corr, P. J. (2008). Reinforcement sensitivity theory (RST): introduction. In *The reinforcement sensitivity theory of personality* (pp. 1–43). Cambridge University Press. <https://doi.org/10.1017/CBO9780511819384.002>
- Daniel-Watanabe, L., & Fletcher, P. C. (2021). Are fear and anxiety truly distinct? *Biological Psychiatry Global Open Science*, 2, 341–349. Advance online publication, <https://doi.org/10.1016/j.bpsgos.2021.09.006>
- Davis, M., Walker, D. L., Miles, L., & Grillon, C. (2010). Phasic vs sustained fear in rats and humans: Role of the extended amygdala in fear vs anxiety. *Neuropsychopharmacology*, 35(1), 105–135. <https://doi.org/10.1038/npp.2009.109>
- Doré, B., Ort, L., Braverman, O., & Ochsner, K. N. (2015). Sadness shifts to anxiety over time and distance from the national tragedy in Newtown, Connecticut. *Psychological Science*, 26(4), 363–373. <https://doi.org/10.1177/0956797614562218>
- Ekman, P. (1992). Are there basic emotions? *Psychological Review*, 99(3), 550–553. <https://doi.org/10.1037/0033-295X.99.3.550>
- Ellsworth, P. C., & Scherer, K. R. (2003). Appraisal processes in emotion. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 572–595). Oxford University Press.
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175–191. <https://doi.org/10.3758/BF03193146>
- Forgas, J. P. (2001). *Feeling and thinking: The role of affect in social cognition*. Cambridge University Press.
- Ghosh, D., Fabbri, A. R., & Muresan, S. (2018). Sarcasm analysis using conversation context. *Computational Linguistics*, 44(4), 755–792. https://doi.org/10.1162/coli_a_00336
- Grinfeld, G., Wakslak, C. J., Trope, Y., & Liberman, N. (2021). *Hypotheticality and level of construal*. PsyArXiv. <https://doi.org/10.31234/osf.io/yvafk>
- Hipson, W. E., Kiritchenko, S., Mohammad, S. M., & Coplan, R. J. (2021). Examining the language of solitude versus loneliness in tweets. *Journal of Social and Personal Relationships*, 38(5), 1596–1610. <https://doi.org/10.1177/0265407521998460>
- Izard, C. E. (1992). Basic emotions, relations among emotions, and emotion-cognition relations. *Psychological Review*, 99(3), 561–565. <https://doi.org/10.1037/0033-295X.99.3.561>
- Izard, C. E., & Tomkins, S. S. (1966). Affect and behavior: Anxiety as a negative affect. In C. D. Spielberger (Ed.), *Anxiety and behavior* (pp. 81–125). Academic Press.
- Johnson-Grey, K. M., Boghrati, R., Wakslak, C. J., & Dehghani, M. (2020). Measuring abstract mind-sets through syntax: Automating the linguistic category model. *Social Psychological and Personality Science*, 11(2), 217–225. <https://doi.org/10.1177/1948550619848004>
- Joshi, P. D., Wakslak, C. J., Appel, G., & Huang, L. (2020). Gender differences in communicative abstraction. *Journal of Personality and Social Psychology*, 118(3), 417–435. <https://doi.org/10.1037/pspa0000177>
- Kahn, D. T., Björklund, F., & Hirschberger, G. (2021). Why are our political rivals so blind to the problems facing society? Evidence that political leftists and rightists in Israel mentally construe collective threats differently. *Peace and Conflict: Journal of Peace Psychology*, 27(3), 426–435. <https://doi.org/10.1037/pac0000567>
- Kross, E., & Ayduk, Ö. (2017). Self-distancing. In *Advances in experimental social psychology* (Vol. 55, pp. 81–136). Elsevier. <https://doi.org/10.1016/bs.aesp.2016.10.002>
- Lakens, D. (2022). Sample size justification. *Collabra: Psychology*, 8(1), 33267. <https://doi.org/10.1525/collabra.33267>
- LeDoux, J. E., & Pine, D. S. (2016). Using neuroscience to help understand fear and anxiety: A two-system framework. *American Journal of Psychiatry*, 173(11), 1083–1093. <https://doi.org/10.1176/appi.ajp.2016.16030353>
- Lee, D., & Fujita, K. (2022). From whom do people seek what type of support? A regulatory scope perspective. *Journal of Personality and Social Psychology*, Advance online publication, <https://doi.org/10.1037/pspi0000405>
- Lent, L. G. van, Sungur, H., Kunneman, F. A., Velde, B. van de, & Das, E. (2017). Too far to care? Measuring public attention and fear for ebola using twitter. *Journal of Medical Internet Research*, 19(6), e7219. <https://doi.org/10.2196/jmir.7219>
- Lippold, J. V., Ettinger, U., Hurlmann, R., Corr, P. J., Reuter, M., & Perkins, A. M. (2020). Differentiating anxiety from fear: An experimental–pharmacological approach. *Personality Neuroscience*, 3, e6. <https://doi.org/10.1017/pen.2020.1>
- McNaughton, N., & Gray, J. A. (2000). Anxiolytic action on the behavioural inhibition system implies multiple types of arousal contribute to anxiety. *Journal of Affective Disorders*, 61(3), 161–176. [https://doi.org/10.1016/S0165-0327\(00\)00344-X](https://doi.org/10.1016/S0165-0327(00)00344-X)
- Mineka, S., Watson, D., & Clark, L. A. (1998). Comorbidity of anxiety and unipolar mood disorders. *Annual Review of Psychology*, 49(1), 377–412. <https://doi.org/10.1146/annurev.psych.49.1.377>
- Mobbs, D., Adolphs, R., Fanselow, M. S., Barrett, L. F., LeDoux, J. E., Ressler, K., & Tye, K. M. (2019). Viewpoints: Approaches to defining and investigating fear. *Nature Neuroscience*, 22(8), 1205–1216. <https://doi.org/10.1038/s41593-019-0456-6>
- Moran, T., Bornstein, O., & Eyal, T. (2021). The level of construal involved in the elicitation of core versus moral disgust. *Emotion*, 21(2), 391–404. <https://doi.org/10.1037/emo0000709>

- Moran, T., & Eyal, T. (2022). Emotion regulation by psychological distance and level of abstraction: Two meta-analyses. *Personality and Social Psychology Review*, 26(2), 112–159. <https://doi.org/10.1177/10888683211069025>
- Murray, H. A. (1938). *Explorations in personality: A clinical and experimental study of fifty men of college age*. Oxford University Press.
- Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015). *The Development and Psychometric Properties of LIWC2015*. <https://repositories.lib.utexas.edu/handle/2152/31333>.
- Perkins, A. M., Kemp, S. E., & Corr, P. J. (2007). Fear and anxiety as separable emotions: An investigation of the revised reinforcement sensitivity theory of personality. *Emotion*, 7(2), 252–261. <https://doi.org/10.1037/1528-3542.7.2.252>
- Perusini, J. N., & Fanselow, M. S. (2015). Neurobehavioral perspectives on the distinction between fear and anxiety. *Learning & Memory*, 22(9), 417–425. <https://doi.org/10.1101/lm.039180.115>
- Powers, J. P., & LaBar, K. S. (2019). Regulating emotion through distancing: A taxonomy, neurocognitive model, and supporting meta-analysis. *Neuroscience & Biobehavioral Reviews*, 96, 155–173. <https://doi.org/10.1016/j.neubiorev.2018.04.023>
- Roseman, I. J. (1984). Cognitive determinants of emotion: A structural theory. In: *Review of Personality and Social Psychology* (Vol. 5, pp. 11–36). Beverly Hills, CA: SAGE Publications.
- Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology*, 39(6), 1161–1178. <https://doi.org/10.1037/h0077714>
- Schaffner, K. F. (2020). A comparison of two neurobiological models of fear and anxiety: A “construct validity” application? *Perspectives on Psychological Science*, 15(5), 1214–1227. <https://doi.org/10.1177/1745691620920860>
- Scherer, K. R. (1982). Emotion as a process: Function, origin and regulation. *Social Science Information*, 21(4–5), 555–570. <https://doi.org/10.1177/053901882021004004>
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2012). *A 21 Word Solution* (SSRN Scholarly Paper ID 2160588). Social Science Research Network. <https://doi.org/10.2139/ssrn.2160588>.
- Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, 48(4), 813–838. <https://doi.org/10.1037/0022-3514.48.4.813>
- Smith, C. A., & Lazarus, R. S. (1990). Emotion and adaptation. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 609–637). Guilford. <https://psycnet.apa.org/record/1990-98135-023>.
- Snefjella, B., & Kuperman, V. (2015). Concreteness and psychological distance in natural language use. *Psychological Science*, 26(9), 1449–1460. <https://doi.org/10.1177/0956797615591771>
- Talisman, N. W., & Rohrbeck, C. A. (2022). Anxiety and fear: Testing distinctions with theoretically-informed vignettes. *Personality and Individual Differences*, 194, 111640. <https://doi.org/10.1016/j.paid.2022.111640>
- Trope, Y., Ledgerwood, A., Liberman, N., & Fujita, K. (2021). Regulatory scope and its mental and social supports. *Perspectives on Psychological Science*, 16, 204–224. <https://doi.org/10.1177/1745691620950691>
- Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review*, 117(2), 440–463. <https://doi.org/10.1037/a0018963>
- Yeomans, M. (2021). A concrete example of construct construction in natural language. *Organizational Behavior and Human Decision Processes*, 162, 81–94. <https://doi.org/10.1016/j.obhdp.2020.10.008>
- Yin, Y., Wakslak, C. J., & Joshi, P. D. (2022). “I” am more concrete than “we”: Linguistic abstraction and first-person pronoun usage. *Journal of Personality and Social Psychology*, 122(6), 1004–1021. <https://doi.org/10.1037/pspa0000285>