Constructing Confidence:
The Role of Affect and Cognition in Decisions Under Radical Uncertainty

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Abstract

Confidence in one's decisions is key in making satisfactory decisions, especially under radical uncertainty where no normatively correct choice can be made. Low confidence can result in monetary losses for individuals (e.g. overtrading in the financial markets) or retailers (e.g. processing consumer returns). But how do people construct confidence in their decisions? Using Conviction Narrative Theory (CNT) as a framework, we ran two studies demonstrating the relationship between integral emotions, cognition and confidence. Consistent with CNT, we found that even in contexts which are not explicitly affective, such as financial investments, weak and strong arguments for a stock to rise are still interpreted affectively. Approach emotions (e.g. excitement) generate more confidence and make individuals perceive such arguments as stronger. Conversely, avoidance emotions (e.g. anxiety) reduce both confidence and perceived argument strength. Overall, cognition, operationalised as perceived argument strength, mediates the effects of emotion on confidence. This approach to decision-making is all the more rational under radical uncertainty, where there is no normatively correct answer based only on facts.

Keywords: Confidence, Radical Uncertainty, Emotions.

Introduction

Our decisions are influenced by our confidence. While the pitfalls of overconfidence are well documented (e.g. Barber & Odean, 2000; Griffin & Tversky, 1992; Koellinger & Treffers, 2015), confidence also serves an adaptive role in allowing us to reach a threshold required to make a decision when doing nothing is not a good option. For example, if Sarah is choosing between two investments for her pension, she will have to gather information about the investments themselves and relevant future events. Only once she reaches a sufficient level of confidence will she decide one way or the other.

Knightian or radical uncertainty (Kay & King, 2020; Knight, 1921) refers to contexts such as Sarah's decision, where the outcomes of future expectations are imaginable but neither knowable nor predictable, because the dynamics of the system producing that future are open. In this case, exogenous unpredicted events can challenge whatever predictions Sarah had about her investment, and if she does not feel enough confidence in her initial decision she risks reacting to short term market movements and reversing her decision midstream. In a continuously evolving context, such as the financial markets, this lack of confidence, much like overconfidence, can lead to over-trading and capital loss from trading fees (Barber & Odean, 2000). Although confidence in one's attitudes has an important role in decision-making (see Rucker, Tormala, Petty, & Briñol, 2014 for a review), here we concentrate on confidence about a particular decision. This type of confidence is critical to decision-making, especially when the decision can later be reversed (e.g. returning a purchase or selling shares). In this article, we propose that integral affect (i.e. affective reactions that arise due to the decision at hand) and cognitive judgments are intimately intertwined in determining decision confidence.

Many studies have looked at cognitive and affective processes separately, although typically in very different tasks that can be difficult to compare. Cognitive approaches consider

confidence in terms of arguments and evidence. For example, Griffin and Tversky (1992) argue that the evaluation of arguments for and against competing hypotheses drives confidence, supporting this account with evidence from judgments about events such as coin-flipping. Such approaches have also found that confidence increases with the number of arguments presented (Tsai, Klayman, & Hastie, 2008), the familiarity of the domain (Koriat, 2008), or more generally the processing fluency associated with the task (see Alter & Oppenheimer, 2009 for a review). From a cognitive perspective, Sarah's pension decision can be modelled as an accumulation of evidence favoring each alternative, with the decision taken when the evidence for one option reaches a threshold (Pleskac & Busemeyer, 2010; Ratcliff, 1978; Stewart, Chater, & Brown, 2006). That is, she decides once she has sufficient confidence to do so, and confidence is roughly equivalent to weight of evidence.

Yet, we often refer to “feeling” confident, suggesting a role for affect too, even in canonically ‘cognitive’ decision-making (Morris, Woo, & Singh, 2005). Indeed, people use their pre-decision arousal as a cue to their confidence level (Savitsky, Medvec, Charlton, & Gilovich, 1998); similarly, incidental joy can lead to overconfidence (Koellinger & Treffers, 2015), while worry can lead to better calibration (Massoni, 2014). Incidental affect influences confidence both about judgments where there is an identifiable correct answer, such as about the accuracy of one's perception or memory (Kuvaas & Kaufmann, 2004; Lebreton et al., 2018; Massoni, 2014 Sidi, Ackerman, & Erez, 2018), as well as more amorphous judgments about one's abilities (Sanna, 1999) and attitude certainty (Bless, Bohner, Schwarz, & Strack, 1990; Bless, Mackie, & Schwarz, 1992; Briñol, Petty, & Barden, 2007). However, less is known about how affect influences confidence in a decision that they have taken, with particularly little known about the role of integral affect or how emotions affect decisions under radical uncertainty.

In this article, we investigate the interplay between cognition and affect in producing confidence in decisions. Through two incentivized experiments in financial decision-making, we show how confidence is shaped by the perceived relevance of given evidence, which in turn is influenced by our integral emotional state. Our results open up the possibility of affective financial interventions aimed at improving people's decision-making abilities.

Theoretical Framework

The link between confidence and emotion has not been widely studied, outside the negative effects of *overconfidence*. Yet, for decisions under radical uncertainty, where there is no calculable correct decision, confidence is key in evaluating and justifying a course of action.

Conviction Narrative Theory (CNT; Chong & Tuckett, 2015; Tuckett & Nikolic, 2017) is a theory of decision-making under radical uncertainty. The central construct in CNT is the *narrative*—a mental representation that (i) causally structures relevant information, (ii) can be used to imagine the future; and (iii) can motivate action (Johnson, Bilovich, & Tuckett, 2020). For example, when Sarah is deciding on her pension, she might adopt the narrative that “inflation is rising, so the Fed will probably increase interest rates, pushing up the price of bonds.” She would then use this narrative to simulate plausible futures if she does versus does not include bonds in her portfolio, which in turn she evaluates affectively (in this case, with approach emotions such as excitement), likely leading to an approach response—including bonds in her portfolio. CNT has been used to explain financial bubbles and subsequent crashes as a result of affective shifts from approach to avoidance emotions (Nyman et al., 2018; Tuckett, Smith, & Nyman, 2014), patterns in how novice investors predict future prices (Johnson & Tuckett, 2020), and the decision processes of fund managers (Chong & Tuckett, 2015) and central bankers (Tuckett, Holmes, Perason, & Chaplin, 2020). Although a central claim of CNT is that cognition and affect are intertwined, the specific pathways by which these

processes jointly generate confidence have not been pinpointed. How do cognition and affect fit together?

Do emotions affect confidence?

In the affect-as-information view, people use emotions as informational cues that they combine with other cues to reach a decision (Bechara & Damasio, 2005; Schwarz, 1990). For example, incidental joy increases confidence when the mood induction is unrelated to the judgment task (Koellinger & Treffers, 2015). But affect tends to have a weaker effect on decisions when it is seen as non-representative of the target or irrelevant to the task (e.g. Pham, 1998; Schwarz & Clore, 1983). Indeed, because financial decision-making is stereotypically associated with analytical thinking, people often avoid making financial decisions altogether when they feel they are relying on affect (Park & Sela, 2018). Although not focusing directly on confidence in one's decisions, this theory predicts that positive affect, interpreted as a positive informational cue, should increase one's confidence, while negative affect should decrease it.

The risk-as-feeling hypothesis (Loewenstein, Weber, Hsee, & Welch, 2001), which is closely associated with feelings-as-information, stipulates that when cognitive and affective reactions to a risky situation diverge, emotions tend to drive behaviour (and therefore confidence) and override cognitive evaluations. When they do not diverge, the predictions of risk-as-feeling are aligned with the affect-as-information hypothesis as well as CNT. Unlike these other theories, CNT's main focus is on decisions that can be reversed, or have to be sustained, thus underlining the importance of confidence, and the generation of confidence through approach emotions. Additionally, instead of taking a granular view of emotions (Lerner & Keltner, 2000), these are viewed as motivating either an approach or an avoidance behaviour (Elliot, 2008).

According to CNT, people make decisions by projecting narratives into the future and evaluating plausible futures based on the preponderance of approach (e.g. excitement) versus avoidance (e.g. anxiety) emotions that are evoked. The absence of a normatively correct answer means that this reliance on affective cues linked to future scenarios is central in creating confidence in one's decisions. Therefore, mirroring the affect-as-information predictions, CNT suggests that integral feelings of excitement (as an approach emotion) and anxiety (as an avoidance emotion) should have opposite effects. Specifically:

H1: Approach emotions (e.g., excitement) increase confidence in decisions

H2: Avoidance emotions (e.g., anxiety) decrease confidence in decisions

Do emotions affect cognition?

A different set of views on how emotions and cognition interact to generate confidence rely on the idea that emotions affect the cognitive strategies used when making decisions. Emotions influence how people interpret facts (Wegener, Petty, & Smith, 1995). Positively valenced emotions typically decrease systematic information processing and search, while negatively valenced ones increase it (Bolte, Goschke, & Kuhl, 2003; Schwarz & Bless, 1991; Yang & Kahlor, 2013). The appraisal tendency framework (Lerner & Keltner, 2000; Tiedens & Linton, 2001), which provides a granular theory of emotions, also predicts that emotions which are high on certainty (such as excitement) lead to more heuristic processing of information while those which are low on certainty (such as anxiety) result in more systematic information processing. In other words, people experiencing positive emotions such as excitement should evaluate arguments less critically, rating weak arguments as stronger compared to a neutral condition (and possibly rating strong arguments as weaker). Conversely, people experiencing

negative emotions such as anxiety should evaluate arguments more critically, rating weak arguments as weaker compared to a neutral condition and strong arguments as stronger.

CNT views this relationship quite differently, conceptualizing arguments as causal *narratives* that can either support or refute the plausibility of an imagined future. To the extent we experience approach emotions such as excitement toward that future, associated narratives should be viewed as more plausible and therefore both strong *and* weak arguments for that narrative should be viewed as stronger. Conversely, avoidance emotions such as anxiety should have the opposite effect, leading both strong and weak arguments to be seen as weaker. That is:

H3: Approach emotions increase the perceived relevance of both strong and weak arguments

H4: Avoidance emotions decrease the perceived relevance of both strong and weak arguments

The mediating role of narratives in constructing confidence

According to CNT, narratives play a crucial role in decision-making because we use them to simulate imagined futures from which our confidence in our decisions derive. Thus, the main reason why integral affect increases confidence is *because* that affect manifests in our attachment to narratives or arguments. Thus:

H5: Relevance judgments of arguments mediate the effect of emotions on confidence.

Study 1

Study 1 tests the effects of an approach emotional context on people's cognitive evaluations, investment decisions, and confidence, testing H1, H3, and H5.

Methods

We conducted a power analysis using G*Power 3.1 (Faul, Erdfelder, Lang, & Buchner, 2007) to determine the required sample size. A sample of 265 was required to detect a small effect ($d=.2$) with acceptable power ($>.9$) and alpha level (.05). Therefore, we recruited 300 English-speaking participants from Prolific, of whom 293 passed the attention check and were used for analysis (69% females; $M_{\text{age}}=34$). Most participants ($N=268$) had little or no investment experience. The incentivized study followed a 2 (emotional context) by 3 (argument type) within-subject design, with each subject rating strong, weak, and mixed arguments for the stock to rise, in both an approach-emotion and neutral context. For full materials for both studies, see Appendix A.

After providing demographics, participants read the description of a company (including a graph of past performance, randomized across conditions). In the approach condition, the company was from an exciting industry (solar energy) and the analyst was described as a “vocal supporter.” In the neutral condition, the company was in the mining industry and the analyst had “never been a big proponent.” In both conditions, the information was identical, and the analyst had “upgraded the shares from Neutral to Buy.” Participants then chose an amount to invest on a scale from £0 to £100. As a manipulation check, participants then rated their emotional reaction (“how do you feel about the stock and its prospects”) on a scale from 1 (*Very little or not at all*) to 5 (*Extremely*) on four approach emotions (excited, optimistic, interested, confident) and three avoidance emotions (bored, pessimistic, disconnected).

Participants then rated two arguments (strong and weak) in random order, followed by a longer narrative containing both arguments as well as general positive information (mixed), on

three dimensions on a scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*): the positive effect of the argument on satisfaction with their investment, the positive effect on their confidence in the amount they invested, and the quality of the argument. This mixed narrative was included to ensure that the effects hold for longer, more ecologically valid narratives (which are often comprised of more than one argument). Arguments were validated in a pilot, to ensure that they were written in fluent English and to ensure they were either strong (e.g. “The company has opened a new factory in India which will decrease production costs.”) or weak (e.g. “The company has donated money to the Museum of Art, which will further increase their profits.”). Participants were also given the opportunity to readjust the amount they want to invest. After each condition, participants were shown how much they decided to invest and how much they gained from the investment, which was fixed as 10% or 30% respectively for the neutral and approach condition.

Results¹

We report all measures, manipulations, and exclusions in these studies. The emotion manipulation was successful: participants rated the approach-emotion condition as higher in approach emotions [$M_{approach}=3.34$, $SD=0.87$] and lower in avoidance emotions [$M_{avoid}=1.63$, $SD=0.72$] than the neutral condition [$M_{approach}=2.80$, $SD=1.02$, $t(292)=8.08$, $p<.001$; $M_{avoid}=2.00$, $SD=0.87$, $t(292)=-6.81$, $p<.001$].

Relevance

We used repeated measures ANOVA to compare the effect of argument type (weak, strong, mixed) on perceived relevance in the approach and neutral conditions. There were significant

¹ For clarity, only the analyses pertaining to our main hypotheses are presented here. Details of all the other analyses and the results can be found in Appendix B.

effects of approach emotion [$F(1,292)=6.68, p=.010$] and argument type [$F(2,584)=389.77, p<.001$] on perceived relevance of the arguments, but no interaction [$F(2, 584)=1.08, p=.34$]. Specifically, all arguments were seen as stronger in the approach-emotion than in the neutral condition, supporting our hypothesis (H3), with the non-significant interaction indicating that this effect was similar in magnitude across strong and weak arguments. When arguments were presented together in a narrative in the mixed condition (which always occurred after they were considered in isolation), the strong arguments appear to dominate relevance judgments, such that the mixed arguments are rated just as relevant as the strong arguments, with their relevance again seen as greater in the approach condition.

Fig. 1. Perceived relevance of argument, as a function of emotional condition and argument type.

Confidence

Similarly, we used repeated measures ANOVA to compare the effect of argument type (weak, strong, mixed) on perceived confidence in the approach-emotion and control conditions. There was a significant effect of approach emotion [$F(1,292)=10.97, p<.001$] and argument

type [$F(2,584)=224.25, p<.001$] on confidence, but no interaction [$F(2,584)=.911, p=.40$]. This indicates that approach emotions increase people's confidence (H1).

Fig. 2. Participants' confidence as a function of argument relevance and emotional condition.

Mediation analysis

We ran a repeated measures mediation model (using the MEMORE macro; Montoya, 2019) averaging across argument types, to test whether perceived argument relevance mediated the effect of approach emotions on confidence. Perceived relevance did mediate between approach emotions and confidence (see Figure 3). The indirect effect of approach emotions on confidence was significant ($b=.14, CI [.03, .25]$). Though smaller in magnitude, the direct effect was also significant, leaving room for a potential role for non-cognitive processes to intervene between emotions and confidence.

Fig. 3. Perceived argument relevance mediating between approach emotions and confidence.

Discussion

Study 1 found that excitement—a high-arousal approach emotion—leads people to judge both strong and weak arguments more relevant (H3) and feel more confident in decisions supported by those arguments (H1). Moreover, these effects appear to be related, with the effect of approach emotions on confidence mediated by perceived relevance (H5). These results support CNT, which posits that approach emotions draw attention to associated narratives—i.e., increase argument relevance—and therefore imbue our decisions with confidence.

The results are also generally consistent with existing theories of emotion which predict that positive affect would lead to increased confidence. Yet, the mechanism of a differentiation of processing depth theorised by these approaches (Schwarz & Bless, 1991), i.e. that approach emotions decrease systematic processing, does not seem to hold. Indeed, in that case we would have expected a smaller difference in perceived relevance of strong and weak arguments in the approach emotion condition, than in the neutral one. These results are also at odds with the notion that high-arousal emotions decrease confidence (Savitsky et al., 1998), although this could be due to the difference between confidence in a specific decision and confidence in one's abilities.

Study 2

Financial decisions are rarely devoid of doubt, which is a source of avoidance emotions. Thus, Study 2 aimed to replicate the results of Study 1 comparing a neutral affect condition to one evoking avoidance emotions, testing H2, H4, and H5.

Methods

Consistent with the sample size requirements identified for Study 1, we recruited 302 English-speaking participants from Prolific, of whom 275 passed the attention check and were used for analysis (67% female; $M_{\text{age}}=35$). Most participants ($N=244$) had little or no investment experience and none had participated in Study 1. Much like Study 1, the study followed a 2 (emotional context) by 3 (argument type) incentivized within-subject design, with each subject rating strong, weak and mixed arguments in both an avoidance-emotion and neutral context.

The materials and procedure were similar to Study 1. In both conditions, the companies were from a low excitement industry (mining) and the analyst "...has never been a big proponent of the company [...] has downgraded the shares from Buy to Neutral." In the avoidance-emotion condition, there were some negative pieces of information in the company's description ranging from "negative media coverage" to "fined for tax avoidance". In the neutral condition, the additional information was neutral ("announced plans to expand their social media presence").

Results

As in Study 1, the emotion manipulation was successful: participants rated the avoidance-emotion condition as lower in approach emotions [$M_{\text{approach}}=1.71$, $SD=0.78$] and higher in avoidance emotions [$M_{\text{avoid}}=2.56$, $SD=0.89$] than the control condition [$M_{\text{approach}}=2.64$, $SD=0.95$; $t(274)=-15.17$, $p<.001$; $M_{\text{avoid}}=1.87$, $SD=0.80$, $t(274)=12.81$, $p<.001$].

Relevance

We used repeated measures ANOVA to compare the effect of argument type (weak, strong, mixed) on perceived relevance in the avoidance and neutral emotional conditions. There were significant effects of emotional context [$F(1,274)=90.08$, $p<.001$] and argument type [$F(2,548)=323.68$, $p<.001$] on perceived strength of the arguments, but no significant interaction [$F(2,548)=1.075$, $p=.34$]. As predicted by CNT, avoidance emotions equally decrease the perceived relevance of strong and weak arguments (H4).

Fig. 4. Perceived relevance of argument, as a function of emotional context and argument type.

Confidence

We used repeated measures ANOVA to compare the effect of argument strength (weak, strong, mixed) on confidence, in avoidance and neutral emotional contexts. There were significant effects of emotional context [$F(1,274)=77.42$, $p<.001$] and argument type [$F(2,548)=195.01$, $p<.001$] on confidence, with a modest interaction [$F(2,548)=3.73$, $p=.025$] reflecting the somewhat larger effect of emotional context for strong arguments. Thus, consistent with predictions, avoidance emotions decrease confidence (H2).

Fig. 5. Participants' confidence as a function of argument relevance and emotional context.

Mediation analysis

We ran a repeated measures mediation model to test whether perceived argument relevance mediated the effect of avoidance emotions on confidence, averaging across the different argument types. Perceived argument relevance indeed mediated the effect of avoidance emotions on confidence (see Figure 6). The indirect effect of avoidance emotions on confidence was statistically significant ($b = -.47$, $CI [-.60, -.35]$). Again, the direct effect was smaller but significant, leaving open the possibility of non-cognitive processes intervening between emotions and confidence.

Fig 6. Perceived argument relevance mediating between avoidance emotions and confidence.

Discussion

Study 2 replicated Study 1 using avoidance emotions such as doubt and anxiety. Results indicated that avoidance emotions have a strong effect on the perceived relevance of all arguments (H4). Both strong and weak arguments were perceived as less relevant in the avoidance condition. Avoidance emotions also decreased confidence (H2), with perceived argument strength mediating this effect (H5). The results were stronger than in Study 1, in line with the general tendency for “bad” to be stronger than “good” (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Unlike in Study 1, the narrative containing both the strong and weak arguments (mixed) generated the most confidence. This may have occurred because most of the neutral information in the mixed narrative was actually slightly positive, which would have a greater effect against the negative backdrop of Study 2 compared to the positive backdrop of Study 1.

These results support CNT, which posits that avoidance emotions serve to deflect attention from a particular narrative and decrease confidence in decisions supported by that narrative. Much like in Study 1, there are some notable differences with prior theories. Although the negative effect on confidence is consistent with affect-as-information (Savitsky et al., 1998), negative emotions should increase systematic processing, tending to make weak arguments

appear weaker and strong arguments appear stronger (Schwarz & Bless, 1991). Instead, we found that both strong and weak arguments appear weaker in the presence of avoidance emotions and that these effects mediate the effects of emotions on confidence.

General Discussion

Taken together, these studies show the interplay among emotion, cognition, and confidence. In both approach and avoidance contexts, we showed how integral emotions influence judgements of argument strength and confidence in investment decisions. Approach emotions, such as excitement, increase people's confidence in their decisions (H1), as well as making arguments seem stronger (H3). Conversely, avoidance emotions such as doubt decrease people's confidence in their decisions (H2), and make arguments seem weaker (H4). Both studies also showed that cognition, operationalized here as perceived argument strength, mediates the effect of emotions on confidence (H5). These results are clearly predicted by Conviction Narrative Theory (Tuckett & Nikolic, 2017), which holds that confidence is generated from narratives (arguments) that are imbued with a preponderance of approach over avoidance emotions.

Other theoretical approaches can also accommodate some, but generally not all, of these results. For example, motivated reasoning (Kunda, 1990) predicts different levels of argument scrutiny depending on one's preferences. Affective reactions, such as integral emotions, are often more rapid than cognitive ones (Zajonc, 1980). They can therefore indicate people's preferences and thus bias their interpretation of arguments in support of these preferences. Taking the results of Studies 1 and 2 together, there does not seem to be a difference in argument scrutiny under approach or avoidance emotions. Strong arguments were rated as stronger in an approach condition, and weaker in an avoidance condition (compared to a control condition). If argument scrutiny had differed across emotional contexts (Ditto & Lopez, 1992),

we would have expected strong arguments to be rated more strongly in an avoidance emotional condition, or at least the difference between weak and strong argument evaluation to be greater in that condition. Our results do not support such an interpretation, as it is in the neutral rather than avoidance-emotion condition in Study 2 where we observe a greater difference between the evaluation of the two arguments. Rather, the emotional context affects how the arguments are being interpreted: in an approach condition they seem more relevant and in an avoidance condition less so. These interpretations respectively increase and decrease confidence.

Our results are generally in line with the affect-as-information hypothesis, although we do not find the differences in information processing that the theory postulates. As previously discussed, there was no indication that respondents in the approach-emotion (avoidance-emotion) condition used heuristic (systematic) message processing when evaluating strong or weak arguments for relevance. Neither did we detect support for the alternative theory, that positive affect facilitates cognition (for a review see Isen, 2008). This could be due to limits in the study's design. Indeed, this latter theory is only applicable for decisions that are deemed important and consequential, and although our experiment was incentivized, it is possible that the incentives were too small to evoke these effects.

Our results echo Pfister and Böhm's (2008) critique that many decision-making theories treat emotions as external forces which influence an otherwise non-emotional process. Indeed, our work shows that emotions cannot be disassociated from cognition, as people's interpretation of factual information is itself imbued with emotion. Whereas researchers often consider the role of affect in the construction of preferences (Pfister & Böhm, 2008), our work takes this approach one step further by looking at the construction of confidence in these preferences. Confidence is especially crucial to decisions which can be reversed (e.g. returning an item, selling shares) unless taken with a high level of confidence.

Further work could integrate CNT with the appraisal-tendency approach (Lerner & Keltner, 2000) to identify whether specific emotions' appraisal tendencies (e.g. anger which is a negatively valenced approach emotion) also affect confidence, or whether instead the approach–avoidance distinction has enough explanatory power. Future work might also further examine the role of context in shaping argument evaluation. Even when *presented* in isolation, arguments are rarely *evaluated* in isolation, but are instead communicated and evaluated within expressions of narratives. It is therefore critical to understand the interaction between the cognitive and affective dimensions of these narratives and their role in generating and communicating conviction. The mixed argument condition in our studies provides some evidence that the mechanisms for generating confidence in these more ecologically valid narratives are the same as the ones uncovered in the simple arguments. Our work also provides an initial indication that even though the arguments in these narratives are not necessarily stronger (e.g. there was no indication that these narratives were seen as more relevant), they do generate more confidence. This could be due to the additional information present in these narratives (Tsai et al., 2008), but might also be due to an increase in approach emotion evoked by this information.

The identified interaction between cognition and emotion has some interesting practical implications. Firstly, it highlights the need to consider the affective angle of any intervention which aims to increase people's confidence in their decisions. Even in contexts which seem to be less associated with affect, such as financial decision making, emotions are key in creating enough confidence to make a decision when the future is unknown or unknowable. With the current uncertainty due to COVID-19 and the government's shifting responses, many different industries can use these insights in their messaging in order to encourage people to plan holidays, make purchases or even invest in the stock market. Regulators can also make use of

these insights to evaluate whether firms create unwarranted confidence among consumers, leading to negative consequences.

In summary, these studies contribute to our understanding of how confidence is constructed. Our model proposes, and studies confirm, that approach (vs. avoidance) emotions not only increase (vs. decrease) confidence, but do so by changing our interpretation of facts. Thus, interventions aimed at increasing confidence should target people's emotions as well as their thoughts, as information alone will be far less effective. For example, consumer advocates may wish to consider how people can be prevented from experiencing unfounded excitement, as this can bias their interpretation of facts.

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