Positive Affect, Intuition, and Feelings of Meaning

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Subjective rationality, or the feeling of meaning, was identified by William James (1893) as a central aspect of the non-sensory fringe of consciousness. Three studies examined the interaction of positive affect (PA) and individual differences in intuitive information processing in predicting feelings of meaning for various stimuli and life events. In Study 1 ($N = 352$), PA and intuition interacted to predict understanding for ambiguous quotes and abstract artwork. In Study 2 ($N = 211$), similar interactions were found for feelings of meaning for fans after their football team lost a conference championship game and for individuals not directly affected by Hurricane Katrina in events surrounding the hurricane. In Study 3 ($N = 41$), induced PA interacted with individual differences in intuition in predicting accuracy for coherence judgments for loosely related linguistic triads. Intuitive individuals in the positive mood condition recognized coherent triads more accurately than did other participants. Results are discussed in terms of the role of individual differences in intuitive information processing in the relationship of PA to cognition.

Keywords: intuition, consciousness, positive affect, feelings of meaning

> When the feeling of rightness is present, even gibberish will feel that it makes perfect sense. (Mangan, 2001, p. 13)

Certainly life experiences are sometimes perplexing, but, more often than not, life makes sense. In this investigation, we consider the phenomenology of the feeling of sense. William James (1893) suggested that at the heart of the non-sensory fringe of the stream of consciousness is the feeling of the *subjective rationality of experience*, or the rightness of the direction of one's thoughts. This feeling of rightness is responsible for our perception that experiences make sense (Mangan, 2000, 2001). Mangan (2001) described the feeling of "right direction" as "the feeling of meaning" (p. 13). Drawing on research on intuitive judgments of coherence and cognitive experiential self theory (CEST; e.g., Epstein, 1990, 1994, 2008), in the present studies, we examined the roles of individual differences in intuitive processing style and positive affect (PA) in these feelings of meaning, testing the prediction that the relationship between PA and feelings of meaning would be moderated by individual differences in intuition. To begin, we briefly describe feelings of meaning and then provide our rationale for this hypothesis.

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The Feeling of Meaning

The feeling of meaning pertains to a feeling about an event or experience that one has found to feel "right." Like other aspects of the non-sensory fringe of consciousness (e.g., feelings of familiarity, knowing, or causation), feelings of rightness are evident instantly, although they may be amorphous and fuzzy (Mangan, 2001). Like the feeling of truthfulness (e.g., Unkelbach, 2006, 2007), the feeling of meaning is a feeling that there is something about a stimulus, an underlying comprehensibility, or a sense that there is a self-evident "there there." The feeling of meaning is present when experience fits with its context and one's expectations (King & Hicks, 2009a) and absent when experience violates these (Heine, Proulx, & Vohs, 2006). Not surprisingly, when experiences feel right, they also feel better. Research using facial

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electromyography (EMG) demonstrates that subtle facial musculature activity suggestive of PA occurs when stimuli make sense (Topolinski, Likowski, Weyers, & Strack, 2009) or when expectancies are not violated (Harmon-Jones & Allen, 2001; Winkielman & Cacioppo, 2001).

Differences in feelings of meaning may be present when two friends argue over the humor of a *New Yorker* cartoon: For one it is clear, for the other it is unfathomable. This example illustrates a difference between feelings of meaning and other aspects of the fringe of consciousness: The subjective feeling of meaning may lack an objective referent against which to judge its accuracy. Feelings of knowing or feelings of familiarity can be tested against objective reality (Kim & Cabeza, 2007; Nelson, Gerler, & Narens, 1984; Schwartz & Metcalfe, 1992). For the subjective feeling of the sense of some experiences, however, an objective measure of accuracy may be difficult to specify. At least sometimes, the subjective rationality of experience may be definitely subjective. For those two friends arguing over the *New Yorker* cartoon, the one who does not get it might never accept the amused friend's explanation for its meaning, because it simply does not feel right. Indeed, James (1893) described the effort to distinguish between subjective sense and nonsense as "impossible" (p. 26); we address this issue directly in Study 3.

Feelings of Meaning and Intuitive Processing

Numerous scholars have recognized the strong link between James's description of the non-sensory fringe of consciousness and intuitive information processing (e.g., Nickerson, 1990; Price & Norman, 2008; Reber, Fazendeiro, & Winkielman, 2002; Reber & Schwarz, 2001; Reber, Wurtz, & Zimmermann, 2004; Topolinski & Strack, 2009b, 2009c). Intuitive knowledge is self-evident and may be felt as "just knowing," without knowing why or how one knows (Block, 1995; Epstein, 2008; Epstein & Pacini, 1999; Kahneman & Klein, 2009; Kuhl, 2000; Price & Norman, 2008). Intuitive information processing is generally characterized as occurring with little awareness (e.g., Baumann & Kuhl, 2002; Bolte & Goschke, 2008; Kuhl, 2000); as fast and effortless (Topolinski & Strack, 2008); and as being driven by internal cues (e.g., Topolinski & Strack, 2009b) that are experienced phenomenologically as hunches, gut feelings, or vibes (Epstein, 2008). Research on intuitive processing and judgments of coherence provides important clues to the processes that give rise to feelings of meaning.

On the basis of their impressive body of work on semantic and visual coherence judgments, Topolinski and Strack (2008, 2009a, 2009b, 2009c) introduced a fluency-affect model of intuitive judgments that focuses on processing ease and subtle indicators of PA as important links in the chain of intuitive judgments. From this perspective, fluid processing leads to brief, subtle, and positive changes in core affect (i.e., affect that is diffuse, automatic, and relatively free floating; Russell, 2003; Topolinski & Strack, 2009b). This fluency-triggered affect then leads to the experiential gut feeling that drives intuitive judgments (e.g., Topolinski & Strack, 2009b; see also Reber et al., 2004; Wurtz, Reber, & Zimmermann, 2008).

This model explains the superiority of intuitive (vs. effortful) processing in semantic coherence judgments (i.e., tasks in which participants are asked to judge whether three words share a common associate; Topolinski & Strack, 2008). Relative to incoherent word triads (i.e., those with no common associate), coherent triads are processed more easily (Topolinski & Strack, 2009c). This ease of processing produces subtle increases in core PA (Topolinski et al., 2009), which, in turn, play a crucial role in directing intuitive judgments (Topolinski & Strack, 2009c). Manipulating these two links in the process of intuitive judgment effectively sabotages those judgments: When incoherent word triads (i.e., those with no solution) were manipulated to be easily processed and affectively positive, they were more likely to be misjudged as coherent (Topolinski & Strack, 2009b).

Clearly, judging the coherence of potentially inscrutable word triads involves the detection of underlying sense. The question posed by such tasks is centrally the question of feelings of meaning: Is this triad sense or nonsense? This model suggests that when information is easily processed or affectively positive, the feeling of meaning is likely to emerge.

In addition to fluency-triggered affect, research has shown that induced PA leads to greater accuracy in intuitive judgments for linguistic associates (Baumann & Kuhl, 2002; Bolte, Goschke, & Kuhl, 2003). It is important to note that the subtle affect included in Topolinski and Strack's (2009b) model is separable from full-blown induced positive mood. The former refers to PA that is intrinsic to a task, that emerges out of processing fluency, and that drives intuitive judgments. The latter, in contrast, refers to PA that is induced before the task and that presumably facilitates intuitive processing by increasing the quantity of available semantic associations (Baumann & Kuhl, 2002; Bolte & Goschke, 2008; Bolte et al., 2003; Storbeck & Clore, 2008). Full-blown mood is not thought to disrupt the core affect that influences semantic coherence judgments, and PA inductions do not lead to misperceptions of coherence for incoherent word triads (Baumann & Kuhl, 2002; Bolte et al., 2003). This research suggests that PA itself might play a central role in feelings of meaning.

Crucially missing from these emerging accounts of the fascinating process of intuitive coherence judgments is any consideration of individual differences in information processing styles, a focus of the present investigation. In previous work, the adjective *intuitive* has been applied to types of judgments, but it has not been applied to the person making the judgment. How might individual differences in intuitive processing style play a role in intuitive judgments and feelings of meaning more specifically?

Individual Differences in Intuitive Processing Style and Feelings of Meaning

Dual process models of information processing typically recognize one system that is rapid, heuristic, and intuitive and another that is slower, effortful, and analytical (e.g., Stanovich & West, 2000). CEST (Epstein, 1990, 1994) presents these two styles of information processing as individual differences in habitual processing style, with the intuitive style being reflected in a tendency to trust one's hunches or initial impressions. Thus, an individual's dispositional level of faith in intuition (or FI; Epstein & Pacini, 1999) might be thought of as his or her epistemological stance toward James's fringe of consciousness. If the fringe of consciousness includes internal, non-sensory vibes that suggest the sense of external experience, FI ought to be related to showing particular attention to such internal impressions. If the perception of sense is communicated to the individual via subtle indicators of ease of

processing that emerge experientially as gut feelings (Topolinski & Strack, 2009b), individuals who report themselves as particularly prone to follow such feelings might be expected to be especially good at rendering accurate intuitive judgments.

This conceptual description of individual differences in intuitive processing style, as well as previous research on the effects of PA on intuitive judgments, might both suggest that these variables should exert primarily additive main effects on intuitive judgments and feelings of meaning. In contrast, we predict that individual differences in intuitive processing will moderate the relationship of PA to feelings of meaning. This predicted interaction warrants consideration.

In research on nonrational beliefs and behaviors (e.g., King, Burton, Hicks, & Drigotas, 2007), main effects of individual differences in intuition and PA have not emerged. Instead, individual differences in intuition and PA interacted to predict these various outcomes. For example, when presented with videotapes of purported UFOs and ghosts, a positive (vs. neutral) mood induction led to enhanced ratings of the believability and meaningfulness of these tapes only for those who were high on intuition (King et al., 2007, Study 1). Similarly, in studies of susceptibility to sympathetic magic, naturally occurring PA predicted poorer performance in hitting a picture of a baby with darts and induced PA (vs. neutral) mood predicted sitting farther from a person who had purportedly stepped in excrement only for those who were high on intuition (King et al., 2007, Studies 2 and 3). More recently, the relationship of naturally occurring PA to referential thinking (ascribing personal meaning to patently meaningless events) was similarly moderated by individual differences in intuition (King & Hicks, 2009b). How might the interaction of PA and individual differences in intuition in predicting these types of beliefs and behaviors be understood?

Research and theory on the role of mood in cognitive processing supports the idea that mood directs cognition. Negative affect (NA) signals that analytical problem solving is required. In contrast, PA signals that all is well and one can indeed follow one's hunches (Clore et al., 2001; Clore & Palmer, 2009; Schwarz, 2001). Within CEST, the intuitive system is considered the default system but the rational system is seen as acting to curb these gut feelings (e.g., Epstein, 1994). Rational impulses can disrupt intuitive processing (Topolinski & Strack, 2008), leading to poorer performance on intuitive tasks. Thus, PA may be required to strongly shift the balance of processing over to the intuitive system, allowing for these individual differences to manifest in nonrational behavior without interference from rational impulses (King et al., 2007). Such a possibility is strongly implicated in a broad array of studies showing that PA promotes rapid and heuristic (i.e., intuitive) processing (e.g., Bodenhausen, 1993; Bodenhausen, Kramer, & Süsser, 1994; Clore & Palmer, 2009; Ruder & Bless 2003; Storbeck & Clore, 2005). In this sense, PA can be thought of as giving the go-ahead to the intuitive system for whatever task is at hand (King et al., 2007).

Of course, one might note that in the vast literature on the effects of PA on cognitive processing, individual differences in intuitive processing style (regrettably) have not been addressed. Thus, it is possible that individual differences in intuition would moderate these results as well, suggesting that the influence of PA on cognitive processes may depend on the extent to which an individual is dispositionally prone to trust his or her gut feelings. Induced PA might lead to enhanced accuracy in intuitive judgments not only because it promotes spreading of activation but also because it activates the intuitive system.

Although intuition and PA may converge to facilitate ascriptions of nonrational meaning (e.g., sympathetic magic), our aim in the current studies was to explore whether these effects may be broader than previously considered and generalize to feelings of meaning for the phenomena that individuals encounter in daily life. We predicted that individual differences in intuition would similarly moderate the relationship of PA to these types of everyday feelings of meaning.

Underlying Mechanisms

In terms of the underlying processes that might explain how individual differences in intuitive processing moderate the contribution of PA to feelings of meaning, we consider three possibilities. First, it might be that intuitive individuals are simply more likely to engage in heuristic processing (Epstein, Pacini, & Denes-Raj, 1996; Pacini & Epstein, 1999) and as such are more susceptible to mood-as-information effects (for a review, see Schwarz, 2001; Schwarz & Clore, 1996) for feelings of meaning. Epstein (1998) has reviewed the distinctive ways that learning and habit formation occur within the intuitive system. Because the intuitive system is highly susceptible to the enticement of PA (Epstein, 1998, p. 17), highly intuitive individuals may be especially prone to using positive mood as information when faced with the question of the comprehensibility of a stimulus or an experience. Given that subtle PA has been demonstrated to emerge in the presence of sense (e.g., Winkielman & Cacioppo, 2001), relying on PA for feelings of meaning might be appropriate. Notably, this explanation would suggest that intuitive individuals might be more likely to trust that PA, indeed, indicates sense.

A second possibility is that intuitive individuals are particularly attentive to the multiple associates that bubble into consciousness as a function of PA (Storbeck & Clore, 2008). If PA promotes a variety of explanations for present experience, intuitive individuals may be particularly open to these various explanations. Such individuals may be more likely to find a satisfactory answer to the question, "Does this make sense?" from the broad array of associates fostered by PA. FI is related to a decreased tendency to selectively ignore demonstrably irrelevant information (Kaufman, 2009), suggesting that intuitive individuals may well entertain a variety of ideas in consciousness, even some that might be discounted by others.

A third possibility is that individuals who are highly intuitive and in a good mood are more sensitive to the gut feelings that emerge experientially as a function of fluency-triggered affect (Topolinski & Strack, 2009b). Given that individual differences in intuition reflect differences in trusting one's hunches, this explanation would seem to fit quite well with past research on intuitive judgments as well as the conceptual framework of CEST. If PA essentially shifts the balance of processing to the intuitive system and that system is especially guided by gut feelings, PA and intuition ought to lead to stronger (and potentially more accurate) feelings of meaning.

The present studies provide varying opportunities to test these different explanations. Most important, Studies 1 and 2 tested the notion that intuition and naturally occurring PA interact to predict

feelings of meaning for ambiguous stimuli and as such are open to the mood-as-information account. In contrast, Study 3 included a mood manipulation and stimuli whose objective coherence was manipulated, allowing for a more direct test of these alternatives.

Overview of Current Studies

In three studies (using six independent samples), we examined the joint roles of PA and individual differences in intuitive processing in predicting feelings of meaning. Although a great deal of research on intuitive information processing has been conducted using highly constrained stimulus materials, in the present studies, we were interested in examining the role of intuition and PA in feelings of meaning for more real-world phenomena. Thus, in Study 1, participants rated feelings of understanding of stimuli that ranged in ambiguity from common quotations to images that were purportedly abstract art. In Study 2, participants rated their understanding of the broader significance of a real-life event: having a university football team lose a chance to play in the national championship game or the extent to which the events surrounding a natural disaster (Hurricane Katrina) were felt to fit with preexisting expectations and knowledge. Finally, borrowing the paradigm typically used in studies of intuitive processing, in Study 3, we used a positive mood induction to examine participants' ability to correctly identify coherent (vs. incoherent) linguistic triads. For all three studies, we predicted that individual differences in intuition would moderate the relationship between PA and feelings of meaning.

In Study 1, three samples of participants completed measures of intuition and state PA prior to evaluating their feelings of meaning for a variety of stimuli. All three samples essentially completed identical studies, with the only substantive exceptions being the targets of their feelings-of-meaning judgments and the specific wording of their ratings.

Study 1, Feelings of Meaning for Ambiguous Stimuli

Method

Participants. Three samples of college students ($N = 356$; 248 women) completed online surveys on a secure website to fulfill research participation requirements in psychology courses or to receive extra credit in an upper level course. Sample 3 completed an additional laboratory session. Median age was 20 years old. In all studies, participants were predominantly European American (>84%) in race and non-Hispanic (>95%) in ethnicity.

Materials. All participants completed the 20-item FI subscale of the Rational Experiential Inventory (Pacini & Epstein, 1999). This individual difference is related to the use of heuristics in problem solving, stereotypical thinking, superstitious beliefs, extraversion, agreeableness, and interpersonal trust (Pacini & Epstein, 1999). Sample items include "I believe in trusting my hunches," "I tend to use my heart as a guide for my actions," "I rely on my intuitive impressions," and "I trust my initial feelings about people." Items were rated on a scale of 1 (*not at all*) to 7 (*extremely much*). (All αs $> .90$; for Sample 1, $M = 4.71$, $SD = 0.79$; for Sample 2, $M = 4.96$, $SD = 1.04$; for Sample 3, $M = 4.69$, $SD = 0.85$.) Samples 1 and 2 completed this measure at the beginning of the assessment. Sample 3 completed this measure several weeks in advance.

Immediately before exposure to the target stimuli, all participants rated positive mood adjectives (e.g., *happy*, *joy*, *pleased*) as a measure of current PA (on the basis of Diener & Emmons, 1984; Diener, Smith, & Fujita, 1995). All items were rated on a scale of 1 (*not at all*) to 7 (*extremely much*). (All αs $> .90$; for Sample 1, $M = 5.14$, $SD = 0.96$; for Sample 2, $M = 4.71$ $SD = 1.24$; for Sample 3, $M = 4.34$, $SD = 1.12$.) For all samples, none of the participants reported any suspicion about the purpose of the study.

Sample 1, quotations. Participants ($n = 144$) read six quotations (see Appendix A). After each quotation, participants rated a variety of items, including the main dependent measure, "How much do you understand the quotation?" on a scale of 1 (*not at all*) to 7 (*extremely much*). Ratings of this item were averaged over the six quotes to create a composite feeling-of-meaning measure ($\alpha = .70$; $M = 5.38$, $SD = 1.07$).

Sample 2, zen koans. Participants ($n = 130$) were presented with four Zen koans (see Appendix A). After each koan, participants answered two questions, "How much do you understand the passage?" and "How much does the passage make sense?" on a scale of 1 (*not at all*) to 7 (*extremely much*; average interitem $r = .70$). Ratings across the four koans were averaged to create a composite feeling-of-meaning variable ($\alpha = .81$; $M = 4.63$, $SD = 1.13$).

Sample 3, abstract art. In a private computer cubicle in the lab, participants ($n = 82$) rated eight different stylized Japanese kanji characters, presented as abstract artwork. They were told that the artist who created the images adapted various cultural symbols. (None of the participants reported understanding the true meaning of the characters.) Each of the characters was rated on one item, "How much do you understand what the artist is trying to communicate?" on a scale of 1 (*not at all*) to 7 (*extremely much*). The ratings for the eight images were averaged to create a total score ($\alpha = .86$; $M = 1.93$, $SD = 0.98$).

Results and Discussion

Preliminary analyses revealed that intuition and PA were not significantly associated in any of the samples (rs $< .14$, ps $> .13$). To test the main predictions, we converted intuition and PA scores to mean deviation scores (within sample), and their product was used as the interaction term (Aiken & West, 1991). Hierarchical regression equations were computed, regressing feelings of meaning on the main effects in the first step and the interaction of Intuition $\times$ PA on the second step. The main effects did not contribute significantly to R^2 in Samples 1 and 3 (ps $> .09$), but the main effects did contribute significantly in Sample 2 (in which participants had rated the Zen koans, $\Delta R^2 = .10$, $p < .05$), with both PA and intuition predicting feelings of understanding (βs $= .21$, $p < .05$).

It is important to note that for all samples, significant Intuition $\times$ PA interactions emerged on the second steps of the analyses (ΔR^2s $\geq .03$, ps $< .05$; $\beta = .16$ for Sample 1, $\beta = .17$ for Sample 2, and $\beta = .22$ for Sample 3). Generated regression lines for individuals ± 1 standard deviation from the mean on the predictors are shown in Figures 1A–1C. As can be seen in these graphs, PA was more strongly associated with understanding the ambiguous stimuli for intuitive individuals compared with individuals who were less intuitive.

Across the three panels of Figure 1, it is clear that individual differences in intuition moderated the role of PA in judgments of understanding. PA was strongly associated with feelings of

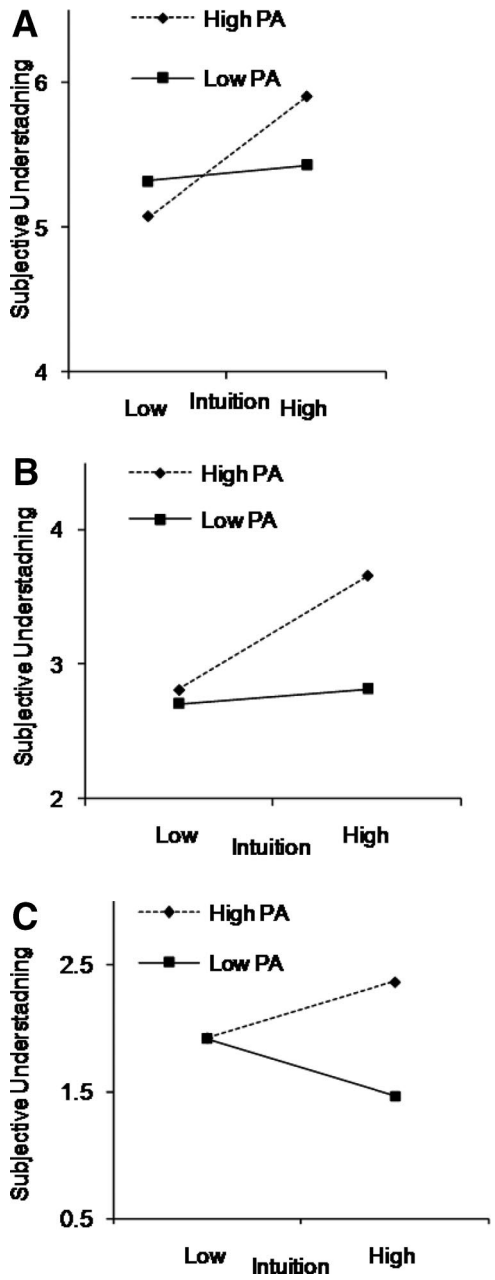

Figure 1. Feelings of meaning for brief texts and artwork, as a function of positive affect (PA) and intuition, Study 1. A: Quotations. B: Zen koans. C. Kanji art.

understanding toward novel stimuli only among individuals who were highly intuitive. Because PA was measured prior to the presentation of the stimuli, the pattern of results is in keeping with the notion that PA may have predisposed participants to generate a variety of explanations for the stimuli or that they were relying on mood as information in making their judgments. Most important, these results suggest that preexisting PA plays a role in feelings of meaning particularly for highly intuitive individuals.

These stimuli, although potentially inscrutable, were presumably not personally troubling. In Study 2, we examined the roles of PA and intuition in feelings of meaning for two separate samples after real-life negative events. In Sample 1, the event was a university football team's loss of the conference championship game. In Sample 2, the event was Hurricane Katrina. Unlike Study 1, PA was measured in Study 2 after the events had taken place. In this case, then, PA might be viewed as emerging (at least partially) out of a sense of meaning for those events. On the basis of the notion that highly intuitive individuals are especially likely to trust PA as an indicator of sense, we again predicted that individual differences in intuitive processing would moderate the relationship of PA to feelings of meaning for these distressing events. In Study 2, feelings of meaning were operationalized as understanding the broader implications of the event (i.e., the loss of a conference championship football game for Sample 1) and as the experience of fit between an event (i.e., Hurricane Katrina for Sample 2) and one's expectations.

Study 2, Feelings of Meaning for Real-Life Events

Both samples completed the FI subscale ($M = 5.10$, $SD = 1.08$, for Sample 1; $M = 4.66$, $SD = 0.77$, for Sample 2). In Sample 1, participants rated positive mood adjectives (Diener et al., 1995; $M = 4.24$, $SD = 1.46$), whereas in Sample 2, they rated a single item ("How happy are you right now?" on a scale of 1 (*not at all happy*) to 7 (*extremely happy*; $M = 4.78$, $SD = 1.14$).

Sample 1, Football Game

Method. On Saturday, December 1, 2007, the University of Missouri football team (at the time ranked first in the nation for the first time since 1960) played the University of Oklahoma in the Big 12 Conference championship game. Winning would have meant an assured berth in the national championship game. They lost. Within days, participants completed measures of positive mood, intuitive processing, and their feelings of meaning about the event.

Participants and procedure. Seventy-five students (36 women) in an undergraduate psychology course completed the survey. They were selected for participation on the basis of a previous survey that indicated they were fans of the football team. On average, participants had watched or attended 11.5 of the 13 (range = 10–13) games that season and rated themselves as fans of the team ($M = 6.0$, $SD = 1.46$, on a 1–7 scale; range = 5–7). Participants were e-mailed a link to a Web survey the day after the game. All of the participants had attended the game or watched it on TV. (Two participants played in the game. Results were the same with these individuals included or excluded.) Fifty-five percent of the participants completed the survey within 48 hours of the loss, 75% had done so within 4 days, and the rest completed the survey within a week.

Feelings-of-meaning measure. Participants rated five items tapping meaning and understanding for the experience (in which the University of Missouri was referred to as MU or Mizzou), in terms of the lost opportunity to play in the national championship and the loss to the University of Oklahoma more specifically, including "How much do you fully understand how meaningful it is that MU lost to Oklahoma on Saturday?" "How meaningful is it to the city of Columbia that MU lost to Oklahoma on Saturday?" "How meaningful is it to you that MU lost to Oklahoma on Saturday?" "How much do you understand

how meaningful it would have been to you if the Mizzou football team was playing for the national championship?" and "How meaningful would it have been if the Mizzou football team was playing for the national championship?" These items were rated on a scale of 1 (*not at all*) to 7 (*very much*; $\alpha = .80$; $M = 6.40$, $SD = 0.71$).

Results. Initial analyses tested for gender differences in feelings of meaning and for gender interactions with PA or intuition. As no effects of gender emerged, the analyses below include the entire sample. Once again, intuition and PA were unrelated ($r = .02$, $p = .90$).

A hierarchical regression was computed to assess whether intuition and PA interacted to predict subjective understanding for the meaning of the loss, using the same procedure as in Study 1 (following Aiken & West, 1991). In the absence of main effects (entered on the first step), the two-way interaction entered on the second step contributed to a significant change in R^2 ($\Delta R^2 = .06$, $\beta = .25$, $p < .039$). The interaction is shown in Figure 2A. As predicted, PA played a role in these assessments of fully getting the broad significance of the loss to Oklahoma for individuals who were high on intuition.

Sample 2, Hurricane Katrina

Method. On Monday, August 29, 2005, Hurricane Katrina made landfall in New Orleans, Louisiana, and the Gulf Coast more generally. Katrina was the costliest and one of the deadliest hurricanes in the history of the United States. Media coverage of the devastation of the city of New Orleans, along with the apparent lack of effective help from federal agencies, was widespread. None of the participants were directly affected by the storm.

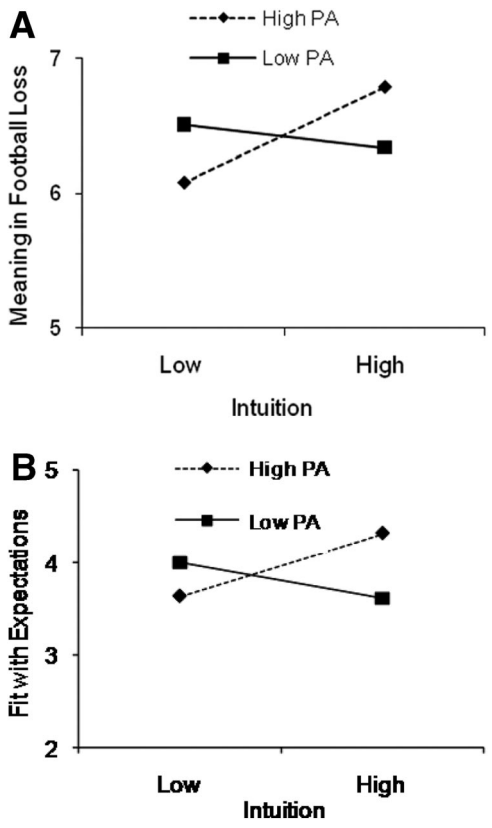

Figure 2. Feelings of meaning for lost football game and Hurricane Katrina, as a function of positive affect (PA) and intuition, Study 2. A: Football loss. B: Hurricane Katrina.

Participants and procedures. One hundred thirty-three undergraduate students (80 women) from a psychology class participated. Median age was 22 years old.

On Tuesday, September, 5, 2005, participants completed a short in-class questionnaire about the event. After rating their PA, participants read the following instructions:

> In the last week, the Gulf Coast, including parts of Louisiana and Mississippi, experienced a powerful hurricane, Katrina, which caused substantial damage. The following questions pertain to Hurricane Katrina and the damage it caused. Please rate the following items using the scale below to indicate how much each statement characterizes your thoughts about the events associated with hurricane Katrina.

Participants completed two items related to their familiarity with Hurricane Katrina: "I have paid attention to this story" ($M = 5.00$, $SD = 1.31$) and "I care about what is going on with regard to the hurricane" ($M = 5.49$, $SD = 1.04$). These items were rated on a scale of 1 (*not at all*) to 7 (*extremely much*).

Feelings-of-meaning measure. Six items were used to assess feelings of meaning, in this case, the extent to which events were felt to fit with preexisting expectations and knowledge: "The events reinforce what I know about humanity," "The events fit well into what I know about the world and people," "It is difficult to make sense of the events" (reverse coded), "The events are hard to understand and do not fit with anything I have experienced before" (reverse coded), "I have thought about it a lot trying to understand the events" (reverse coded), and "I struggle to make sense of the events" (reverse coded). Notably, this measure included four negatively worded items, to ensure that participants high in PA and intuition were not simply prone to acquiescence bias or yea-saying (Wells, 1963). All items were rated on a scale of 1 (*not at all*) to 7 (*extremely much*; $M = 4.48$ $SD = 0.83$). The reliability of this measure was relatively low ($\alpha = .58$). As such, in our analyses below, we examined not only the full scale but also the scale separated by type of item (nonreversed and reversed).

Results. Again, a preliminary analysis revealed that intuition and PA were not significantly correlated ($r = .13$, $p = .13$). A hierarchical regression was computed to assess whether intuition and PA interacted to predict the experience of fit between the events of Hurricane Katrina and participants' preexisting expectations. The two control variables (paying attention and caring about the events associated with Hurricane Katrina) were entered on the first step, contributing significantly to R^2 ($R^2 = .11$, $p < .01$). Intuition and PA scores, entered on the second step, did not contribute to the equation ($p = .37$). The two-way interaction entered on the third step contributed significantly ($\Delta R^2 = .06$, $\beta = .24$, $p < .01$).[1] As can be seen in Figure 2B, faced with the question of whether the

[1] The results remain significant when the control variables are not included in the analysis.

tragedy of Hurricane Katrina challenged their expectations, PA was associated with the tendency to say that it fit with preexisting knowledge to the extent that individuals were high on intuition.

To ensure the results were not driven by a particular type of item (non–reverse coded vs. reverse coded), we conducted two additional regression analyses. Two dependent variables were created (after King & Hicks, 2009a), the first using the non-reverse-coded items ($M = 4.04$, $SD = 1.22$; $\alpha = .76$) and the second using the reverse coded items ($M = 4.71$, $SD = 1.13$; $\alpha = .70$). The interaction terms in both of these analyses were significant ($\beta s > .17$, $ps < .05$) and the pattern of results replicated the analysis using the complete scale. As already noted, for both samples, it is quite possible that the PA reported by participants was at least partially an outcome of their sense of meaning in those events (Millis, 2001; Winkielman & Cacioppo, 2001). Thus, for highly intuitive individuals, naturally occurring positive mood in the aftermath of a negative life event may be especially indicative of the presence of sense.

Brief Discussion of Studies 1 and 2

Results for five independent samples rating stimuli ranging from inscrutable quotations to a natural disaster show a consistent pattern in which PA predicts feelings of meaning only for individuals who are high on intuition. Although consistent with predictions, these data are limited in at least one important way: Results are ambiguous with regard to the accuracy of participants' self-assessed understanding of the various objects of their ratings. All of the results might be explained via mood as information, suggesting that individuals who are high in intuition simply rely more on mood as a sign of the presence of sense. Such a conclusion would not be entirely uninteresting because research has shown that PA is often a reliable indicator of sense (e.g., Topolinski & Strack, 2009c; Winkielman & Cacioppo, 2001). Results of Studies 1 and 2 suggest that this link between PA and meaning might be particularly true for individuals who are highly intuitive.

Nevertheless, the question remains whether these individuals actually understood the various stimuli and experiences or were simply ascribing feelings of meaning, heuristically, as a function of positive mood. Study 3 addressed this issue directly, by using a mood induction and exposing participants to objectively coherent or incoherent stimuli so that the accuracy of judgments could be assessed.

Overview and Predictions for Study 3

In Study 3, participants were randomly assigned to a positive or neutral/freestanding mood condition, and they then completed a semantic coherence judgment task. Following procedures used in past research (e.g., Baumann & Kuhl, 2002; Topolinski & Strack, 2008, 2009c), we presented participants with a series of word triads and then asked them to guess whether each triad had a solution (i.e., a fourth common associate). This task is particularly appropriate to the present investigation because such remote associates represent widely shared patterns of meaning and are considered especially likely to reveal evidence of "skilled intuition" (Kahneman & Klein, 2009, p. 520). Furthermore, performance on this task is truly dependent on intuitive processing. Conscious, effortful processing applied to such judgments leads to poorer performance (Topolinski & Strack, 2008).

As already mentioned, past research has demonstrated that induced PA leads to superior performance on semantic coherence judgments (Bauman & Kuhl, 2002; Bolte et al., 2003). However, the benefits of PA for such judgments have been demonstrated in studies contrasting PA with NA (e.g., Baumann & Kuhl, 2002). Relative to freestanding mood, induced PA does not differ on semantic coherence judgments (Bolte et al., 2003). Storbeck and Clore (2008) demonstrated that although induced PA certainly differs from induced NA in terms of spreading of activation, PA does not significantly differ from neutral or freestanding mood in this regard. Storbeck and Clore (2008) further suggested that typical neutral mood inductions are more likely to engender mild NA (rather than truly neutral mood). Drawing on this work, in Study 3, we contrasted induced PA with neutral/freestanding mood; we did not expect main effects of PA on coherence judgments in this study. Furthermore, on the basis of the results of research by Storbeck and Clore (2008), it is unlikely that any effects that emerge as a function of mood condition are accounted for by differences in the spread of activation.

Most important, Study 3 allowed us to directly test (and potentially rule out) a mood-as-information explanation for the feelings of meaning of highly intuitive individuals. If highly intuitive individuals are more likely than others to simply rely on PA as information suggesting the presence of sense, the two-way interaction of mood condition and intuition should predict coherence judgments across coherent and incoherent triads. That is, from a mood-as-information perspective, individuals who are highly intuitive in the positive mood condition should be more likely than others not only to judge coherent triads accurately but also to misjudge incoherent triads as coherent.

In contrast, we predicted that individual differences in intuition would interact with mood condition to predict performance only for coherent triads. This prediction is based on the notion that positive mood is especially likely to turn processing over to the intuitive system (King et al., 2007), coupled with the idea that the intuitive system is particularly sensitive to the gut feelings that emerge as a function of subtle indicators of ease of processing in response to coherent triads (Topolinski & Strack, 2009b). These predictions were tested using the proportion of coherent triads judged accurately and the proportion of incoherent triads judged inaccurately, as well as by using a measure of signal detection (Bolte & Goschke, 2008; Pollack, 1970).

Study 3 also included reaction time (RT) measures for all of the judgments. These data allowed us to examine whether the performance of intuitive individuals across mood conditions and triad type could be explained by speed of processing. Processing speed has been used as a measure of ease of processing, and studies have generally found that coherent triads are processed more quickly than incoherent triads (e.g., Bolte & Goschke, 2008). Using RTs, we were able to examine whether intuitive individuals in the positive mood condition rendered their judgments primarily as a function of these differences in processing speed (rather than the gut feelings that presumably emerge as a function of this difference).

Study 3, Assessing the Accuracy of Feelings of Meaning

Method

Participants. Forty-one people participated—26 staff employees (19 women) and 15 undergraduates (12 women)—from the University of Missouri.[2] The staff employees ranged in age from 23 to 64 years (M = 41.56 years, SD = 12.45) and were recruited through a mass e-mail offering $5 for participation in a study of attitudes and judgments that would take approximately 30 min. Undergraduates ranged in age from 17 to 24 years (M = 19.37 years, SD = 1.86) and were recruited through an announcement in a psychology class conveying the same information. Represented ethnicities included 77% European American, 9% African American, 5% Asian American, and 2% Hispanic American.

Materials and procedure. Participants were run in individual sessions. On arrival, each was brought into a small seminar room and completed a consent form and a packet that contained several questions relating to his or her personality, including the FI scale (Pacini & Epstein, 1999; M = 5.28, SD = 0.74, α = .86).[3]

Participants in the positive mood condition (n = 21) were then told, "Good news! There was actually some miscommunication with the information we gave you. Instead of receiving $5 for your participation, you will actually receive $20! And here is your $20!" These participants were handed a $20 bill by the researcher and then asked to come into the next room to complete a computer task. Participants in the neutral mood condition were simply asked to come into the next room to complete the computer task (although they were similarly compensated after the experimental session).

The next part of the session was conducted in a private computer cubicle using MediaLab software. Participants completed several questions evaluating the lab setting. Included in these questions was one item that served as the mood manipulation check, "How happy are you right now?" (M = 6.63, SD = 1.41) rated on a scale of 1 (*not at all happy*) to 9 (*extremely happy*).

Semantic coherence task. Next, participants were presented with the semantic coherence task. This task involved the presentation of word triads. Participants were asked to judge whether each triad had a solution (i.e., if there was a fourth word associated with all three words; Bowers, Regehr, Balthazard, & Parker, 1990). Participants were told that a word triad with a fourth word associate was called a *coherent triad*, whereas a word triad that did not was an *incoherent triad*. An example of a coherent triad was *base, snow, dance* (common associate: ball). An example of an incoherent triad was *mouth, sixteen, lines*. Participants were informed that each triad would be presented for less than 2 s and that they would then be given 5 s to make a decision. Triads were presented in the center of the screen, as three rows with one word on each row, for 1.5 s (adapted from Bolte et al., 2003). Then a screen appeared that asked whether the triad was coherent or incoherent. Participants were told to press the number *1* on the computer keyboard if they believed the triad was coherent or the number *2* if they believed the triad was incoherent. If participants did not respond within the 5-s time limit, a prompt informed the participants that they were too slow and then the program automatically advanced to the next triad. Participants completed five practice trials and were then told to inform the researcher if they did not completely understand the task. Each participant then completed 50 triads that included 25 coherent and 25 incoherent word triads presented randomly. RTs were recorded for all judgments.

On completion of the computer task, participants were led back into the seminar room and given a questionnaire that probed for suspicion about the purpose of the study. No participants expressed any suspicion. Finally, all participants were fully debriefed and asked not to divulge the true nature of the experiment to others who might eventually participate.

Results and Discussion

Initial data screening indicated two outliers (one participant from each mood condition, with one being staff and one a student participant) were more than 3 standard deviations away from the mean on the dependent variables. These participants were removed from further analyses, leaving an overall sample size of 39 (20 in the positive and 19 in the neutral mood condition). A t test confirmed that the mood manipulation was successful, with participants in the positive mood condition reporting significantly higher happiness on the mood check item (M = 7.15, SD = 1.46) compared with those in the neutral condition (M = 6.21, SD = 1.32), $t(38) = 2.11$, $p < .05$. As expected, given that this study contrasted induced PA with neutral/freestanding mood, no differences emerged between conditions in the proportion of coherent or incoherent triads judged as coherent (for coherent triads, Ms = .59 and .61, and for incoherent triads, Ms = .41 and .43, for positive and neutral conditions, respectively). Notably, these means are quite similar to those reported by Bolte et al. (2003) for positive and freestanding moods. Replicating previous research, participants were significantly faster to respond to coherent triads (1,619.68 ms) compared with incoherent triads (1,822.26 ms), $t(38) = 5.12$, $p < .0001$. Next, analyses turned to the main predictions of the study.

Intuition, PA, and judgments of semantic coherence. Recall that we had predicted that intuitive individuals in the positive mood condition should be more accurate than other participants in identifying coherent triads. In addition, to test for mood-as-information effects, it was important to examine whether these

[2] The students and staff did not differ in terms of FI scores, coherence judgments across conditions, or ability to discriminate between coherent and incoherent triads (ps > .17). Intuition and performance on coherent and incoherent triads were also independent of age (rs < .12, *ns*).

[3] In Study 3, we also administered a brief version of the Need for Cognition Scale (Cacioppo, Petty, & Kao, 1984; see Pacini & Epstein, 1999). Regression analyses, similar to those reported in the main text, tested whether this personality variable exerted main effects or interactions effects (with condition) on the outcome variables. None of these analyses yielded significant results (ps > .33). Furthermore, controlling for need for cognition, the Condition × Intuition interaction remained significant (β = .47, $p < .03$).

individuals also attributed coherence to incoherent triads.[4] To probe the two-way interactions within triad type, centered FI scores, dummy-coded mood conditions (0 = neutral, 1 = positive), and their product were entered in two hierarchical regression equations predicting the proportion of triads judged as coherent, one for incoherent triads and one for coherent triads. With regard to incoherent triads, no significant effects emerged (for the Condition × Intuition interaction, $\beta = -.05$, $p = .84$), suggesting that mood as information did not bias coherence judgments for incoherent triads.

In contrast, with regard to coherent triads, in the absence of main effects ($p > .51$), the significant Condition × Intuition interaction emerged ($\Delta R^2 = .10$, $p < .05$; $\beta = .13$, $p < .05$). Generated regression lines for individuals in each mood condition are shown in Figure 3. As can be seen in the figure (and as predicted), individuals who were highly intuitive and in the positive mood condition were particularly apt at identifying coherent triads as coherent.

As further evidence that the performance of intuitive individuals in the positive mood condition was not driven by a tendency to simply find everything coherent, a final hierarchical regression equation predicted judgments of coherence for coherent triads, controlling for misperceptions of coherence for incoherent triads. Main effects were entered on the first step contributing significantly ($\Delta R^2 = .27$, $p < .03$), with incorrect coherence judgments predicting correct coherent judgments ($\beta = .47$, $p < .002$). However, controlling for this main effect, the significant Condition × Intuition interaction remained ($\Delta R^2 = .11$, $p < .02$; $\beta = .48$, $p < .02$). The pattern of generated regression lines for this interaction replicated that shown in Figure 3.

Discriminating sense from nonsense. Next, the data were examined using a signal detection approach (Pollack, 1970) that has been used in a number of studies of coherence judgments (Bolte & Goschke, 2008; Bolte et al., 2003). For each participant, we calculated a nonparametric measure of discrimination between coherent and incoherent triads, or A' (Pollack, 1970). A' varies from 0 to 1.0 (for chance performance, $A' = .50$). Higher values of A' indicate higher levels of hits (i.e., coherent judgments for coherent triads) versus false alarms (i.e., coherent judgments for incoherent triads).[5] A' was regressed on condition, individual differences in intuition, and their interaction. Corroborating the results thus far, in the absence of main effects ($p > .56$), the interaction contributed significantly to the equation ($\Delta R^2 = .13$, $p < .03$; $\beta = .48$, $p < .002$). Examining the contribution of intuition to A' in each condition separately showed that although intuition was not a significant predictor of accuracy in the neutral mood condition ($\beta = -.24$, $p > .32$), it positively predicted accuracy in the positive mood condition ($\beta = .50$, $p < .026$). The simple regression lines predicting A' for each condition from intuition are shown in Figure 4, illustrating that in the positive mood condition, intuition was positively associated with discriminating between coherent and incoherent triads.

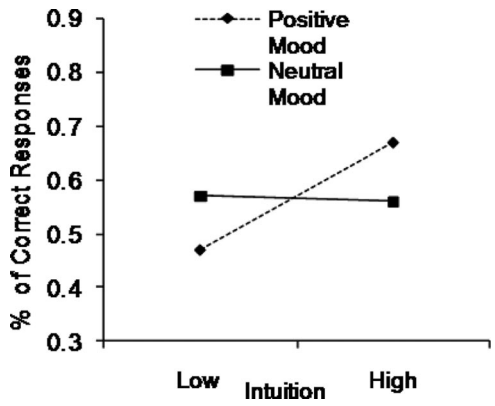

Figure 3. Proportion of coherent triads accurately identified as coherent as a function of mood condition and intuition, Study 3.

Ease of processing. As already noted, participants in general were faster to respond to coherent than incoherent triads. It is notable that intuition was not correlated with RTs to either coherent or incoherent judgments (ps > .31). In addition, intuition and mood condition did not interact to predict RTs to either type of triad (ps > .75). Furthermore, in additional regression analyses, controlling for RTs ($\beta = -.35$, $p < .01$), the interaction of condition and intuition remained a significant predictor of accurate judgments for coherent triads ($\beta = .49$, $p < .02$) as well as A' ($\beta = .48$, $p < .03$). Similar results were found when these dependent measures were regressed on the difference in RTs across coherent and incoherent triads and the main variables of interest. Finally, neither RTs to the coherent and incoherent triads nor the difference between these interacted with condition and intuition to predict coherence judgments. These results suggest that individuals who are highly intuitive (and in a good mood) are better than others at recognizing coherent triads as coherent, and this accuracy is not explained by speed of processing.

[4] We predicted a significant interaction for coherent triads but no such interaction on incoherent triads. As such, the first step in the analyses would be to test for the expected three-way interaction. Because type of triad was a within-participant factor, a straightforward regression equation could not accommodate this analysis, which is, essentially, a 2 (triad type: coherent vs. incoherent, within-participant) × 2 (mood condition: positive vs. neutral) × individual differences in intuition. To justify examining each triad type separately, we tested for the predicted three-way interaction in two admittedly imperfect ways. First, we conducted a median split on the FI scores and performed a 2 (type: coherent vs. incoherent) × 2 (mood condition: positive vs. neutral) × 2 (intuition: high vs. low) analysis of variance with triad type as a within-participant factor. Second, we treated triad type as a between-participant factor in a regression equation (essentially doubling the degrees of freedom for the analysis). For both analyses, the dependent measure was the proportion of triads judged as coherent. Both analyses showed a main effect of triad type, indicating that overall, participants were more likely to judge coherent triads as coherent compared with noncoherent triads, $F(1, 35) = 63.16$, $p < .0001$; for the regression, $\beta = .63$, $p < .001$. More important, both of these main effects were qualified by significant three-way interactions; for the analysis of variance, the three-way $F(1, 35) = 4.85$, $p < .04$; for the regression, the three-way $\Delta R^2 = .04$, $p < .05$; $\beta = .18$, $p < .05$. Thus, each of these analyses justifies examining the incoherent and coherent triads separately to probe the predicted differences in two-way interactions.

[5] If a participant has more hits (H) than false alarms (FA), $A' = .5 + (H - FA)(1 + H + FA)/4H(1 - FA)$. If participants have more false alarms than hits, $A' = .5 - (FA - H)(1 + FA - H)/4FA(1 - H)$. If hits equal false alarms, A' is .50 (Bolte et al., 2003; Pollack, 1970).

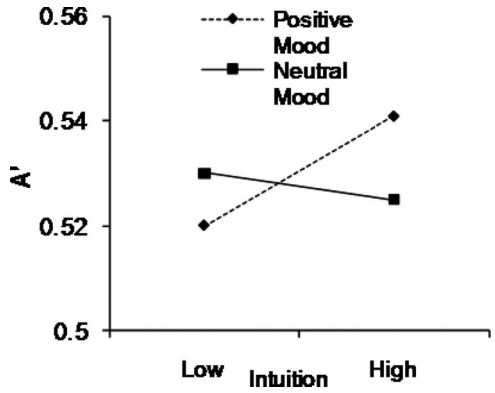

Figure 4. Discrimination of coherent and incoherent triads (*A′*) as a function of mood condition and intuition, Study 3.

General Discussion

These results support the prediction that PA and individual differences in intuitive processing style interact to promote feelings of meaning. Individual differences in intuitive processing style moderated the relationship of PA to reports of understanding ambiguous texts and works of art (Study 1) and greater appreciation for the underlying meaning of a negative life event (Study 2, Sample 1). PA related to seeing even a profoundly negative event as fitting with preexisting expectations and knowledge, for individuals who were highly intuitive (Study 2, Sample 2). In Study 3, participants who were intuitive and in a positive mood condition were more likely than other participants to accurately recognize the coherence of loosely related linguistic associates. Furthermore, these individuals were not more likely to misattribute coherence to incoherent stimuli. The consistent pattern across such diverse stimuli and judgments ranging from self-reports of understanding to automatic judgments of semantic coherence is striking and demonstrates the ways that feelings of meaning are fostered by the mixture of intuitive processing style and PA.

The results of Studies 1 and 2 might be interpreted as indicating that for intuitive individuals, positive mood facilitates to the presence of sense. Of course, the actual meaning of these stimuli or experiences was inherently ambiguous and open to varied interpretations. It is impossible to tell whether participants actually got the meaning present. Nevertheless, for intuitive individuals, PA was strongly related to the feeling of rightness. Although some individuals, for example, may interpret the meaning of artwork as nothing more than gibberish, meaning is readily apparent (or at least reported as such) for individuals who are happy and intuitive. These results complement research that has associated PA with the presence of sense using more constrained laboratory stimuli (e.g., Topolinski et al., 2009). For all of their limitations, it is important to note that these two studies demonstrate the application of feelings of meaning for materials that reflect the kinds of stimuli individuals encounter in everyday life. It is also important to note, of course, that these studies suggest that individual differences in intuition may moderate the role of PA in the perception of sense.

Although mood-as-information effects can explain the findings for Studies 1 and 2, the results of Study 3 cannot be easily explained by this account. If these individuals were solely relying on mood as information, then they should have been more likely to indicate that all stimuli were coherent (i.e., coherent and incoherent stimuli). This, of course, was not the case: Happy, intuitive people were not more likely than others to indicate that the incoherent triads were coherent. The results of Study 3 indicate that, in this instance, happy, intuitive participants were actually "getting it" in that they correctly discriminated sense from nonsense.

The results of Study 3 cannot be explained by mood-as-information effects, begging the question of what mechanisms may explain the performance of intuitive individuals in the positive mood condition. Results for RTs suggest that at least one possible explanation (processing speed) does not account for the performance of intuitive individuals in a positive mood. Study 3 provides clues as to other candidates that may account for these effects.

Underlying Mechanisms Revisited

A first possibility is that PA increased the spreading of semantic associates available to participants and these were more likely to be entertained by highly intuitive individuals. Although this explanation is possible, it would seem to be unlikely. Study 3 compared positive mood with neutral/freestanding mood, and these types of affective states do not differ reliably on spreading of activation (Storbeck & Clore, 2008). Nevertheless, to explore this possibility, future research might manipulate the quantity of common associates in memory (e.g., using a global/local processing manipulation; Friedman & Förster, 2001) to more directly test whether increases in common associates contribute to feelings of meaning for intuitive individuals.

Two remaining candidate mechanisms include the core affect that is triggered by ease of processing and the experiential gut feeling that this affect presumably instantiates (Topolinski & Strack, 2009b). If these results are driven primarily by fluency-triggered affect, we might conclude that feelings of meaning for highly intuitive individuals may be the results of extremely subtle mood-as-information effects (or, perhaps more aptly named, *implicit*-mood-as-information effects). To examine the role of core affect in the intuitive processing of these individuals, future research might manipulate core affect to examine whether such manipulations sabotage the intuitive judgments of intuitive individuals who are in a good mood.

However, it may be that all participants felt the same fluency-triggered affect in response to coherent triads (certainly participants generally responded to coherent triads faster than they did to incoherent triads), but highly intuitive individuals, especially when they are in good mood, are more likely to trust the experiential feeling that emerges as a result. Examining this link in the chain of intuitive judgments is clearly an intriguing direction for future research. One way to think about these results is that PA activates the intuitive system (as suggested by King et al., 2007), consequently leading highly intuitive individuals to use the information processing system that is, in fact, most appropriate to the types of judgments used in Study 3 (Topolinski & Strack, 2008). PA may clear the mental landscape of rational interference, allowing the intuitive system to do its work.

One important implication of the present research is that individual differences in intuitive processing style play an important role in intuitive processing. This statement might seem strikingly

obvious (or strangely redundant). Yet, individual differences in intuition have not been considered in past research on the association between mood and cognition. Most important, past research has shown that induced PA promotes the accuracy of intuitive judgment, but individual differences in intuition have not been examined in this work. The present results suggest that such individual differences may moderate the role of PA in semantic coherence judgments.

A second, perhaps equally important, implication is that to understand the workings of the intuitive system, positive mood must be incorporated into research designs. Notably, past research on individual differences in intuitive processing has not shown many direct or unique relationships between this individual difference and outcomes (other than heuristic processing and stereotypical thinking; e.g., Epstein et al., 1996). Past research has often found nonsignificant effects of FI on rational judgments (e.g., Pacini & Epstein, 1999). In terms of correlations with psychological functioning and personality traits, intuitive and rational thinking styles often relate to these variables in similar ways (Epstein et al., 1996; Pacini & Epstein, 1999). The present studies, along with past research on nonrational beliefs and behaviors, indicate that to examine the role of intuitive processing styles in beliefs and behaviors, PA must be included in the mix.

Implications for the Experience of Meaning

The meaning maintenance model states that violations of meaning promote automatic attempts to make sense of experience (Heine, Proulx, & Vohs, 2006). According to this model, individuals often reinstate meaning via alternate routes when expectations in a particular realm have been violated. For example, after threats to meaning, individuals are more easily able to learn the patterns of association embedded in a subsequent task (e.g., meaningful patterns of letters in a letter string), presumably because making sense out of the present environment helps them reinstate a sense of meaning (Proulx & Heine, 2008, 2009; see also Whitson & Galinsky, 2008). Integrating these findings with the current research, future studies should examine whether happy, intuitive individuals would also be motivated to reinstate meaning after such threats. Alternatively, would these individuals be less likely to perceive common threats to meaning as indeed threatening (i.e., would they be more or less likely to understand that there has been a violation of expectations)?

Faced with troubling experiences, some individuals find the struggle to make sense to be a never-ending task that takes on a pernicious character (e.g., Keesee, Currier, & Neimeyer, 2008). For such individuals, a satisfying sense of resolution is simply impossible. Feelings of subjective rationality may allow an individual to simply assimilate a potentially problematic experience, without the need to analyze or make sense of it, because sense is experienced as simply there. This possibility has important implications for research on the effects of trauma on psychological functioning. Positive affect has been shown to facilitate recovery from traumatic experiences (e.g., Folkman & Moskowitz, 2000; Fredrickson & Levenson, 1998; Tugade & Fredrickson, 2004). Although PA may increase the amount of information accessible in memory that can ultimately help the individual make sense of the experience, perhaps only those who are intuitive incorporate this new information into existing cognitive schemas. The tendency to readily incorporate novel information may facilitate the reinstatement of meaning and may make these individuals relatively immune to expectation violation (which is consistent with the results of Studies 1 and 2). Future research ought to examine these variables in the context of more personally traumatic events to examine whether intuition interacts with positive emotional experiences in the experience of meaning in such events.

Although this investigation has focused on the effects of PA and intuition on feelings of meaning, future research should consider the contributions of NA to these feelings. Baumann and Kuhl (2002) found that negative mood was more likely to be associated with ruminative cognitions and difficulty in performance on an intuitive task. Because NA likely decreases the quantity of common associates in memory (e.g., Bolte et al., 2003), individuals who are highly intuitive may be more likely to attribute these cognitive changes as signifying that the environment is void of meaning. Further, the meaningless mindset fostered by NA may actually enhance accuracy for the identification of meaningless stimuli (e.g., incoherent triads, random visual displays) for these individuals.

Recently, Kahneman and Klein (2009) have suggested that adaptive intuitive judgments are based on learned associations and that intuitive skill should be understood as context specific. Intuitive mistakes are likely to occur when experts overuse heuristics or solutions that work in one context but not others. In a sense, although all three of the present studies showed very similar patterns of results, only in Study 3 is the adaptive nature of those judgments clear. It might be that the results of Studies 1 and 2 represent the overuse of PA and indicators of ease of processing in feelings-of-meaning judgments. Additionally, past research has shown remarkably similar patterns predicting nonrational beliefs and behaviors (e.g., paranormal beliefs, magical behavior, King et al., 2007; and referential thinking, King & Hicks, 2009b). Ironically, the results of the present studies suggest that the very processes that promote such nonrational beliefs and behaviors play a similar role in the general feeling of understanding of life experiences.

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Appendix A

Stimuli Used in Study 1

Quotes Used in Sample 1

1. Sometimes it's necessary to go a long distance out of the way in order to come back a short distance correctly.
2. There are some remedies worse than the disease.
3. Think like a man of action, act like a man of thought.
4. To learn something new, take the path that you took yesterday.
5. No matter where you go or what you do, you live your entire life within the confines of your head.
6. If a placebo has an effect, is it any less real than the real thing?

Zen Koans Used in Sample 2

1. If you understand, things are just as they are . . . if you do not understand, things are just as they are.
2. One day as Manjusri stood outside the gate, the Buddha called to him, "Manjusri, Manjusri, why do you not enter?" Manjusri replied, "I do not see myself as outside. Why enter?"
3. Two monks were arguing about the temple flag waving in the wind. One said, "The flag moves." The other said, "The wind moves." They argued back and forth but could not agree. Hui-neng, the sixth Patriarch, said: "Gentlemen! It is not the flag that moves. It is not the wind that moves. It is your mind that moves."
4. One day Chuang-tzu and a friend were walking along a riverbank. "How delightfully the fishes are enjoying themselves in the water!" Chuang-tzu exclaimed. "You are not a fish," his friend said. "How do you know whether or not the fishes are enjoying themselves?" "You are not me," Chuang-tzu said. "How do you know that I do not know that the fishes are enjoying themselves?"

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