

When the Absence of Reasoning Breeds Meaning: Metacognitive Appraisals of Spontaneous Thought

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Abstract

Intuitions, attitudes, images, mind-wandering, dreams, and religious messages are just a few of the many kinds of uncontrolled thoughts that intrude on consciousness spontaneously without a clear reason. Logic suggests that people might thus interpret spontaneous thoughts as meaningless and be uninfluenced by them. By contrast, our survey of this literature indicates that the lack of an obvious external source or motive leads people to attribute considerable meaning and importance to spontaneous thoughts. Spontaneous thoughts are perceived to provide meaningful insight into the self, others, and the world. As a result of these metacognitive appraisals, spontaneous thoughts substantially affect the beliefs, attitudes, decisions, and behavior of the thinker. We present illustrative examples of the metacognitive appraisals by which people attribute meaning to spontaneous secular and religious thoughts, and the influence of these thoughts on judgment and decision-making, attitude formation and change, dream interpretation, and prayer discernment.

Key Words: spontaneous thought, mind-wandering, decision-making, attribution, metacognition

At times you have to leave the city of your comfort and go into the wilderness of your intuition. What you'll discover will be wonderful. What you'll discover is yourself.

—Alan Alda, *Commencement Speech at Connecticut College (1980)*

Spontaneous thoughts are uncontrolled thoughts, generated for reasons and by processes inaccessible to the thinker (e.g., Marchetti, Koster, Klinger, & Alloy, 2016; Miller, 1962). As such, people might justifiably view spontaneous thoughts to be random and meaningless byproducts of their past or present circumstances. The literature that we survey suggests the opposite. Precisely because their origin is ambiguous, people attribute considerable meaning to spontaneous thoughts, including attitudes, dreams, intuitions, intrusive thoughts and memories, mind-wandering, and prayers. People

perceive spontaneous thoughts to provide important insights about self, others, and their world. As a consequence of the meaning imbued through these metacognitive appraisals, spontaneous thoughts can profoundly influence behaviors, including beliefs, attitudes, and decisions. We present a synopsis of this literature and illustrative examples in domains including judgment and decision-making, attitude formation and change, dream interpretation, and prayer.

Spontaneous Thoughts Are Attributed Peculiar Meaning

Spontaneous thoughts have long been attributed considerable meaning across a wide swath of religions, secular cognition, and scientific theory. Religious and mythological texts from antiquity relate many cases in which spontaneous thoughts in the form of dreams and visions were imbued with

divine commands and revelations. Early biblical passages, for instance, describe many instances in which God communicates God's actions or will to believers and heathens through spontaneous visions and dreams. In contemporary religions, such as among Evangelical Christians, believers find meaning similar to that found by their ancient counterparts in their dreams and the spontaneous thoughts that occur to them during prayer (Luhmann, 2012).

Secular literature and popular culture abound with similar examples of influential spontaneous thoughts. Famous cases include people tortured by intrusive thoughts (e.g., Dostoyevsky, 1866/2011; Homer, 8th century BCE; Poe, 1976). Achilles was so tortured by intrusive thoughts of his deceased friend Patroclus that he could not sleep (Homer, 8th century BCE). Mercutio and Lady Macbeth were similarly haunted with nightmares of past battles and murder, respectively (Shakespeare, 1595/1985; 1623/2001). Modern literature is full of cases in which people are well guided by their intuition (e.g., "trust your gut"). Agatha Christie lauded the utility of trusting intuition in her famous mystery novels (Christie, 1930/2011), for instance, as did Madeleine L'Engle in her popular fantasy novels for children (e.g., 1973).

Early and recent clinical, cognitive, and social psychological theories and methods reflect a similar view of the importance attributed to dreams and spontaneous thoughts. Early psychoanalytic traditions viewed dreams as a "royal road" to the unconscious motives and emotions that guide behavior (e.g., Freud, 1900/1953). More recent psychological theories and practices place considerable value on the elicitation of spontaneous thought because those thoughts are perceived to provide access into unconscious processes (e.g., Gawronski & De Houwer, 2014; Mihura, Meyer, Dumitrascu, Bombel, 2013; Murray, 1943; Schafer, 1954), are purported to reflect the undistorted preferences of the thinker (e.g., Dijksterhuis, Bos, Nordgren, & Van Baaren, 2006; Wilson & Schooler, 1991), and may be less affected by self-presentational concerns and experimental demand than similar deliberate forms of cognition (Nosek, 2007; cf. Fiedler & Bluemke, 2005). For instance, the first thought that occurs spontaneously in response to the prompt "African American" might reveal which of several concepts related to that stimulus is most chronically accessible (Bargh & Chartrand, 2014), and spontaneous methods of attitude elicitation such as the implicit association test (IAT) may reveal more negative associations with "African American" than

a typical person might be willing to explicitly reveal (Gawronski & De Houwer, 2014).

In this section, we review evidence suggesting that both laypeople and scientists often attribute greater meaning to spontaneous thoughts in the form of intuitions, attitudes, counterfactuals, intrusive thoughts, dreams, and prayers than to similar forms of deliberate cognition. Indeed, people perceive that the spontaneity of a thought signals its truth-value and accuracy (e.g., Topolinski & Reber, 2010), or the quality of a decision (e.g., Kupor, Tormala, Norton, & Rucker, 2014). People even attribute greater meaning to spontaneous thoughts than more deliberative or effortful thinking when the content of spontaneous and deliberate cognitions is similar (Morewedge, Giblin, & Norton, 2014; Morewedge & Norton, 2009).

Spontaneous Thoughts Are Meaningful Mental Events

Although it would be reasonable to believe that random thoughts are less meaningful than thoughts with an apparent cause, secular laypeople, religious congregants, and scientists in many cases attribute meaning to thoughts precisely because they occurred spontaneously. Features of spontaneous thoughts, such as their high processing fluency, certainly can contribute to the meaning they are attributed. However, the spontaneity of a thought itself may be taken as a signal of its importance, whether the thinker is examining her thoughts for traces of a divine origin, inferring if an action is morally praiseworthy or blameworthy, or determining her attitude toward a new stimulus or recent decision.

Approximately one-third to one-half of thought is spontaneous (Klinger & Cox, 1987), and people derive significant meaning from the occurrence of their spontaneous thoughts. Indeed, people explicitly attribute meaning to thoughts to the extent that they are perceived to be spontaneous. In one study we conducted, research participants ($N = 198$) appraised 13 categories of thought on the extent to which each provided insight into the self, and the extent to which they tend to occur spontaneously versus deliberately: intuition, deliberation, dreaming, Freudian slips, thoughts under hypnosis, mind-wandering, logical thoughts, problem-solving, random thoughts, rumination, spontaneous thoughts, and thoughts while under the influence of a truth serum. The greater the extent to which each of those categories of thought was perceived to be spontaneous linearly predicted the extent to which it was perceived to reveal

meaningful insight into the mind of the thinker (Morewedge et al., 2014; Figure 4.1).

The spontaneity of a thought may imbue it with meaning by signaling its truth-value. “Ah-ha” moments, solutions to problems that appear to the thinker through sudden insight, are perceived to provide true insight to the extent that they are perceived to have been surprising. These solutions benefit from their high fluency (i.e., ease of cognitive processing), which can lead them to be evaluated more positively (Zajonc, 1968). However, spontaneous insights must be distinctive in their prominence or suddenness to be perceived as more creative and truer than alternative solutions (Pronin, 2013; Topolinski & Reber, 2010). Manipulating fluency through the figure-ground contrast of font and background colors, Reber and Schwartz (1999) found that people perceived high-fluency statements to be truer than low-fluency statements, but only when the high-fluency statements were immediately followed low-fluency statements. When a high-fluency statement was embedded in a block of other high-fluency statements, its fluency was

insufficiently surprising to increase its perceived truth-value.

For some, the spontaneity of a thought during prayer is taken as a possible signal of its divine truth—that it is the will of God. Evangelical Christians in the Vineyard tradition regularly engage in communication with God through prayer. The form of this communication often follows a question-response format. The person praying deliberately formulates a query or topic, and then waits for a response from God in the form of a spontaneous thought. This potentially divine thought is then examined by the individual and her religious community through a process of prayer discernment, with many thoughts classified as divine messages from God. One example of such a “discourse” is the individual picturing a person for whom she is concerned, and waiting until a word is spoken or appears in her mind across the picture. These spontaneous thoughts are often described as verbal or visual stimuli, such as a spoken word, written word, or image, which are often accompanied by a positive affective cue (Luhmann, 2012).

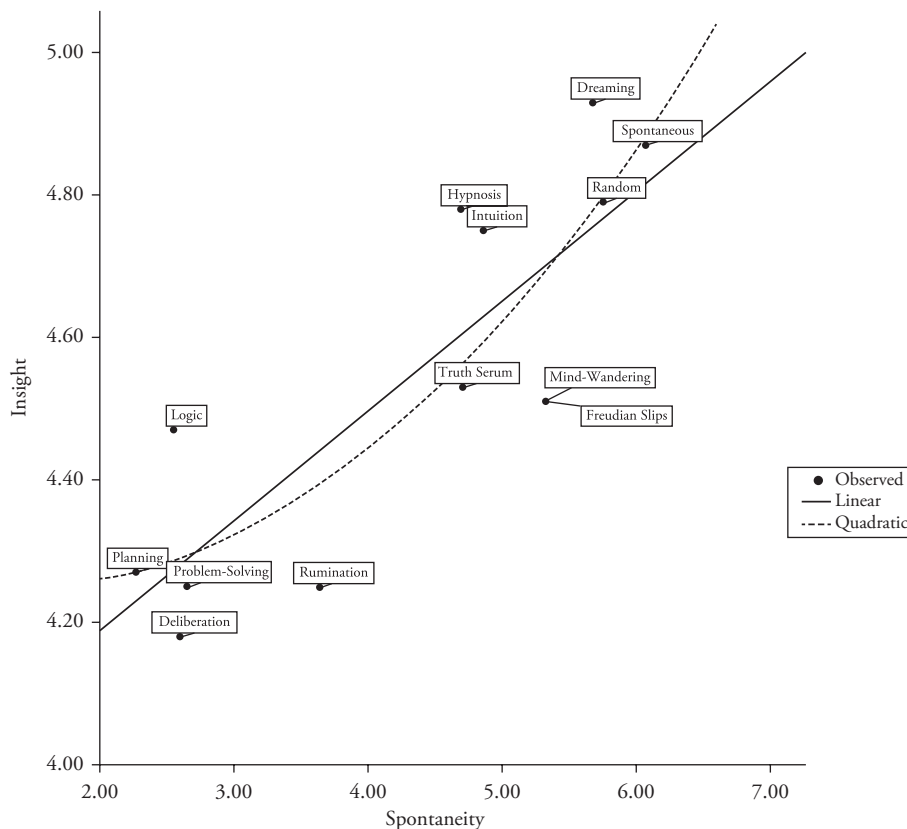


Figure 4.1. Greater perceived thought spontaneity increases perceived insight into the thinker’s mind. Reprinted from Morewedge, Giblin, and Norton (2014).

Secular spontaneous beliefs and attitudes are often immediately accepted as true (e.g., Frederick, 2005; Morewedge & Kahneman, 2010). Rather than questioning why they occurred, people often engage in post hoc rationalization and a search for supporting arguments to justify these intuitive beliefs and attitudes. A sudden disgust response, for instance, can prompt the thinker to generate reasons justifying her initial feeling (e.g., Haidt, 2001). If a disgust response occurs when she is evaluating non-normative but harmless activities, such as homosexual sex, that explanatory process may lead her to then believe that the activity is immoral (e.g., Inbar, Pizarro, Knobe, & Bloom, 2009).

More generally, spontaneous affective reactions to stimuli cause people to immediately and unintentionally evaluate stimuli across a wide range of domains as good or bad. People interpret positive (or negative) affect as an indicator that their attitudes toward a focal stimulus must be positive (or negative; Chaiken, 1987; Zajonc, 1980). Such automatic evaluations occur even when people do not have a goal of evaluating the stimulus (Bargh, Chaiken, Raymond, & Hyme, 1996). As a result of these spontaneous thoughts, people's preferences, judgments, and attitudes can be formed before they are consciously aware of them (e.g., Loewenstein, Weber, Hsee, & Welch, 2001; Morewedge & Kahneman, 2010; Zajonc, 1980).

Spontaneous thoughts can also serve as meaningful signals about the quality of an activity or decision. If spontaneous thoughts arise that are unrelated to the focal activity in which the thinker is engaged, she may infer that she is unsatisfied with it (e.g., bored; Eastwood, Frischen, Fenske, & Smilek, 2012). For example, if a moviegoer finds his mind wandering to other pleasant or entertaining events, he is more likely to infer that he is not enjoying the movie than that he has a poor attention span (Critcher & Gilovich, 2010; Eastwood et al., 2012). Indeed, people report being happier throughout the day when their mind is focused on the activity in which they are engaged than when their mind wanders elsewhere (Killingsworth & Gilbert, 2010; Smallwood & Schooler, 2015).

Counterfactual thoughts, a particular type of mind-wandering in which people imagine what could have been if events had unfolded differently, can signal dissatisfaction with a decision or outcome in the recent or distant past (e.g., Iyengar, Wells, & Schwartz, 2006). For example, if a consumer thinks about a laptop other than the laptop he just purchased, he might infer that he isn't happy with

the laptop that he bought (Mannetti, Pierro, & Kruglanski, 2007; Morewedge, 2016). Similarly, a student's counterfactual thoughts about how she might have performed better on a test are likely to indicate to her that she is unhappy with her test performance (Roese & Hur, 1997). Intriguingly, people also report being less attracted to their current or recent significant other if mind-wandering leads them to think of another person to whom they are sexually attracted than if the attractive other is identified through more deliberate reasoning processes (Morewedge et al., 2014).

Spontaneous Thought Content Is Important Thought Content

In many contexts, people perceive the content of spontaneous thoughts to provide more meaningful information about the self, other people, and their world, than the content of similar deliberative and effortful thinking. In other words, people attribute greater meaning and importance to the content of their intuitions, reflexive and implicit attitudes, spontaneous thoughts, and even their dreams, than to similar content arising from more deliberate forms of cognition.

INTUITION

People explicitly believe that intuition provides better solutions for some of their decisions than deliberate forms of thinking, as when choosing a spouse or dessert (Inbar, Cone, & Gilovich, 2010). People also apply this same belief to others' decisions. When an actor makes a fast decision about an easy choice set (e.g., a choice set in which products differ only in color), observers infer that the actor is a better decision-maker and are more willing to follow that actor's advice in the future. In contrast, when an actor makes a fast decision about a difficult choice set (e.g., a choice set in which products differ across multiple non-aligning attributes), observers infer that the actor is a poor decision-maker (Kupor, Tormala, Norton, & Rucker, 2014). Whether people make decisions for themselves or simply observe others' decisions, people explicitly believe that intuition can be a conduit to quality decisions.

These beliefs are not necessarily misguided. In some cases, intuition may be a better way to make decisions than deliberation (Dijksterhuis et al., 2006; Wilson & Schooler, 1991; cf. Payne, Samper, Bettman, & Luce, 2008). When making complex decisions involving multiple attributes, deliberation can lead people to place undue weight on a subset of attributes that happen to be salient

at the time of judgment for idiosyncratic reasons. A chronic flaw in graduate admissions, for example, is the tendency to base admissions decisions on how candidates performed in their interview, rather than on more predictive and quantifiable measures of their performance, such as their GRE exam score (Dawes, 1979).

Even in cases where people believe deliberation is a better process by which to make decisions than intuition, people perceive decisions that they made through intuition to be as good or better than decisions that they made through deliberation. In an incentive-compatible experiment in which students received one of five posters for their dorm room, students predicted that they would like the poster that they chose more, and would be willing to forgo more money to keep their poster, if they selected a poster deliberately than if they selected a poster by letting their mind wander until a choice came to mind (Giblin, Morewedge, & Norton, 2013). In a second group of students who actually selected a poster (see Figure 4.2), both groups of participants reported liking their poster equally and were willing to forgo similar amounts of money to keep their poster. In addition, both groups liked and valued their poster considerably more than did students who were randomly assigned a poster.

People even prefer to rely on their intuition when compelling reasons suggest that their intuition is wrong (e.g., Denes-Raj & Epstein, 1994; Kirkpatrick & Epstein, 1992; Morewedge &

Kahneman, 2010; Simmons & Nelson, 2006). One surprising example is ratio-bias. When people are given the chance to win money for drawing a red bean from a bowl, they intuit that they are more likely to win if they draw from a bowl that holds a larger number of red beans (e.g., 7 out of 100) rather than a bowl with a smaller number of beans with better odds (e.g., 1 out of 10). In other words, intuition suggests choosing the bowl with the most “chances” of winning, whereas rational deliberation suggests choosing the bowl with the most favorable ratio. Some people exhibit this ratio bias even when they are explicitly reminded that their odds are worse if they draw from the larger bowl (Peters et al., 2006).

People also believe that intuition reveals more about the mind and character of the thinker than more deliberate forms of cognition, whether the thinker is another person or the self. For example, a person who finds a cash-filled wallet and decides to keep it is judged to be more immoral if he quickly decides to keep the wallet than if he decides to keep it after deliberating. Conversely, a person who decides to return the wallet to its rightful owner is judged to be more moral if he quickly decides to return the wallet than if he returns it after deliberating (Critcher, Inbar, & Pizarro, 2013).

People similarly derive more self-insight from their own intuitive than deliberative decision-making, even when the decision they are making is how to categorize other people. In an illustrative

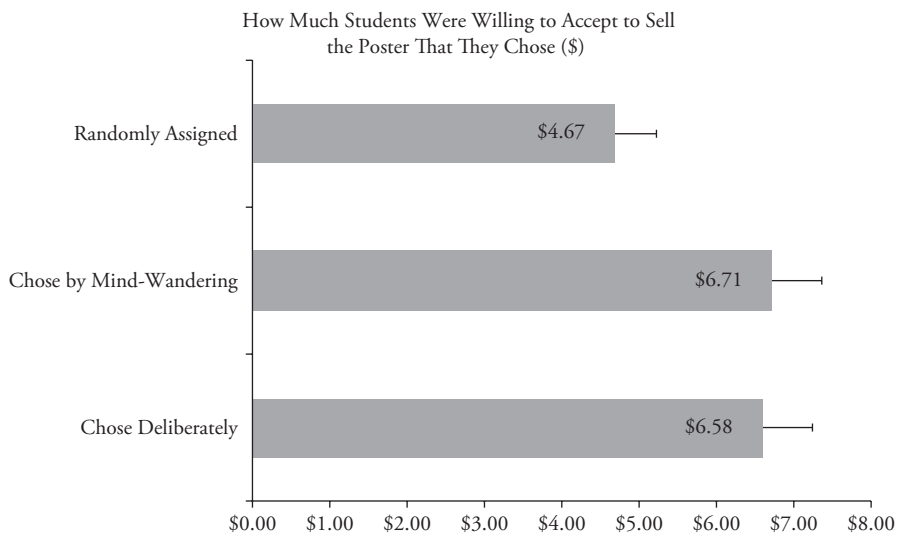


Figure 4.2. How much real money participants were willing to forgo (\$USD) to keep a poster they received through random assignment, spontaneous selection process (i.e., mind-wandering), or a deliberate selection process. Adapted from Giblin, Morewedge, and Norton (2013).

experiment, research participants were shown four people and were asked to generate one word to describe each person (Morewedge et al., 2014). Participants who generated these descriptions intuitively (i.e., who used the first word that came to mind to describe each person) inferred that they gained greater self-insight from the descriptions that they generated than did participants who generated these descriptions in a more deliberate manner (i.e., who used the word they thought most logical to describe each person). In short, intuition is often perceived to provide more valuable insight into the self and others than similar deliberate forms of judgment and decision-making.

ATTITUDES

The spontaneous thoughts elicited by a persuasive message are a primary determinant of attitude formation and change (Greenwald, 1968). Rather than shaping people's attitudes directly, persuasive messages shape attitudes through the thoughts people have in response to the persuasive message. Consider a voter who hears Donald Trump advocate the construction of a wall between the United States and Mexico (e.g., "It's gonna be a great wall . . . This will be a wall with a big, very beautiful door because we want the legals to come back into the country"; Jerde, 2015). The voter should be more persuaded by the content of her spontaneous reactions to the proposal (e.g., "That's inhumane and absurd!" or "That will save American jobs!") than by the proposal itself. Repeated exposure to persuasive information can increase persuasion by inducing increasingly favorable cognitive responses (due to mere exposure). On the other hand, excessive repeated exposure can decrease persuasion by inducing unfavorable cognitive responses (because of repetition-induced tedium; Cacioppo & Petty, 1979; Calder & Sternthal, 1980). The thoughts that people have in response to a persuasive communication often determine whether the communication successfully instills or changes attitudes.

People also derive significant meaning from the content of others' spontaneous implicit evaluative associations. For example, when assessing the extent of racial bias in a group of people (e.g., police officers), researchers rely heavily on the people's spontaneous implicit associations. Indeed, some researchers have described measures that elicit spontaneous implicit racial responses as "unobtrusive measure[s] of racial attitudes" (e.g., Fazio, Jackson, Dunton, & Williams, 1995; Frazer & Wiersma, 2001). Moreover, some researchers suggest that

among individuals who express no explicit racial bias (i.e., do not behave in a biased manner), only individuals who show no implicit racial bias are "truly unprejudiced" (Fazio, Jackson, Dunton, & Williams, 1995). It is important to note that researchers are not in full agreement that implicit measures reflect people's true attitudes (e.g., Arkes & Tetlock, 2004), but many do argue that attitudes about race (and other topics) can be inferred from implicit spontaneous responses (e.g., Green et al., 2007; Teachman et al., 2003).

ASSOCIATIONS AND COGNITIVE RESPONSES

The content of a wide variety of more general associative and cognitive responses, whether regarding a person, experience, or object, is perceived to be more meaningful when it results from spontaneous rather than deliberative thinking. The recollection of a positive or negative childhood memory is believed to provide more meaningful information about the self if it occurs spontaneously rather than deliberately (Morewedge et al., 2014). For memories of past experiences recovered during therapy, whether or not those recovered memories are accurate, people believe the memories to be more meaningful if they are perceived to have been spontaneously recovered during therapy than if their recovery is perceived to have been deliberately prompted by another client or therapist (even though all such recovered memories are effectively prompted by someone other than the self; Bowers & Farvolden, 1996). Unplanned behaviors such as action slips, and errors of production such as slips of the tongue, are similarly believed to provide more telling information about the producer than comparable actions without error (Norman, 1981).

Spontaneous thought content not only is attributed greater meaning than similar deliberate thought content, but also can more potently influence downstream evaluations. For example, when people identify a person to whom they are attracted other than their present or most recent significant other, they perceive the person whom they identified to reveal more meaningful information about the self if they identified that person through mind-wandering rather than deliberation. Moreover, people report feeling more attracted to the person they identified through mind-wandering than deliberation, an effect mediated by the greater self-insight they attribute to the thought of that person (Morewedge et al., 2014).

Perhaps the most influential form of spontaneous thought may be that which occurs during prayer.

Most Americans (97%) report engaging in prayer (Smith et al., 2011), which typically takes the form of the individual asking a question of God, and then waiting for God to respond (Spilka & Ladd, 2012). Those responses can take the form of a voice, a word, an image, or a feeling. Although diverse in their form, a necessary condition for these mental events to be categorized as divinely inspired, and acted on, is that they are perceived to have occurred spontaneously. Individuals in the Vineyard tradition might seek divine guidance on consequential topics. The few domains they are trained to avoid seeking advice on through prayer include concrete advice and prophesying a birth, death, or marriage (Luhmann, 2012).

DREAMS

One of the most curious phenomena is the meaning people attribute to dreams. Rather than viewing dream content as the random byproduct of stimuli encountered, assisting memory consolidation or problem-solving, a majority of participants in college student samples from the United States (56%), India (73.8%), and South Korea (64.9%) endorsed a Freudian view of dream content. They believed that dreams are most likely to reveal hidden emotions, beliefs, and desires to which the thinker normally lacks access than to reflect these other functions (Morewedge & Norton, 2009).

Not only do people believe that dreams provide them privileged access inside their own mind, people seem to believe that dreams provide them with special insight into their external world. A separate group of participants imagined that one of four events occurred the day before they were scheduled to fly: they had a dream of their plane crashing; they had a conscious thought of their plane crashing; the Department of Homeland Security increased the national threat level to “Orange” (indicating a high risk of a terrorist attack); or a real plane crash occurred on the route they planned to fly. Participants in the dreaming condition reported that they would be as likely to avoid flying the next day as did participants in the condition in which there was an actual crash on the route they planned to take. Moreover, participants reported that having a dream of a plane crash would lead them to be more likely to avoid flying than having a conscious thought of a plane crash, or even the issue of a real federal warning suggesting that a terrorist attack was imminent (Morewedge & Norton, 2009).

Why Are Spontaneous Thoughts Attributed Meaning and Importance?

People have a belief in an “authentic” or “true” self (e.g., Aristotle, 350 BCE/1998; Newman, Bloom, & Knobe, 2013; Newman, Lockhard, & Keil, 2010; Schlegel, Hicks, Arndt, & King, 2009) to which they lack full access (Wilson, 2004). The true self is a valued construct, purported to be who one really is, regardless of outward behavior. People who believe they know their true self are more likely to report that their life is meaningful (Schlegel, Hicks, King, & Arndt, 2011). We suggest that the attribution of meaning to a thought is a metacognitive process of determining whether a thought is perceived to reveal meaningful information about the thinker’s true self, which follows a general model of source attribution (e.g., Gilbert, 1998; Wilson & Brekke, 1994). Specifically, people anchor on the belief that thoughts provide meaningful insight into the mind of the thinker, but may correct or deviate from this appraisal if the thought appears to be due to external influence. Because spontaneous thoughts are less likely to have an obvious external cause than deliberative thoughts, and are less likely to evoke the recruitment of external justifications, they are less likely to enact this correction process (Morewedge et al., 2014; Morewedge & Norton, 2009).

Attribution of Meaning as a Correction Process

Any given thought has the potential to reveal information about one’s true self to the extent that it is uninfluenced or uncontaminated by external sources. Given that thoughts originate within one’s own mind, we argue that the default is to assume that a thought reflects one’s true self and is free of external influence (with prayer and disordered thought being notable exceptions). As people believe they see the world objectively (e.g., Ross & Ward, 1996; Scopelliti et al., 2015), they should only correct from this default assumption when they believe that a thought was due to external influence (e.g., Bem, 1967), and only when they have sufficient motivation and capacity to correct from their default assumption.

Consider two examples: love and pizza. At first, the thought of a former lover is likely to be interpreted as providing meaningful information about one’s beliefs, attitudes, or desires. If no stimulus that could have evoked the thought is salient, the thinker is likely to assume that the thought occurred for some meaningful reason. If a stimulus that could

have evoked the thought is salient, such as the presence of the love interest in a social media feed, the thinker is likely to discount the meaning of the thought if she is motivated to engage in that discounting (e.g., she is currently in love with another person) and has sufficient cognitive resources to perform that discounting (Morewedge et al., 2014). Similarly, the thought of pizza while watching television might be initially interpreted as providing meaningful information about one's self, such as that one likes pizza, is hungry and wants pizza, or is struggling to adhere to one's diet (Kavanagh, Andrade, & May, 2005). If a potential external source of influence is particularly salient, however, such as an advertisement for pizza during the last commercial break, the thinker is likely to discount the meaning of the thought unless the television show is sufficiently distracting or the thinker is not motivated to adhere to his diet (e.g., Gilbert, Pelham, & Krull, 1988).

As evidence of this discounting model, people attribute considerable meaning to their dreams, but attribute more meaning to dreams that are more consistent with their desires and important beliefs. For example, people are more likely to attribute meaning to a pleasant dream that involved a person whom they like than to an unpleasant dream involving a liked person. Motivated reasoning in the attribution of meaning, however, may be overridden by important personal beliefs. For example, agnostics are more likely to attribute meaning to a dream in which God commands them to take a year off from their work to travel the world than to a dream in which God tells them to take a year off from their work to serve the sick and destitute. By contrast, religious believers perceive that both dreams are meaningful (Morewedge & Norton, 2009). It appears that people first appraise spontaneous thoughts, such as dreams, as meaningful—as did agnostics for dreams with pleasant implications (taking off for a year to travel the world), and as did religious believers for dreams with both pleasant and unpleasant implications. When the dream conflicts with an important belief or desire (e.g., betrayal by a loved one or giving up college to serve the poor), however, dreamers discount its meaning.

Religious believers engage in an analogous form of explicit discounting through their process of prayer discernment: how they decide which thoughts to attribute to God. Prayer discernment is an interesting case because individuals test whether another agent caused their thought, rather than test whether they were the agent that

caused their thought. When Evangelical Christians have a thought during prayer, they first examine whether the thought was spontaneous or deliberate. Deliberate thoughts are viewed as caused by the person who is praying, and thus are unlikely to have a divine origin. By contrast, spontaneous thoughts are viewed as possibly emanating from God. People then initiate a process of discounting in which they evaluate the thoughts for their adherence with her God concept, which is informed by her understanding of God's values, beliefs, and desires. As a final step, the individual often shares thoughts she believes might be communications from God with other members of her congregation, who often examine those thoughts for motivated reasoning on the part of the individual (Luhrmann, 2012). Although the focus of hypothesis testing is inverted relative to spontaneous thoughts with secular origins, these individuals follow a similar metacognitive appraisal process to discern whether a thought should be attributed to God (an external agent) or a different source.

Our discounting model is rooted in theories elucidating the attribution of causality and person perception. Basic models of animacy and mind perception attribute actions to the actor's mental states to the extent that the actions are internally rather than externally caused (Heider, 1958; Michotte, 1963; for a more recent review, see Morewedge, Gray, & Wegner, 2010). Which hypothesis is tested—whether an action is internally or externally caused—is generally determined by the attentional focus of the person making the attribution (for a review, see Gilbert, 1998). Observers judging the extent to which the behavior of an actor reveals information about her disposition tend to anchor on attributing that behavior to her disposition and fail to correct sufficiently for situational influences on her behavior (Jones & Harris, 1967; Scopelliti et al., 2016). Conversely, observers judging the extent to which an actor's behavior reveals information about the influence of her situation tend to anchor on attributing her behavior to situational influences and fail to sufficiently correct for the role of her disposition (Krull, 1993).

We suggest that when people attribute meaning to a particular thought, the focal hypothesis tested is “Does this reveal meaningful insight about the mind of the thinker?” This focus anchors their judgment on the thinker as a cause, a hypothesis that is likely to be confirmed unless there is compelling reason for adjustment from this anchor or disconfirmatory hypothesis testing (Nickerson, 1998).

Other roots of our model stem from research testing dual-process models of attitudes, such as the heuristic systematic model (Chaiken, Liberman, & Eagly, 1989; Trumbo, 2002; Zhang, Luo, Burd, & Seazzu, 2012) and the elaboration likelihood model (Kupor & Tormala, 2015; Petty & Cacioppo, 1986; Petty & Wegener, 1999; Rucker & Petty, 2006). In these models, the extent to which a persuasive message is incorporated into the recipient's belief system and forms or changes her attitudes is largely a function of whether or not she generates countervailing cognitive responses, such as counterarguments to its message. If the message recipient is unmotivated or is too cognitively overloaded to systematically process the message and correct for its influence (Petty, Cacioppo, & Schumann, 1983; Petty, Wegener, & White, 1998), her attitude is likely to move in the direction of that message.

Spontaneous Thoughts Evoke Less Correction

When people appraise the extent to which a thought reflects their true self, we suggest that spontaneous thoughts are less likely to prompt a correction process than similar deliberate forms of reasoning because the former are less likely to be attributed to external sources. Spontaneous thoughts are less easily linked to an obvious external cause, and they are less likely to prompt thinkers to search for corroborating external reasons to justify those thoughts than similar thoughts generated via deliberation.

The link between spontaneous thoughts and the external stimuli that caused them is often more ambiguous than the link between a deliberate thought and external stimuli. Many of the images, voices, feelings, and thoughts that arise spontaneously explicitly fall into the category of "stimulus-independent thought" (Mason et al., 2007), suggesting that they are less likely to be tied to stimuli in the thinker's immediate environment than more deliberate "stimulus-dependent thought." Indeed, mind-wandering and dreaming are forms of thought that are typically unrelated to the present environment of the thinker. By definition, dreaming occurs while the thinker has no conscious awareness of her present environment. Intuitions are similarly difficult to trace to external causes, as the process by which they were generated is usually inaccessible to the thinker (Johansson, Hall, Sikström, & Olsson, 2005; Nisbett & Wilson, 1977). The more ambiguous link between spontaneous thoughts and their external causes than between

similar deliberate thoughts and their external causes should make the thinker less likely to discount the meaning attributed to her spontaneous rather than deliberate thinking.

In addition to less obvious external causes, we argue that thinkers are less likely to explicitly search for external reasons to justify a spontaneous thought than a similar deliberate thought. People are certainly able to generate reasons for their spontaneous thoughts (although they may be spurious reasons; Johansson, Hall, Sikström, & Olsson, 2005; Nisbett & Wilson, 1977), but in many cases people may not naturally generate reasons for their spontaneous thoughts unless they are explicitly directed to do so (e.g., Fernbach, Rodgers, Fox, & Sloman, 2013; Wilson & Schooler, 1991). Consider the judgment, "This is good wine." When made intuitively, no external stimulus other than the wine itself is required to validate the intuition. One could even make the judgment having never tasted the wine, having only seen its name on a menu or label. When made deliberately, however, reasons are likely to be generated to justify the judgment (e.g., Shafir, Simonson, & Tversky, 1993), which are likely to make external potential causes of the thought more salient. Even if trivial, the mere identification of potential external causes is likely to reduce the attribution of a thought to causes internal to the thinker (Nisbett, Zukier, & Lemley, 1981).

Conclusion

Thinking in the absence of reasoning breeds meaning. Metacognitive appraisals of spontaneous thought imbue those thoughts with meaning. Spontaneous thoughts are believed to provide valuable insight into the self, other people, and the external world. The presence of a spontaneous thought is itself perceived to be a meaningful event, signaling something revealing about the thinker, the truth-value of the thought, or the value of the activity or decision in which the thinker is engaged. Spontaneous thought content is also meaningful thought content. People explicitly believe that some kinds of spontaneous thought provide more insight into the self and the world than similar deliberate thought, and people even value spontaneous thought content more than deliberate thought content when logic suggests that they shouldn't.

We suggest that the greater meaning and insight attributed to spontaneous thoughts is due to a metacognitive appraisal process through which thought is attributed meaning. The greater inaccessibility of their external origins leads the meaning

of spontaneous thoughts to be discounted less than similar deliberate thoughts. This is reflected in the metacognitive processes by which people attribute meaning to dreams and engage in discernment during prayer.

Of course, we do not mean to imply that people are wrong to attribute meaning to their spontaneous thoughts. Decision and thoughts that are truly spontaneous and not prompted by the current context may best reflect chronic preferences and beliefs of the thinker (e.g., Bargh & Chartrand, 2014; Dijksterhuis et al., 2006; Wilson & Schooler, 1991). Moreover, many of the judgments examined in this work are subjective—preferences, attitudes, attraction, and personal faith. Meaning may reside as much in the subjective assessment of the perceiver as in objective properties of the object of perception. We merely attempt in our inquiry to elucidate the fascinating metacognitive processes by which meaning is created and determined.

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