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A process perspective on fluency's validity in judgment

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Abstract

Western societies usually cherish rational thought but distrust their feelings as sound basis of information. Contrary to this perception of feelings as being maladaptive, this contribution argues that fluency experiences generally allow for valid judgments and decision. For this argument, we focus on the processes underlying the use of fluency in judgment, in particular the two process steps of attribution and interpretation. We argue that these two process steps operate on swift defaults but are backed-up with sophisticated safety nets. Together, defaults and safety-nets allow for both efficient judgment formation and generally valid judgments. We conclude that it is time to have more faith in fluency as information when forming judgments.

Western societies cherish rational thought and recommend reaching important judgments and decisions via conscious deliberation of content information. Reliance on feelings, in contrast, is often considered erroneous and fallible (e.g., Elster, 1999). Undoubtedly, if politicians or CEOs justified decisions by referring to "how it feels," they would be perceived as spooky at best, if not downright irresponsible. This reputation of feelings as irrational is noteworthy because individuals frequently rely on fluency experiences in judgment (see Greifeneder, Bless, & Pham, 2011, for a recent review of empirical evidence). Would such frequent reliance have evolved, if reliance on fluency was generally misleading? Contrary to such a pessimistic perspective, we argue that fluency experiences may promote valid judgments. For this argument, we presuppose that fluency is generally an ecologically valid source of information (see also Herzog & Hertwig, Chapter 12, this volume). Going beyond such *source validity*, we adopt a process perspective and examine to what extent two of the critical process steps in fluency-based judgments—attribution and interpretation (see Unkelbach & Greifeneder, Chapter 2, this volume)—may promote or hamper *judgment validity.* We suggest that these two process steps operate on swift defaults which are, however, backed-up with sophisticated safety nets. We believe that a more refined understanding of

judgment validity is critical given that individuals rely on fluency when forming important judgments and decisions, such as whether to display trust or cooperative behavior (Greifeneder, Müller, Stahlberg, Van den Bos, & Bless, 2011a, 2011b; Müller, Greifeneder, Stahlberg, Van den Bos, & Bless, 2010).

The present chapter is organized as follows. First, we reflect on why feelings are often perceived as misleading, despite good reasons to assume that fluency has source validity. In a second and third step, we then examine the potential effects that two critical process steps may have on judgment validity, namely attribution—which links fluency to a source—and interpretation—which assigns meaning with respect to a criterion.[1]

Why feelings are perceived as misleading

Without doubt, feelings in general, and fluency experiences in particular, may lead astray—just as conscious rational thought, or content-based heuristic thinking may be misleading (Tversky & Kahneman, 1974). For feelings, many of these misleading instances are particularly salient, because they are often characterized by strong intensity—consider the folk wisdom that "hatred or love are blind." Such instances stand out, such as black sheep in a large herd of white ones. This standing out, however, is not informative about how often such instances occur, so that we may fall prey to a sampling error when judging feelings as misleading based on salient instances.

Curiously, the perception of feelings as troublemakers is fostered by those who investigate the impact of feelings, because these researchers often report on seemingly misleading influences of feelings in judgment. Consider what we will refer to as Tversky and Kahneman's (1973, Experiment 3) *letter experiment*. Participants were asked, for instance, whether there are more English words that begin with the letter "r" than words with the letter "r" in the third position. The researchers found that words beginning with "r" were judged to be more numerous, even though the opposite is true in the English language. This systematic error was explained by reliance on fluency experiences in judgment. Participants presumably formed frequency judgments based on the experience of ease or difficulty associated with the recall of content from memory—after all, if it feels easy to retrieve words that start with the consonant "r," there are probably many. However, because recall fluency is not necessarily indicative of category frequency, the letter experiment exemplifies a situation in which fluency constitutes a misleading source of information.

Similarly, in what we will refer to as the *fame experiment*, participants were asked to read aloud a list of non-famous names such as "Sebastian Weisdorf" (Jacoby, Kelley, Brown, & Jasechko, 1989). One day later, participants formed fame judgments about previously presented (and therefore old) non-famous names and new non-famous names. The old names were rated as more famous than the new names, seemingly because the old names (including Sebastian Weisdorf) felt more familiar than the new ones. Again, feelings of familiarity (fluency) seem to have produced erroneous judgments.

At face value, such scientific evidence suggests that feelings are troublemakers. It should be kept in mind, however, that experiments of this kind are intentionally constructed so that reliance on fluency experiences will lead astray. This is because, from a scientific perspective, seemingly wrong judgments are often particularly diagnostic (see Greifeneder, 2007). Researchers therefore take great effort in designing experiments in which the use of fluency is unjustified, because this is one way to show that feelings were relied upon in the first place (for a similar argument in other domains, e.g., Gilovich, Griffin, & Kahneman, 2002; Kahneman & Tversky, 1996; Kruglanski & Ajzen, 1983). This, however, does not render such illogical uses *representative* for the totality of instances in which feelings are used in judgment, and hence not diagnostic about judgment validity (Greifeneder et al., 2011).

Together, the tendency of erroneous feeling-based judgments to stand out and researchers' preference for investigating seemingly illogical uses of feelings in judgment may have contributed to the dodgy light that feelings are often perceived in. The following is to argue that such a perspective does not do justice to the validity of feelings in judgment. In what follows, we will focus on fluency experiences specifically. The majority of our conjectures, however, will likely hold for a broader class of feelings, too.

Our discussion centers around two critical process components in fluency-based judgments—attribution and interpretation (see Unkelbach & Greifeneder, Chapter 2, this volume)—and their effects on judgment validity. A precondition for this argument is that fluency allows—at least theoretically—for valid judgments when used appropriately. This precondition of source validity is shortly discussed next.

Source validity

We start our argument by assuming that there is reason to have faith in the ecological validity of fluency as an information cue. In addition to the empirical evidence reviewed by Herzog and Hertwig (Chapter 12, this volume), several conceptual arguments may be advanced in support of this argument.

First, fluency has been suggested to be a result of constant monitoring of cognitive activity and to continuously code the "how" of our cognition (Whittlesea & Williams, 2000). This coding not only encompasses that something was processed, but also the architectural properties of the underlying associative network. For instance, the strength and closeness of associations likely influence the ease or difficulty with which some piece of information can be recalled from memory. By being dependent on this learnt network structure, fluency experiences do not reflect single events in a vacuum, but single events against the background of a larger whole, the individual's learning history. This larger whole renders fluency experiences particularly valuable information carriers.

Second, because we are usually not aware of the architectural properties of our associative network system, fluency experiences may tell us more than we can

consciously know. This is not only true for architectural properties, but also for content that remains below the threshold of consciousness. Consider, for instance, tip-of-the-tongue states, in which participants feel that they know a certain piece of information, yet are currently unable to access it (Schwartz, 2002; see also feeling of knowing, Koriat, 1993; Nelson, Gerler, & Narens, 1984). Similarly, with feelings of familiarity, individuals feel to have encountered an object or a person before (i.e., are familiar with it), but are not able to specify this encounter (e.g., Whittlesea, 1993). Fluency experiences may thus reflect information that is not consciously accessible.

To the extent that integrating a lot of information that is accessible both consciously and subconsciously promotes reliability, fluency experiences should allow for relatively accurate judgments. This statistical argument is reflected in the characterization of fluency experiences as "meta-summaries" (Koriat & Levy-Sadot, 1999), which holds that fluency experiences integrate multiple pieces of information into a single whole. Compared to single pieces of accessible content information, fluency experiences are therefore relatively efficient information carriers (see also Greifeneder & Bless, 2007). That such meta-summaries may be quite accurate predictors has been shown, for instance, in the realm of feelings of knowing. Hart (1965) asked participants to answer general knowledge questions such as "How many sides are there in a hexagon?" For non-recalled answers, participants made feeling of knowing predictions, which were then compared to recognition performance. As expected, feelings of knowing predicted recognition reliably above chance, thus attesting to the idea that fluency experiences may allow for valid judgments.

In sum, fluency experiences may be expected to be a reasonably valid source of information because they code current events against the background of a large information basis and because they code multiple pieces of information into a single whole. Arguably, these considerations may increase faith in the source validity of fluency experiences, but do not allow to qualify how valid judgments based on fluency experiences are. To answer this question about *judgment validity*, it is important to focus on the judgmental processes that underlie the *use* of (ecologically valid) fluency experiences in judgment. What follows is to address this question, separately for attribution and interpretation.

Attribution: what causes fluency?

For a feeling to influence judgment, it needs to be attributed. In the course of the attribution process, it is determined what presumably caused fluency, and what fluency may therefore be informative about (see Unkelbach & Greifeneder, Chapter 2, this volume). In what follows, we first describe general aspects of this attribution process, which we label as "swift defaults," because they operate on efficient but fallible rules. In a second step, we focus on more specific aspects of the attribution process, which we label as "sophisticated safety nets," because they likely ensure that attribution is not a constant source of error.

Swift defaults

Whittlesea, Jacoby, and Girard (1990) conceptualized the attribution process as automatic. The attribution process is further said to be controlled by whatever is salient and applicable at the time of attribution, that is, what happens in temporal contiguity to the experienced feeling. This tendency has been referred to as immediacy principle (Clore et al., 2001) or aboutness principle (Higgins, 1996). As a result, fluency experiences are generally perceived as immediate reactions to whatever is currently in the focus of attention—"Why else would I be experiencing fluency just now?"

While ascribing causality by contiguity allows for swift and effortless attribution, it widely opens the door for biases. Tversky and Kahneman (1973), for example, took advantage of the attribution inference based on temporal contiguity. In their letter experiment, participants presumably judged the frequency of words with the letter "r" in the first compared to the third position based on the fluency with which instances of the respective category come to mind. This likely occurred because participants did not attribute experienced fluency to its true cause—that memory cues words by their first and not by their third letter—but spontaneously misattributed experienced recall fluency to an apparent cause—that some word categories are more frequent than others. Participants seem to haven fallen prey to temporal contiguity, which supposedly suggested that perceived recall fluency is telling about ecological frequency, because it was experienced *when* frequency was judged.

Similarly, in the fame experiment, Jacoby, Kelley, Brown and Jasechko, (1989) exploited the attribution by contiguity mechanism. The finding that participants judged old non-famous names (e.g., Sebastian Weisdorf) as more famous than new non-famous names likely occurred because perceived fluency associated with old non-famous names was not attributed to its true cause—recall fluency caused by prior exposure—but misattributed to an apparent cause—recall fluency caused by fame—simply because the fluency experience and the fame assessment coincided. Both of these examples illustrate that the attribution inference is parsimonious but fallible.

Unfortunately, misattributions based on contiguity are not confined to the laboratory. Consider the case of unintentional plagiarism, which has been linked to misattributed fluency experiences (Jacoby, Kelley, & Dywan, 1989). Plagiarism may occur unintentionally presumably because the previous exposure to a sentence influences the fluency with which the sentence presents itself later, thus rendering the sentence compelling when authors put their "own" thoughts into words. In this case, fluency from prior exposure is not attributed to its true cause—prior exposure—, but misattributed to an apparent cause—compellingness—simply because fluency is felt when compellingness is considered. As another non-laboratory example consider that individuals have been shown to overestimate the prevalence of extreme causes of death, such as flood, homicide, or tornado (Lichtenstein, Slovic, Fischhoff, Layman, & Combs, 1978). This overestimation presumably occurs due to biased media-coverage, which heightens the

accessibility of certain lethal events and thereby distorts accessibility-based judgments of actual frequency (Combs & Slovic, 1979).

Such findings illustrate that attribution based on contiguity may lead astray when joint occurrence is not indicative of causality. This may have far-reaching consequences. For instance, in the realm of education, it has been shown that essays are evaluated more positively when written in legible compared to less legible handwriting (Greifeneder, Zelt, Seele, Bottenberg, & Alt, 2012; James, 1929). Presumably, this legibility bias occurred because fluency is not attributed to its true source—differences in legibility—, but misattributed to an apparent cause—the work's quality (Greifeneder et al., 2010). Again, this misattribution likely arises because fluency is experienced *when* the work's quality is assessed (temporal contiguity), and does not reflect a causal relationship between handwriting legibility and work quality.

Sophisticated safety nets

Naïve theories of causation. Since attribution depends largely on temporal contiguity, it has been referred to as fluency's Achilles' heel (Greifeneder et al., 2010). Fortunately, however, contiguity is not the sole criterion for attribution, which is probably more accurately assessed when appropriate naïve theories about causation are available. For instance, when individuals are explicitly told that handwriting legibility causes differences in perceived fluency, handwriting legibility is no longer used to evaluate the work's quality (Greifeneder et al., 2010). Apparently perceived fluency is then correctly attributed to differences in legibility, and no longer misattributed to the work's quality. This suggests that once individuals know about fluency's true source, temporal contiguity is less powerful. More generally, naïve theories of causation seem to qualify contiguity.

As a second example consider findings by Jacoby and Whitehouse (1989). The authors observed that processing fluency may be enhanced when a test word is preceded by a masked prime. When this priming occurred unobtrusively, participants experienced an illusion of familiarity presumably because they did not correctly attribute fluency to priming. However, when the primes were presented for longer durations, participants were less likely to display an illusion of familiarity, seemingly because they correctly attributed fluency to the priming procedure. Note that this example is different from the handwriting example in that participants were not told about fluency's true source, but identified the true source themselves.

As a third example consider an experiment in which participants also spontaneously identified the true source of fluency. Oppenheimer (2004) reported that retrieval fluency is generally a good proxy for judging the frequency of names in a population, because familiar names are generally more prevalent. However, when evaluating celebrity names such as "Bush," for which fluency is less or not indicative of prevalence, participants' frequency judgments were not influenced by retrieval fluency. Presumably this is because participants were aware of the fact that intensive media coverage is the reason for why celebrity names felt so

fluent, and therefore ceased to use recall fluency as an indicator of name frequency. This example illustrates that appropriate naïve theories of causation may be available to individuals as part of their "world knowledge" and need not necessarily be provided as part of experimental procedures.

Together these findings suggest that although the contiguity principle renders the attribution mechanism fallible, it is not the sole criterion determining attribution. All things considered, however, incorrect attribution may still be the largest source of error when it comes to the validity of fluency in judgment. This is because the automaticity and speed that the contiguity-based immediacy (or aboutness) principle grants comes with a price: whenever contiguity is not indicative of causality, the contiguity rule likely points to an incorrect source of fluency. Nevertheless, misattribution in the "wild" may be less likely than one would expect based on evidence accrued in the laboratory. This is because in experimental settings researchers try to disentangle the cause of the feeling from the judgment situation, for instance by manipulating fluency orthogonally to the judgment task (e.g., Reber & Schwarz, 1999). In contrast, in natural settings, dissociations between cause of feeling and judgment situation may be less likely (see Bless, Keller, & Igou, 2009).

Correlations between causes. In addition to naïve theories of causation there is a second safety net, which is statistical in nature. Specifically, fluency may promote valid judgments even if it is attributed to a wrong cause because true and wrong causes often covary. Consider again the letter experiment conducted by Tversky and Kahneman (1973), in which participants incorrectly attributed fluency resulting from architectural properties of memory to word category frequency. For the consonants chosen by Tversky and Kahneman (1973)—for instance, the letter "r"—there are more words in the English language where this letter occurs in the third compared to the first position. For these letters, fluency resulting from architectural properties of memory organization is negatively correlated to word frequency. Critically, however, there are only eight consonants in the English language for which this is true, whereas for 14 consonants there are more words that have the respective consonant in the first compared to third position (as spelt out in the original contribution, Tversky & Kahneman, 1973). For this majority of cases, fluency resulting from architectural properties of memory organization is positively correlated to frequency. Hence, in this majority of cases, relying on fluency when judging frequency will result in valid judgments even though fluency was misattributed. More generally, when wrong and correct attribution targets covary, misattribution may result in valid judgments.

Interpretation: What does fluency mean?

Once fluency is attributed, individuals need to draw inferences from fluency with respect to a criterion. Should we infer from fluent recall that something is frequent or infrequent, true or wrong, good or bad? This step is generally referred to as interpretation (see Unkelbach & Greifeneder, Chapter 2, this volume). Again, we differentiate "swift defaults" and "sophisticated safety nets."

Swift defaults

Context dependency. In the fame experiment, participants inferred fame from fluency (Jacoby, Kelley, Brown et al., 1989). But how come that these individuals interpreted fluency as fame, and not as frequency, like participants in the letter experiment did (Tversky & Kahneman, 1973)? Again, contiguity seems to be an important player, in that fluency gains meaning within the (temporal) context it is experienced. Consider a set-up of Schwarz and Schuman (1997), who created conditions of recall difficulty by asking US participants if they remembered anything special their representative had done for the district. Subsequently, participants were asked to evaluate either their representative's effort to keep them informed (public relations), or how closely they themselves followed politics (political interest). Now think of yourself: when asked about the representative's public relations behavior, the recall disfluency previously experienced in relation to the representative's voting behavior likely suggests that *public relations* are bad—after all, when you experience difficulties in recalling the representative's voting behavior, her/his public relations would seem ineffective. But when asked about your own interest in politics, the experienced disfluency likely signals *disinterest*—after all, when you have difficulties recalling such voting behavior, are you really serious about politics? This example illustrates that what we infer from fluency is often dependent on the context in which fluency is experienced.

Naïve theories of meaning. The context seems to trigger the judgmental domain that fluency is informative about (e.g., frequency, truth, valence, etc.), but is likely silent in which direction on each judgmental continuum fluency points. How do we know whether fluency signals, for instance, that a name is famous or insignificant? Schwarz (2004a) proposed that individuals hold naïve theories about what fluency means in a specific context. These naïve theories of meaning are supposed to link fluency experiences and judgmental inferences. Presumably it is such a naïve theory of meaning that let participants in the fame experiment know that fluency means fame and not insignificance.

Often, naïve theories of meaning reflect learned contingencies in the environment (for the critical role of learning, see Unkelbach, 2006, 2007). For instance, individuals may have observed that when they are interested in something (such as in politics, see above example, Schwarz & Schuman, 1997), it is easy to recall details about this topic. Likewise, when they are not interested, individuals may have experienced that recall of pertaining information is difficult. In both cases, a certain level of interest is associated with certain recall experiences. Now suppose that you have problems recalling a specific piece of information (e.g., your representative's voting behavior). If you want to draw conclusions about your interest in the associated larger topic (e.g., politics), one possibility is to reverse the interest-fluency logic into a fluency-to-interest inference. For instance, you may infer from recall difficulty (e.g., "I can't think of anything the representative did") that you are not interested in politics (e.g., "I never really cared").

The politics example illustrates that meaning may result from basic psychological inference principles. These inferences principles are relatively swift but

rough and may therefore pose several threats to judgment validity. First, a high level of contextual dependency opens the door for unsystematic influences of many kinds. Second, the described inference process reverses the logical order of antecedent and consequent, in that something about the antecedent (e.g., political interest) is inferred from the consequent (e.g., recall fluency). This inference is only correct when the contingency is biunique—that is, true in both directions (see Bless & Schwarz, 1999, for an extended discussion). If the relationship is not bi-unique, inferring the antecedent from the consequent may result in error. Third, when cause and consequence covary sequentially over extended periods of time, individuals may not be able to observe contingencies and therefore may hold wrong naïve theories. One such example has been reported by Benjamin, Bjork, and Schwartz (1998, Experiment 1). Participants were asked to answer general knowledge questions and to estimate the likelihood of being able to retrieve the respective answers in a later free recall test. Results show that participants were more likely to retrieve answers the longer they had initially taken to answer the general knowledge questions. Future recall performance was thus positively correlated with initial recall latencies, presumably because initial elaboration increases the likelihood of later recall (e.g., Craik & Lockhart, 1972). Participants' initial estimations, however, were different. Specifically, participants judged future retrieval to be *less* likely the longer initial retrieval latencies were, thus committing a prediction error with potentially serious consequences for the allocation of learning times. It would seem that this prediction error occurred because participants held a wrong naïve theory of meaning about what fluency in recall means. The existence of such a wrong naïve theory may be due to a dearth of clearly observable contingencies in the environment (for related evidence, see Nelson & Leonesio, 1988).

Sophisticated safety nets

That interpretation operates on swift defaults may result in erroneous judgments. Which safety nets are in place? First, there is reason to assume that associatively represented contingencies may not be correlational but more akin to partial regression coefficients, as has been argued for in the realm of associatively represented heuristics (Smith & DeCoster, 2000; Uleman, 1999). One may therefore speculate that individuals rely on reversed inferences particularly when these have proven reliable in the past.

Second, because the meaning of fluency is often derived from learned contingencies, it reflects what individuals have learned about themselves and their ecology over long periods of time. To the extent that many observations allow for more reliable inference rules, relatively accurate interpretations may be expected. In this respect, it is noteworthy that naïve theories of meaning are not highly subjective and idiosyncratic, but socially shared. This is because the variation in the environment is similar across individuals so that inferred theories of meaning are similar, too. In line with this reasoning, Schwarz (2004b) observed a remarkably high consensus in participants' agreement on naïve theories. Interestingly, this

also suggests that naïve theories of meaning are generally stable within individuals.

In sum, interpretation is influenced by contextual variables and naïve theories of meaning. Both carry some threat to validity, as the underlying rules are often efficient but not perfectly accurate. Specifying this threat in absolute terms is difficult; however, a relative comparison to conscious integration of accessible content information is plausible. This argument is based on the notion that judgments formed on the basis of declarative knowledge are also inferential, and depend on acquired naïve theories of meaning. For instance, an alternative explanation to Tversky and Kahneman's (1973) letter experiment is that participants actually recalled more words having the letter "r" in the first compared to third position. When forming a frequency judgment based on this recalled content, participants may have come to the conclusion that words with the letter "r" in the first position are more numerous, because "when I can recall many words, the category is probably numerous." Such a naïve theory of meaning may be correct, but may also be wrong—as in the letter experiment, where the recall of more words with the letter "r" in the first position is not indicative of true category frequency in the environment. As this example illustrates, judgments based on content information may also require naïve theories of meaning that have been learned throughout ontogenesis. To the extent that naïve theories used for drawing inferences based on content information versus fluency experiences are similarly valid, one would expect that content-based versus fluency-based judgments should result in judgments of similar validity.

The role of expertise

The present chapter's main focus is on the impact that attribution and interpretation may have on the validity of fluency-based judgments. We have suggested that the validity of reliance on fluency experiences in judgment depends in many respects on learned contingencies that are reflected in naïve theories of causation—which qualify the contiguity principle in attribution—and naïve theories of meaning—which guide interpretation. Because both often depend on prior learning, one may argue that fluency will be a more accurate indicator in judgment the more learning has occurred, that is, the more refined the associative network structure is. Fluency experiences should therefore allow for more valid judgments the more expertise a person has acquired in a specific domain. And in their domain of expertise, experts compared to novices may be expected to draw more accurate conclusions from fluency. To our knowledge, no evidence directly addressing this conclusion is available, despite interesting implications.

Note that the validity with which experts compared to novices form judgments based on fluency needs to be treated separately from the frequency with which they do so. With respect to frequency, prior research has shown that experts compared to novices rely less (and not more) on fluency (e.g., Janssen, Müller, & Greifeneder, 2011; Ofir, 2000; Tybout, Sternthal, Malaviya, Bakamitsos, & Park, 2005). Perhaps this is (a) because experts have not only more refined fluency experiences,

but also more refined factual knowledge, and (b) because experts perceive their factual knowledge as relatively more telling based on the societal norm that sound judgments should reflect conscious rational thought. The specific reasons for this difference are, however, not yet fully understood and further research is needed to more closely understand the role expertise is playing in the validity of, and reliance on, fluency in judgment. Until then, it is interesting to note the apparent discrepancy between more accurate fluency-based judgments for experts compared to novices, but less frequent reliance on fluency as information. Perhaps what is needed is that experts (are allowed to) have more faith in their fluency experiences.

Conclusion

In this chapter, we have discussed several threats to the validity of fluency-based judgments, which result from underlying mechanisms that are speedy and efficient, but rough and sometimes fallible. However, in most cases, the weaknesses of these mechanisms seem to be at least partially counteracted by other mechanisms, such as when the fallibility of the contiguity principle in attribution is qualified by naïve theories of causation. By and large, fluency may therefore allow for reasonably valid judgments. This should be seen in light of the fact that the validity of alternative judgment pathways, such as conscious integration of accessible content information, may be lowered by factors that usually not affect fluency-based judgments. For instance, it has been suggested that the integration and weighing of single pieces of content information is error-prone (e.g., Wänke, 1996). Moreover, content-based judgment formation has been argued to be seriously constrained by limitations of consciousness (e.g., Dijksterhuis & Nordgren, 2006; Miller, 1956). Both of these aspects do not apply to fluency-based judgments. Consequently, one may venture the speculative conclusion that all things considered, fluency-based judgments are not less valid than content-based judgments, but perhaps even more. This conclusion is in line with the claim that fluency-based and content-based judgments are generally aligned, as illustrated in the letter experiment (Tversky & Kahneman, 1973). We therefore suggest that it is time to have more faith in fluency-experiences, and to embrace the enrichment a "feeling" perspective can bring to models of human functioning, both within and beyond the realm of psychology.

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Note

1 Note that attribution and interpretation often work in tandem and may be "amalgamated" within one step (for a discussion see Unkelbach & Greifeneder, Chapter 2, this volume).

While it is conceptually important to separate the two process steps, many examples in the literature are ambiguous with respect to whether a specific pattern of results is due to differences in attribution ("caused by") or interpretation ("indicative of"). We have approached this ambiguity by selecting examples according to whether the attribution or interpretation process was likely dominant. We acknowledge, however, that some of the cited evidence could also be categorized differently. To resolve this ambiguity in future research, it will be important to conceptualize whether fluency can be attributed to specific causes (e.g., prior exposure)—which strongly constrain interpretation and thus result in an amalgamation of attribution and interpretation—or only to more general causes (e.g., recall)—which open the door for a larger set of possible inferences.

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