Intuition versus deliberation: the role of information processing in judgment and decision making
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Chapter 4

Where Intuition Resides:
Effects of Processing Style on Affective Reactions and Processing Fluency

Chapter 4

Abstract
What are the characteristics of intuitive as opposed to more deliberate judgments and decisions? Past research suggests that the experience of intuition depends both on affective reactions and processing fluency (e.g., Topolinski & Strack, 2009b). In the present studies we provide direct evidence for the role of affect and processing fluency in intuitive judgment, and also show that their role is more prominent in intuitive as opposed to more deliberate processes.

We induced global versus local processing styles, which have been shown to instigate intuitive and deliberative judgments, respectively. Study 4.1 and 4.2 showed an increased responsiveness to affective stimuli among participants in a global as opposed to a local processing mode. Study 4.3 showed similar effects for processing fluency; participants in a global processing style showed an increased reliance on fluency. Study 4.4 replicated our findings in a more mundane judgment task, in which participants judged apartments.

Keywords: global versus local processing style, judgment and decision-making, intuition, processing fluency, affective reaction.
We more or less continuously need to make decisions ranging from what to have for dinner and how to get to work, to which job offer to accept, which apartment to buy, and whom to marry. For many decisions people rely on habits, others are made more intuitively, or after carefully analyzing pros and cons for each option before making a deliberated choice. Interestingly, people not only rely on intuition when making simple decisions that do not have serious consequences (Sjöberg, 2001), but also when confronted with more important decisions (Klein, 2004). Some argue that these intuitive decisions are often remarkably accurate (Albrechtsen, Meissner, & Susa, 2009; Dijksterhuis & Nordgren, 2006; Halberstadt & Green, 2008; Klein, 2004; Wilson & Schooler, 1991). On what sources of information are these decisions based? Do intuitive and deliberative judgments rely on different sources of information, and if so, how does that affect the judgments people make?

Wilson, Hodges, and LaFleur (1995) argued that deliberation makes people focus on accessible and readily verbalized information, possibly ignoring other, perhaps more indicative sources of information (see also Tordesillas & Chaiken, 1999). It remains unclear however, what kind of information is ignored and whether intuition does incorporate this information. In the present paper we experimentally test whether affective reactions and feelings of processing fluency are sources of information that are taken into account in a more intuitive mode of processing, but are relatively ignored in a deliberate mode of processing.

In line with Betsch (2008) we define intuition as follows: “Intuition is a process of thinking. The input to this process is mostly provided by knowledge stored in long-term memory that has been primarily acquired via associative learning. The input is processed automatically and without conscious awareness. The output of the process is a feeling that can serve as a basis for judgments and decisions.” (p. 4).

There is some evidence that intuition is related to (sometimes implicit) affective reactions (Bechara, Damasio, Tranel, & Damasio, 1997; Wagar & Dixon, 2006; see also Slovic, Finucane, Peters, & MacGregor, 2002) and to processing fluency (Fu, Dienes, & Fu, 2010; Topolinski & Strack, 2009a; Wippich, 1994; Wippich, Mecklenbräuker, & Krisch, 1994). Both affective reactions and processing fluency can be related to experiential learning. For instance, there is ample evidence showing that the valence of the majority of our affective reactions is learned rather than innate (Rozin & Millman, 1987).
Further evidence is provided by research on evaluative conditioning (De Houwer, Baeyens, Vansteeneegen, & Eelen, 2000; Razran, 1954; Staats & Staats, 1957; for an overview see De Houwer, Thomas, & Bayens, 2001). This is in line with the definition provided by Betsch (2008), which claims that the input of intuition is based on knowledge acquired via associative learning.

Processing fluency can be defined in terms of the experienced ease with which information is processed. Ease of processing can for example be enhanced by repeated exposure to the stimulus (Bornstein & D'Agostino, 1994; Jacoby, Kelley, & Dywan, 1989), or by the activation of associated concepts (Topolinski, Likowski, Weyers, & Strack, 2009; Topolinski & Strack, 2009a). Research showed that both affective reactions and processing fluency contributes additively and independently to performance on more or less intuitive tasks such as coherence judgments and artificial grammar tasks (Topolinski & Strack, 2009b). Although intuition might be related to these processes, it has not been experimentally tested whether affective reactions and processing fluency are relatively ignored when individuals deliberate and play a more important role when people rely on intuition.

Dijkstra, Van der Pligt, Van Kleef, and Kerstholt (2010) showed that the effect of relying on intuition or reasons is mediated by processing style (see also Dijkstra, Van der Pligt, & Van Kleef, 2011a). Deliberation induces a local processing style in which people focus on details, and this can make it more difficult to come to an accurate judgment or decision. Processing style refers to the way people attend to information. People can either attend to the Gestalt of a stimulus or pay more attention to its details. A collection of trees, for example, can be seen as a forest, but people can also direct their attention to the individual trees (Gasper & Clore, 2002; Navon, 1977; Schooler, 2002). This attentional selection mechanism operating on a perceptual level is correlated with the attentional mechanism used to select conceptual nodes within the semantic network. Both regulate perceptual and conceptual processes (Derryberry & Tucker, 1994; see also Förster, 2009b; Förster, Friedman, Özel, & Denzler, 2006). A local processing style is related to searching for details. In contrast, when in a global processing style people make sense of a stimulus by integrating it into superordinate, inclusive knowledge structures. Generally, a global processing style supports creativity and metaphor understanding, while a local processing style supports analytical thinking and concrete construals (Förster &
Dannenberg, 2010a). Intuition has also been related to processing the ‘Gestalt’ rather than details (Epstein, 1990; Nisbett, Peng, Choi, & Norenzayan, 2001; Shapiro & Spence, 1997), and to unconsciously integrating large amounts of information (Betsch & Glöckner, 2010; Glöckner & Betsch, 2008).

In the present paper we thus distinguish between global and local information processing. Inducing these two different processing modes allows us to test the role of affective information and processing fluency in intuitive versus deliberative judgments and decisions. Because of the characteristics of global and local processing (processing the Gestalt vs. searching for details and applying analytical thinking; see above), and the importance of processing fluency and affective reactions in the experience of intuition (e.g., Topolinski & Strack, 2009b), we hypothesized that participants in a global processing mode would be more responsive to affective information and experiences of processing fluency than participants in a local processing mode. In Study 4.1 we test effects of the affective valence of stimuli on affective judgments in a global versus local processing mode. In Study 4.2 we examine the differential effect on affective judgments of evaluatively conditioned stimuli. In Study 4.3 we examine responsiveness to fluency by manipulating implicit learning and test performance on an artificial grammar task (Reber, 1967, 1993; for an overview see Pothos, 2007). Finally, in Study 4.4 we replicate our findings in a more mundane judgment task, in which participants were asked to judge apartments.

**Study 4.1**

As noted earlier, deliberating leads people to focus on accessible and readily verbalized information while less readily verbalized information is ignored (Wilson et al., 1995; see also Tordesillas & Chaiken, 1999). Because affective reactions contribute to the experience of intuition (Bechara et al., 1997; Topolinski & Strack, 2009b; Wagar & Dixon, 2006), provide guidance in judgment and decision-making (Wagar & Dixon, 2006), and are less readily verbalized, we hypothesize that affective reactions are a source of information that is included in intuitive judgments but relatively ignored in deliberation. We expect people to be more responsive to affective stimuli when they adopt a global rather than a local processing style. This would be in accordance with our expectation that affective
information is more important and receives more weight in intuitive processing than in more deliberate, analytical information processing.

**Method**

**Participants.** One-hundred-and-nineteen students from the University of Amsterdam participated in exchange for course credits or a monetary reward (42 male, 77 female). Age ranged from 18 to 50 years ($M = 21.92, SD = 4.57$).

**Materials and procedure.** Participants were randomly assigned to either the global or local processing style condition. Processing style was induced by a variation of the global-local reaction time measure ( Förster & Higgins, 2005). Participants were presented with a series of ‘global’ letters made up of smaller ‘local’ letters (an H made of L's, an H made of H's, an L made of L's, and an L made of H's). On each trial, participants were first presented with a fixation cross in the centre of the screen for 500 ms. Then, one of four global composite letters was randomly presented. We presented a total of 48 global composite letters. In the global condition participants were instructed to indicate as quickly and accurately as possible whether the global letter was an H or an L. In the local condition participants were instructed to respond to the local letter.

After the processing style induction, participants judged 28 pictures selected from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 2005). We selected (non-erotic) pictures that depicted scenes that differed on the pleasure dimension. Extremely negative pictures (e.g., pictures of mutilations) were discarded. We selected a total of 28 pictures evenly distributed over the pleasure continuum.

Because we were interested in the effects of more intuitive versus deliberative modes of processing on responsiveness to affective reactions, we deviated as little as possible from the original procedure assessing affective reactions to pictures (Lang et al., 2005). We asked participants to indicate the emotions evoked by each picture and instructed them not to dwell on their response. Participants indicated their emotional experiences on three dimensions (pleasure, arousal, dominance) on a nine-point scale. These three dimensions were the same as those presented by Lang and colleagues (2005) and provided the opportunity to test the effect of processing style on affective judgments. The pleasure scale was anchored *very unhappy* vs. *very happy*, the arousal scale *very calm* vs. *very excited*, and the dominance scale was anchored *very submissive* vs. *very dominant*. 
To make sure that participants interpreted each dimension in the intended way, we explained the dimensions and anchors, using the instruction by Lang et al. (2005).

**Results and Discussion**

The standard deviation of the pleasure ratings across all pictures were subjected to an ANOVA. The ANOVA revealed a significant effect of processing style \(F[1,117] = 5.64, p = .019, \eta^2_p = .05\). Participants in the global condition showed a larger standard deviation \((M = 2.24, SD = .65)\) than participants in the local condition \((M = 1.97, SD = .60)\). This is a first indication that participants in the global condition were more responsive to the affective valence of stimuli. As noted, the judged pictures were both negative and positive. Incorporating the affective valence into judgments of stimuli should be associated with more extreme pleasure ratings of the negative and positive pictures, and consequently a larger standard deviation in the global versus local processing style condition. As expected, we did not find any effects on the dominance \(F[1,117] = 1.56, p = .21, ns\) and arousal scales \(F[1,117] = 2.29, p = .13, ns\).

Contrasting pleasure ratings of the eight most positive to the eight most negative pictures revealed that pleasurable pictures were rated as more pleasurable \((M = 6.63, SD = 1.01)\) than negative pictures \((M = 2.64, SD = .92, F[1,117] = 856.52, p < .001, \eta^2_p = .88)\). The analysis further revealed a processing style by pleasure rating interaction. Participants in the global condition rated the IAPS pictures more extremely (positive pictures: \(M = 6.77, SD = 1.08\); negative pictures: \(M = 2.39, SD = .97\)) than participants in the local condition (positive pictures: \(M = 6.52, SD = .94\); negative pictures: \(M = 2.82, SD = .84, F[1,117] = 6.03, p = .016, \eta^2_p = .05\)). Simple effects tests revealed that the interaction was mostly driven by ratings of negative pictures (negative pictures: \(F[1,117] = 6.61, p = .011, \eta^2_p = .05\); positive pictures: \(F[1,117] = 1.80, p = .18, ns\))

To sum up, participants in the global condition, showed larger differences in their pleasure ratings of the pictures and their ratings of the positive and negative pictures were more extreme. This indicates that participants in the global condition were more responsive to the affective valence of stimuli than participants in the local condition.

**Study 4.2**

In this study we test whether individuals in a global processing style are more responsive to the valence of evaluatively conditioned stimuli than individuals in a local
processing style. We used an evaluative conditioning (EC) paradigm. In this paradigm, the judged conditioned stimulus (CS) remains the same across conditions, and the unconditioned stimuli (US) transfer their affective reaction to the CS. The fact that the same CS is judged across conditions allows us to test whether individuals using a global or local processing style are more or less responsive to these non-deliberated affective reactions.

**Method**

**Participants.** Forty-one students from the University of Amsterdam participated in exchange for course credits or a monetary reward (12 male, 29 female). Age ranged from 17 to 25 years ($M = 20.12$, $SD = 1.90$).

**Materials and procedure.** Again, participants were randomly assigned to either the global or local processing style condition. We manipulated the valence of Chinese ideograms in a standard EC paradigm. Four Chinese ideograms (conditioned stimulus) were paired with affect-laden pictures selected from the IAPS database (unconditioned stimulus). Two ideograms were paired twice with four positive US and two ideograms were paired twice with four negative US, in accordance with Lang and colleagues (2005). To avoid main effects of specific ideograms we counterbalanced the CS-US pairings between subjects. In total, each CS was paired eight times, which resulted in 32 trials. Because a forward conditioning paradigm tends to yield larger effects (Hammerl & Grabbitz, 1993; Stuart, Shimp, & Engle, 1987) we first presented the CS for 1000 ms, followed by the US for 1000 ms after an interval of 100 ms. After an inter-trial interval of 3000 ms the next trial commenced.

Next, processing style was induced as in Study 4.1. After the processing style induction, evaluation of the ideograms was assessed on an 11-point scale anchored with *very ugly* and *very beautiful*.

**Results and Discussion**

Mean evaluations of positively and negatively conditioned ideograms were subjected to a 2 (pairing: positive US vs. negative US) by 2 (processing style: global vs. local) mixed model ANOVA. The analysis revealed the expected main effect of pairing ($F[1,39] = 10.67$, $p = .002$, $\eta_p^2 = .22$). Chinese ideograms paired with negative IAPS pictures were rated as less beautiful ($M = 5.60$, $SD = 2.08$) than ideograms paired with positive IAPS pictures ($M = 6.78$, $SD = 2.38$). The main effect of processing style was not
significant \((F[1,39] =1.83, \ p = .18, \ ns)\). As hypothesized, the processing style by pairing interaction was significant \((F[1,39] = 4.03, \ p = .052, \ \eta_p^2 = .09)\). Participants in the global focus condition differed more in their judgment of the valence of ideograms paired with negative \((M = 5.61, \ SD = 2.09)\) and positive USs \((M = 7.61, \ SD = 2.02)\) than participants in the local condition \((negative \ US: \ M = 5.60, \ SD = 2.12; \ positive \ US: \ M = 6.07, \ SD = 2.48)\). Simple effects tests revealed that the interaction was driven by ratings of positively conditioned ideograms \((negative \ US: \ F < 1, \ ns; \ positive \ US: \ F[1,39] = 4.64, \ p = .037, \ \eta_p^2 = .11)\). See Figure 4.1. This indicates that participants in a global processing mode were more susceptible to the (positive) affective valence of stimuli than participants in a local processing mode.

![Figure 4.1](image)

**Figure 4.1.** Beauty judgments of ideograms paired with negative and positive stimuli for participants in the global and local condition.

**Study 4.3**

Studies 4.1 and 4.2 showed that individuals in a global processing mode are more responsive, and thus react more extremely to the affective valence of stimuli. This should
also make it more likely that these affective reactions receive more weight in judgments and decisions when people are in a global as opposed to a local processing mode.

In Study 4.3 we focus on another element of information processing that is less readily verbalized: fluency. As noted in the Introduction, fluency can be defined as the experienced ease of processing a stimulus. In Study 4.3 we operationalized fluency by means of an artificial grammar task (e.g., Reber, 1967, 1993; for an overview see Pothos, 2007). In this task participants implicitly learn an artificial grammar. In a subsequent test stage participants are able to distinguish above chance whether presented letter strings followed the learned grammar or not, without being able to explain their judgments (see e.g., Reber, 1967; Vokey & Brooks, 1992). Kinder, Shanks, Cock, and Tunney (2003) showed that processing fluency is the underlying experience that is the basis for participants’ judgment in the test stage.

As was the case in the previous studies, we induced a global or local processing style before subjecting our participants to the test stage. We expected that participants in the global condition would be more responsive to processing fluency and consequently perform better on the artificial grammar task than participants in the local condition.

**Method**

**Participants.** Seventy-nine students from the University of Amsterdam participated in exchange for course credits or a monetary reward (20 male, 59 female). Age ranged from 18 to 50 years old ($M = 22.30$, $SD = 4.80$).

**Materials and procedure.** Participants were randomly divided between the global and local processing style conditions. In our artificial grammar task we used the same letter strings as Vokey and Brooks (1992) and others (Kinder et al., 2003; Topolinski & Strack, 2009a). Vokey and Brooks (1992) constructed the letter strings by selecting three to seven letters that followed each other in a grammatical structure. We used the same procedure for learning the training items as Topolinski and Strack (2009a). The 16 strings were presented for 3000 ms and participants were asked to reproduce the letter string using the keyboard. Each letter string was presented again until the letter string was reproduced correctly, and this was followed by another letter string. Next, processing style was induced as in Study 4.1.

After the processing style induction participants were informed that the items they had reproduced and learned previously, followed a hidden grammatical rule. They were
instructed to judge whether the following letter strings conformed to the same hidden rule or not. Participants were presented with 64 new letter strings in a random order. Half of the strings followed the same grammatical structure as the trained strings; the remaining strings did not follow the grammatical structure. These non-grammatical strings were created by substituting a single letter of grammatical strings in such a way that the string could not be generated by the grammar.

**Results and Discussion**

Following Topolinski and Strack (2009a), we excluded slow responses (made after 3000 ms) from the analysis, because these responses could be driven by more deliberate processes and are hence less sensitive to grammaticality and do not qualify as intuition.

Proportions of strings qualified as grammar for grammatical and non-grammatical strings were subjected to a 2 (type of string: grammatical vs. non-grammatical) by 2 (processing style: global vs. local) mixed model ANOVA. Grammatical strings were qualified more often as grammar ($M = .50$, $SD = .24$) than non-grammatical strings ($M = .41$, $SD = .20$, $F[1,77] = 30.97$, $p < .001$, $\eta_p^2 = .29$), replicating the standard effect on the artificial grammar task (Pothos, 2007; Reber, 1967, 1993). The ANOVA also revealed the hypothesized interaction. Participants in the global focus condition were better at differentiating between grammatical ($M = .51$, $SD = .24$) and non-grammatical ($M = .38$, $SD = .19$) strings than participants in the local focus condition (grammatical: $M = .50$, $SD = .25$, non-grammatical: $M = .44$, $SD = .21$, $F[1,77] = 4.76$, $p = .032$, $\eta_p^2 = .06$). This indicates that participants in the global focus condition were more responsive to (lack of) fluency and consequently detected the (lack of) hidden grammatical structure more accurately.

**Study 4.4**

The preceding experiments showed that individuals in a global processing mode are more responsive to less readily verbalized characteristics – such as their own affective reactions to affect-laden stimuli, and processing fluency – than individuals in a local processing mode. The third study showed that increased responsiveness to processing fluency can also enhance people’s performance on an implicit learning task. In Study 4.4 we test our hypothesis in a more mundane task. We again induced a global or local processing style and asked participants to judge apartments on the basis of information
provided in pictures and written information in a brief text. Since apartments in the Netherlands are generally advertised by providing information in text and pictures (see e.g., www.funda.nl), we expected participants to be familiar with judging apartments in this way.

We manipulated contrast and brightness of the pictures of the apartments; both are known to increase processing fluency (contrast: Checkosky & Whitlock, 1973; Reber, Winkielman, & Schwarz, 1998; brightness: Whittlesea, Jacoby, & Girard, 1990). These two characteristics are also related to liking (Reber et al., 1998), and are even thought to be a dimension of beauty (Gombrich, 1995; Solso, 1997). Information provided in the text was systematically manipulated in terms of factual elements such as size of the living area and type of insulation.

We expected that information provided in pictures would affect judgment of participants in the global condition more profoundly than that of participants in the local condition. In light of Wilson et al.’s (1995) finding that deliberation increases reliance on accessible information that is also easy to verbalize, we expected that information provided in the text would have a more pronounced effect in the local than in the global condition.

Method

Participants. One-hundred-and-sixty-six first year psychology students from the University of Amsterdam participated in a series of studies, including the present experiment. They participated for partial fulfillment of a course requirement. No information was available about sex and age of the participants.

Materials and procedure. Participants were randomly assigned to conditions in a 2 (Processing style: global vs. local) x 2 (Judgment task: version 1 vs. version 2) between-subjects design. Again, processing style was induced by the same variation of the global-local reaction time measure as used in Study 4.1. After completing the global-local reaction time measure participants were asked to judge two apartments in a random order. Three pictures of each apartment were presented on the left side of the screen, providing “a feel for the atmosphere”; five pieces of textual information were presented on the right side of the screen (viz., type of apartment, size of living area, number of rooms, type of insulation, and some miscellaneous information, such as the absence or presence of a fireplace or information about the kitchen).
To test what type of information was more important – specific attributes or the general atmosphere conveyed by the photographs – we manipulated the positivity of both types of information. For Apartment 1 we manipulated attractiveness of the atmosphere by increasing contrast and brightness of the pictures, creating a desirable and less desirable version of the same apartment. We purposely manipulated the pictures instead of using different pictures in order to keep the elements presented in the pictures constant. For Apartment 2 we manipulated textual information by increasing the size of the living area (75 m\(^2\) instead of 50 m\(^2\)), type of insulation (double instead of single glazing) and the absence or presence of certain details (viz., terrace, fireplace, central heating, 10-year-old kitchen). In this way we again created a desirable and less desirable version of the same apartment. Each participant judged one desirable apartment and one less desirable apartment.

For each apartment we asked participants to indicate how desirable they thought the apartment was, how beautiful, and how much they would like to live in the apartment. All three judgments were assessed with a 100-point slider, anchored with not at all and very much.

**Results and Discussion**

Four participants were excluded from the analyses because their score on the main dependent variable deviated more than 2.5 standard deviation from the mean response. We combined the three attractiveness ratings to create an overall judgment of desirability for each apartment (Cronbach’s \(\alpha = .91\) and .93 for the first and second apartment, respectively).

The desirability ratings for apartment 1 were subjected to a 2 (processing style: global vs. local) by 2 (description of apartment: desirable pictures vs. less desirable pictures) between subjects ANOVA. We did not find a main effect of focus (\(F < 1, ns\)) or version (\(F[1,158] = 2.11, p = .15, ns\)). More importantly, we did find an interaction effect (\(F[1,158] = 7.91, p = .006, \eta_p^2 = .05\)), see Figure 4.2.
Simple effects analyses showed that participants in the global focus condition rated the apartment with desirable pictures as more desirable \( (M = 71.55, SD = 14.73) \) than the apartment with less desirable pictures \( (M = 59.21, SD = 20.66, F[1,158] = 8.98, p = .003, \eta_p^2 = .11) \). No significant difference was found between the two versions in the local condition (desirable pictures: \( M = 63.10, SD = 19.58 \); less desirable pictures: \( M = 67.04, SD = 18.13, F < 1, ns \)). To test the effect of textual information, we subjected the desirability ratings for Apartment 2 to a 2 (processing style: global vs. local) by 2 (description of apartment: desirable text vs. less desirable text) between subjects ANOVA. The ANOVA revealed a main effect of version \( (F[1,158] = 15.46, p < .001, \eta_p^2 = .09) \). Not surprisingly, the version with desirable attributes was indicated as more desirable \( (M = 68.84, SD = 21.32) \) than the version with less desirable attributes \( (M = 55.91, SD = 21.16) \). The analyses revealed no main effect of processing style \( (F < 1, ns) \). However, the analyses revealed a
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version by processing style interaction ($F[1,158] = 10.20, p = .002, \eta_p^2 = .06$), see Figure 4.3.

![Figure 4.3. Desirability ratings of apartments with less desirable attributes and more desirable attributes for participants in the global and local condition.](image)

Simple effects analysis revealed that participants in the local focus condition indicated the description with more desirable attributes as more desirable ($M = 73.85, SD = 18.93$) than the version with less desirable attributes ($M = 50.65, SD = 21.25$, ($F[1,158] = 25.70, p < .001, \eta_p^2 = .25$). No difference was found between the version with desirable attributes ($M = 63.71, SD = 22.62$) and the version with less desirable attributes in the global condition ($M = 61.31, SD = 19.92$, $F < 1, ns$). We conclude that participants in a global processing style assigned more weight to the global impression or the 'feel' of the apartment, as presented in the pictures, than participants in a local processing style. In contrast, participants in a local processing style appeared to assign more weight to information about specific attributes as described in the text.
Chapter 4

General Discussion

In four experiments we examined responsiveness to the affective valence of stimuli and to processing fluency as a function of processing style (global or local). We showed that participants in the global condition were more responsive to affective reactions and gave more extreme ratings to affective pictures (Study 4.1), and more extreme judgments to evaluatively conditioned stimuli (Study 4.2) than those in the local condition. In Study 4.3 we showed that participants in the global condition were more responsive to processing fluency and consequently performed better on an artificial grammar task than participants in the local condition. Finally, we showed that information in pictures had a more profound effect on participants in the global condition than on participants in the local condition. In contrast, information in text affected participants in the local condition more strongly than those in the global condition (Study 4.4).

Given that the effect of judgment mode (intuitive vs. deliberative) on judgment is mediated by processing style (Dijkstra et al., 2010), our studies provide an indication as to what type of information people rely on when they judge intuitively or deliberately. Our findings suggest that individuals who rely on intuition assign more weight to non-verbalized affective information, and less weight to explicit factual information in text than individuals who rely on deliberation (see also Wilson et al., 1995). In addition, we showed that this applies to both affective reactions and processing fluency, both of which are related to intuition (see Topolinski & Strack, 2009b). Individuals who rely on reasons are more affected by verbalized and relatively detailed information, as indicated by our final study on judging apartments.

Fluency and affective reactions are not independent. Previous research showed that fluency reinforces affective reactions (Reber et al., 1998; Reber & Schwarz, 2002). Not surprisingly, it is hard to determine whether it is affective valence or processing fluency or both that causes changes in preference in less artificial judgment tasks, such as the one used in Study 4.4. More insight could be obtained by manipulating fluency and affective reactions independently and preferably with different techniques (e.g., subliminal priming and evaluative conditioning). Our goal in Study 4.4, however, was not to determine which of the two processes affect judgment, but to experimentally test whether judgment mode affects responsiveness to easy (such as information in text) and more difficult to verbalize information.
The fact that we did not find effects of processing style on other dimensions of affective pictures (dominance and arousal) in Study 4.1, suggests that the effect of processing style is limited to valence and does not affect sensitivity to other dimensions of emotions. Our studies thus confirm other findings showing that affective reaction and processing fluency are important mechanisms in intuition (e.g., Bechara et al., 1997; Fu, Dienes, & Fu, 2010; Slovic et al., 2002; Topolinski & Strack, 2009a, 2009b, 2009c; Wippich, W., 1994). In addition, our studies provide new insight into the precise role of these processes and the type of information people tend to rely on when judging intuitively versus more deliberate judgments.

In our experiments we induced processing style instead of decision mode for two main reasons. First, this manipulation is less obtrusive than asking people to deliberate or to follow their intuition. Manipulating processing style is less likely to create demand effects. Second, instructing participants to rely on intuition, and especially instructing participants to deliberate, might be confusing, or even be impossible to comply with, in most of the paradigms we used. Nevertheless, future studies could investigate the role of intuition and deliberation in judgment and decision-making using alternative operationalizations and paradigms.

In addition, future research should help to clarify whether processing style affects responsiveness to one or both poles of the affect continuum. Study 4.1 suggests that the effect of processing style depends on the evaluations of negative stimuli, while the effect of processing style was limited to positive stimuli in the second experiment.

Our studies suggests that the remarkable accuracy of intuitive judgments can be explained in part by the fact that intuition takes sources of information into account that are based on processing fluency and affective reactions, both of which are based on experiential learning. Finally, our findings suggest that decisions can be improved by instructing decision makers about the differential effects of global versus local processing styles. In tasks that require careful deliberation, people may be advised to adopt a local processing style, which could be self-induced by focusing on the details of an object (i.e., focusing on the trees rather than the forest). When a decision is expected to benefit from intuitive judgment, however, people may instead be advised to adopt a global processing style. Focusing on the forest rather than the trees may mobilize affective sources of information that otherwise remain less accessible.