The Respective Impact of Stimulus Valence and Processing Fluency on Evaluative Judgments in Stereotype Disconfirmation

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Abstract

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Both specific stimulus valence and unspecific processing dynamics can influence evaluative responses. Eight experiments investigated their respective influence on evaluative judgments in the domain of stereotyping. Valence of stereotypic information and consistency-driven fluency were manipulated in an impression formation paradigm. When information about the to-be-evaluated target person was strongly valenced, no effects of consistency-driven fluency were observed. Higher cognitive processes, valence of inconsistent attributes, processing priority of category information, and impression formation instructions were ruled out as possible factors responsible for the non-occurrence of fluency effects. However, consistency-driven fluency did influence the evaluative judgment, if the information about a target person was not strongly valenced. It is therefore concluded that both stimulus valence and consistency-driven processing fluency play a role in evaluative judgments in the domain of stereotyping. The respective impact of stimulus valence is much stronger than the impact of unspecific processing dynamics, however. Implications for fluency research and the applied field of stereotype change are discussed.

Zusammenfassung

Der relative Einfluss von Stimulusvalenz und Verarbeitungsflüssigkeit auf evaluative Urteile im Stereotypkontext

Sowohl Stimulusvalenz als auch unspezifische Verarbeitungsflüssigkeit können evaluative Urteile beeinflussen. In acht Experimenten wurde ihr relativer Einfluss im Stereotypkontext untersucht. Hierzu wurden in einem Eindrucksbildungsparadigma die Valenz von stereotypisierender Information und die konsistenzbasierte Verarbeitungsflüssigkeit manipuliert. Im Falle starker Stimulusvalenz der Information über die zu bewertende Person hatte konsistenzbasierte Verarbeitungsflüssigkeit keinen Einfluss auf das evaluative Urteil. Höhere kognitive Prozesse, Valenz der inkonsistenten Eigenschaften, Dominanz von kategorialer Information und Eindrucksbildungsinstruktionen konnten als mögliche Erklärungen für das Ausbleiben von Effekten der Verarbeitungsflüssigkeit ausgeschlossen werden. Konsistenzbasierte Verarbeitungsflüssigkeit hatte allerdings einen Einfluss auf evaluative Urteile, wenn Stimuli keine starke Wertigkeit aufwiesen. Daraus wird geschlossen, dass sowohl Stimulusvalenz als auch unspezifische Verarbeitungsflüssigkeit bei evaluativen Urteilen im Stereotypkontext eine Rolle spielen. Der relative Einfluss von Stimulusvalenz ist jedoch deutlich stärker als der Einfluss von Verarbeitungsflüssigkeit. Implikationen für Theorien der Verarbeitungsflüssigkeit und für die Anwendung im Bereich der Stereotypveränderung werden diskutiert.

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Inhalt

1 Evaluative Judgments in Stereotype Disconfirmation

When interacting with the world, humans have to constantly process and integrate different pieces of information from various sources. Picture yourself seeing someone in the street. You will instantly start asking yourself several questions. Is this a person worth paying more attention to? May that person be a threat to me? Or is it someone I know and would like to meet? To find an answer to these and similar questions you can rely on two main sources of information: all the details you have or can gather about the person; and your gut feeling.

Imagine the person you see is wearing a skirt. This same person is also wearing a beard. Even though you have seen these two things thousands of times, your gut feeling will probably tell you that something weird or unexpected is going on. If you had realized in the first place that the person was not wearing a skirt but a quilt, your gut feelings would probably not have raised the alarm. This example shows that negative feelings may not only be provoked by negative information, but also by pieces of information that are combined in an unexpected way, even if the information as such is neutral or even positive in nature.

This thesis investigates how both the information about a person and your gut feelings influence evaluative judgments about a person. The first part of the thesis introduces theoretical concepts and empirical findings regarding evaluative judgments in general. The specific role of information content and processing dynamics, namely fluency, in evaluative judgments will be discussed in more detail. These general concepts will then be applied to the field of impression formation and stereotyping. The first part of the thesis concludes with an outline of the research programme empirically testing the respective influence of information content and fluency on evaluative judgments in stereotype disconfirmation.

1.1 Evaluative Judgments

In the early nineties of the last century, evaluative judgments have been described to operate in three main stages, namely evaluation, integration, and decision (e.g., Massaro & Friedman, 1990): In a first stage, all available information has

to be gathered and evaluated regarding its valence (*Evaluation*). Here, each physical attribute of a stimulus is translated into a psychological value. This psychological value depends on prior knowledge and experiences with this or similar physical attributes stored in memory (e.g., Rosenberg, 1956). Evaluations are automatically activated from memory upon perceiving the attitude object (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Likewise, judgments of liking can be influenced by stimulus features previously associated with positive or negative events by reactivating this positivity or negativity (Fazio & Olson, 2003). In the above Scotsman example, the attitude objects and their respective evaluations would be beard (neutral) and skirt (positive).

Secondly, these evaluations then have to be integrated into an overall evaluation of the stimulus (*Integration*). This part of the process is of special interest for the experimental work presented in this thesis. Different models postulate different processes for this integration of information into an overall judgment. The most prominent are additive accounts (e.g., Anderson, 1962, 1971; Kahneman, Fredrickson, Schreiber, & Redelmeier, 1993) stating that the values of each single attribute of a stimulus are averaged to reach an overall evaluation. In the Scotsman example, additive accounts would predict that the value of each attribute (beard: neutral, skirt: positive) are averaged into an overall evaluation (moderately positive).

In a third stage, the outcome of the integration process or the overall evaluation has to be mapped to a response (*Decision*). In evaluative judgments the outcome of the integration process is likely to be positive or negative affect (Russell, 2003, 2009). This affect is then used as a basis for the evaluative judgment (Schwarz, 1990, 2002, 2012). In the Scotsman example this could be a positive feeling towards the person, resulting in a friendly greeting to the man.

However, in the introductory example of the Scotsman, affect was most likely not only influenced by the specific features themselves, but also by their consistency. The fact that a beard and a skirt are seldom encountered in one person can lead to a feeling of uncertainty and can possibly result in negative affect. The awareness that features that are not related to stimulus content but to the relation between stimuli has only increased gradually. Early accounts of impression formation (e.g., Anderson, 1962, 1971) assumed that pieces of information were integrated into an overall

judgment about the person, simply processing stimulus content following purely rational principles. Later, research has shown that the outcome of the information integration process also depends on content-independent factors such as previously activated knowledge (D. E. Meyer & Schvaneveldt, 1971), stimulus order (Kahneman et al., 1993), feelings and intuitions (Kahneman, 2003), motivational states (Rozin & Royzman, 2001), or ease of cognitive processing (Reber, Schwarz, & Winkielman, 2004).

Additive accounts of information integration as well as research showing limitations to the idea of purely rational additive information integration will be reviewed in more detail now.

1.2 Effects of Stimulus Valence on Evaluative Judgments

An early approach to explain how information from different stimuli is integrated into evaluative judgments are additive accounts of information integration (e.g., Anderson, 1962, 1971; for a review see Massaro & Friedman, 1990). Additive accounts postulate that the overall evaluation of a target person is simply determined by the evaluation of single pieces of information about the target person. Mathematical rules like arithmetic averaging are assumed to be applicable to the integration process. In a seminal study, Anderson asked participants to evaluate hypothetical persons on the basis of a random set of three adjectives they learned about the person (e.g., good-natured, bold, humorless). All adjectives had been pre-rated for their valence. The evaluation of the person could be predicted by the arithmetic mean of the evaluation of the individual attributes (Anderson, 1962). This was interpreted as evidence for the fact that evaluative judgments are formed according to rational principles.

Later, additive accounts were extended by a weighing factor, assigning weight to the value of each piece of information (Anderson, 1971). This is due to the insight that not all pieces of information are integrated into a judgment to the same extent. Stimuli that are of special importance to the person or that are outstanding for some other reason have a stronger influence on an overall judgment. The value assigned to these stimuli carries a greater weight in forming the integrative judgment (Anderson, 1971). A special form of weighing different stimuli is described by the so-called peak-

and-end rule (Do, Rupert, & Wolford, 2008; Fredrickson & Kahneman, 1993; Kahneman et al., 1993). Evaluative judgments (e.g., of past experiences) are mainly based on the most extreme stimuli or parts of an episode (peak). Likewise, the last stimulus encountered before the end of an episode or before the judgment (depending on what comes first), has an especially strong impact on the evaluative judgment of the episode. This can even lead to the paradoxical effect that a series of more aversive stimuli is preferred to a series of less aversive stimuli, namely if the last stimulus is only mildly aversive (Kahneman et al., 1993). As this mildly aversive stimulus is weighed heavily according to the end rule, the overall impression of aversiveness is diminished, even though the total amount of aversive stimuli is increased.

The weight that is assigned to the value of specific stimuli has been shown to be due to motivational states. For example, negative information is weighed stronger in evaluative judgments than positive information, because negative information can have a warning function (*negativity bias*, for a review see Rozin & Royzman, 2001). The introduction of a weighing factor has made additive accounts of information integration more flexible and able to explain differences in evaluative judgments that are not due to differences in the evaluation of specific stimuli regarding the target person. Since motivation has been shown to influence the weighing of different stimuli when forming an evaluative judgment, additive accounts of information integration are even able to reflect some motivational states, as values can be weighed differently according to current motivations.

In summary, additive accounts of impression formation assume that each piece of information about an individual is assigned a value. The single values are then weighed according to their importance and integrated into an overall judgment of the individual by arithmetic averaging. Additive accounts of impression formation presume purely rational principles of information processing. For this reason, they have been criticized for being unable to account for non-rational influences on information processing (Fiske, Lin, & Neuberg, 1999). Some of these possible non-rational influences on evaluative judgments will be reviewed in the next part of this thesis.

1.3 Influences and Biases in Evaluative Judgments

The basic idea that cognition often does not function by purely rational principles goes back to Simon's notion of boundaries of rationality (March & Simon, 2005; Simon, 1955). Simon did not generally disagree with the idea that individuals try to make rational choices (Simon, 1955). He postulated, however, that the human brain is only able to execute well-defined programs of limited complexity (March & Simon, 2005). Building on Simon's work, in the 1970s Kahneman and Tversky (Kahneman & Tversky, 1979; Tversky & Kahneman, 1974) provided a bulk of evidence showing that judgments can be influenced by irrelevant information such as immediate feelings or biasing intuitions (for a review see Kahneman, 2003). One example for such irrational mental shortcuts is the availability heuristic. It describes the phenomenon that judgments about the probability of events are driven by the ease with which specific examples for the event can be retrieved from memory (Tversky & Kahneman, 1973).

Moreover, cognitive processes have been shown to be not only influenced by feelings and intuitions that occur during the judgmental process but also by influences encountered prior to the to-be-evaluated stimulus. For example, priming research showed that a stimulus is processed faster and more easily when related information has been activated from memory by a prior stimulus (D. E. Meyer & Schvaneveldt, 1971; Palmer, 1975; Wentura & Degner, 2010). More specifically, semantic priming refers to the phenomenon that one stimulus (e.g., dog) activates semantically related concepts (e.g., cat) from memory. Affective priming describes the fact that affective content evoked by one stimulus can facilitate the processing of a subsequent affectively charged stimulus (for a review, see Klauer & Musch, 2003). This is also true for general evaluations: positive stimuli are primed by other positive stimuli; and negative stimuli are primed by other negative stimuli (e.g., Schmitz & Wentura, 2012). Even unrelated bodily sensations can influence the evaluation of a target. Unobtrusive activation of facial muscles that are usually activated when smiling led to a more positive evaluation of stimuli (Strack, Martin, & Stepper, 1988).

Heuristics and priming phenomena both illustrate one point: the judgment of a stimulus is not only influenced by the content of the stimulus itself but also by stimuli that have been encountered previously or simultaneously. The described principles

can be applied to all kinds of judgments, including evaluative judgments in impression formation that are the current object of interest. How can additive theories (Anderson, 1962, 1971) account for effects such as priming or cognitive heuristics on evaluative judgments in impression formation? Additive accounts of impression formation postulate that a specific stimulus has a specific value that influences an (evaluative) judgment according to its weight. The importance of a specific stimulus at a given time or in a given situation determines its weight and thereby how much the evaluation is influenced by the value of the stimulus. The value itself is constant however and should not be influenced by stimuli that have been encountered previously or simultaneously. Thus, additive accounts can explain differences in impression formation that result from weighing stimuli differently. If, for example, Mary is asked how much she likes her next-door neighbour Alex, the first thing that might come to her mind is that he is a hooligan. She might then also remember that he is often drunk and loud when he is coming home after a match. If she stops thinking about Alex at this point, the fact that she often sees him playing with his little one in the yard might elude her judgment. Her spontaneous judgment of Alex will integrate the fact that he is a hooligan, that he is loud and that he is hard-drinking. Thus, Mary's evaluative judgment of Alex is only influenced by information that was easily available to her at the time of the evaluation. Maybe Mary has just read a newspaper article advocating teatotalism, making the fact that Alex is hard-drinking especially disturbing for her. This information is then weighed stronger in the information integration process, resulting in a stronger impact of the value assigned to hard-drinking on the overall evaluative judgment of Alex. This example shows that additive accounts can incorporate and account for at least some heuristics and biases.

However, the explanatory power of additive accounts reaches a limit when evaluative judgments are influenced not by the content of the to-be-integrated information but by content independent factors. One of these content-independent factors mentioned before is consistency between the stimuli. In the next part of this thesis, effects of consistency on evaluative judgments, underlying cognitive processes and according short-comings of additive accounts of information integration will be explained in more detail.

1.4 The Role of Consistency in Evaluative Judgments

One of the content-independent phenomena influencing evaluative judgments that additive accounts of information integration cannot account for is (in)consistency between stimuli. Additive accounts would predict that a specific stimulus (e.g., intelligent) has a constant value, independent of other stimuli or contextual cues. However, the trait intelligent can be evaluated differently depending on other traits accompanying intelligence. When paired with cruel, intelligent has a different meaning and valence than when paired with altruistic (Fiske et al., 1999). The fact that intelligent gains a different meaning and value depending on other available information or prior knowledge is due to the general tendency to resolve conflicts between different pieces of information or new information and existing knowledge. Inconsistency between different pieces of information or new information and existing knowledge is aversive because it potentially interferes with effective and unconflicted action (Harmon-Jones, Harmon-Jones, & Amodio, 2012). Therefore individuals tend to generally look for information confirming existing knowledge (Johnston, 1996; Snyder & Swann, 1978), thus maintaining a clear and stable view of the world.

A recent account to explain the preference for confirmation of existing concepts is the Meaning Maintenance Model (Heine, Proulx, & Vohs, 2006; Proulx, Heine, & Vohs, 2010; Proulx & Heine, 2008; Randles, Proulx, & Heine, 2011). The main ideas of the model are that (1) meaning is derived from coherent relations in the external world, within the person and between the person and the world. (2) Humans constantly seek for meaning. Incoherence is therefore aversive and disruptions in mental representations lead to an urge to regain meaning. (3) Incoherence in one domain can be compensated by reaffirmation of other coherent domains. The compensating reaffirmation of coherent domains is called *fluid compensation* (Heine et al., 2006). One example for fluid compensation is the greater affirmation of moral beliefs after an unobtrusive threat manipulation in an unrelated domain (Proulx & Heine, 2008). Inconsistency or disconfirmation of existing knowledge has even been shown to elicit physical threat responses. Encountering individuals with mismatching ethnic and socio-economic background or mismatching ethnic background and accent led to cardiovascular responses consistent with threat. On a behavioral level

disconfirmation of existing knowledge resulted in poorer task performance, and negative and defeat-related behavior (Mendes, Blascovich, Hunter, Lickel, & Jost, 2007).

This is evidence for the importance of consistency and confirmation of existing knowledge that cannot be accounted for by additive models of information integration. Additive accounts predict that all pieces of information are assigned specific values and integrated into a judgment according to their weight, independent of expectancies or (dis-)confirmation of existing knowledge. Getting back to the example of intelligent, altruistic, and cruel, additive accounts of information integration predict the same value for intelligent independent of the co-occurrence of altruistic or cruel. When all three traits are assigned to one person, additive accounts predict that the overall evaluation of the target person is influenced by the respective values of intelligent, altruistic, and cruel. The irritation that the inconsistency between altruistic and cruel quite possibly causes is not accounted for by additive accounts of information integration.

1.5 Processing Dynamics and Fluency

The notion that inconsistency between stimuli is aversive has recently been augmented by the notion that consistency between stimuli is pleasant. Consistency is one example for stimulus attributes eliciting processing fluency (Reber, Schwarz, et al., 2004). The notion of fluency postulates that evaluative judgments are grounded in the processing experiences of the perceiver. The core assumptions of fluency theory are that objects differ in the efficiency with which they can be processed and that high fluency is subjectively experienced as positive. This subjective experience feeds into evaluative judgments of the stimulus unless the informational value of the experience is called into question (Reber, Schwarz, et al., 2004).

The general concept of processing fluency embraces perceptual fluency and conceptual fluency. Perceptual fluency refers to physical properties of the stimulus such as readability, brightness, contrast, etc. Conceptual fluency refers to the cognitive processing of the stimulus such as integration into structures of prior semantic knowledge. Experimental evidence for both conceptual and perceptual fluency will be discussed now.

One of the first factors that were identified to be relevant for conceptual fluency was the repeated exposure of stimuli (Fang, Singh, & Ahluwalia, 2007). In the now classic study on the so-called mere exposure effect, in a study phase participants were given lists of names they were told belonged to common people. 24 hours later these same names were presented again together with new names. Participants were asked for judgments of famousness for old and new names. Because old names had been encountered before, they were easier to process. As participants did not remember the study phase, they misattributed the processing fluency elicited by repeated exposure. Accordingly, old names were judged to be more famous than new names (Jacoby, Kelley, Brown, & Jasechko, 1989). The false fame attributed to old names is due to the increased processing ease or fluency of old compared to new names (Fang et al., 2007; Topolinski & Strack, 2009a; Willems & Van der Linden, 2006).

More classic research on repeated exposure of stimuli on subsequent judgments of familiarity can be interpreted as resulting from increased processing fluency. For example, priming a to-be-judged word with itself increased the belief that it had been presented in an earlier study list (Jacoby & Whitehouse, 1989). The same effects occur for subliminal and supraliminal priming of the to-be-judged word with itself (Bernstein & Welch, 1991). More recently, the effect has also been shown for graphic symbols. Even graphic symbols that were encountered for the first time were rated as more familiar when primed with themselves (A. S. Brown & Marsh, 2009). This is evidence that priming and repeated exposure lead to more fluency. In line with this reasoning, fluency is discussed to underlie the mere exposure effect (Fang et al., 2007; Topolinski & Strack, 2009a).

1.6 Effects of Fluency on Evaluative Judgments

The early experiments investigating fluency effects reviewed above were mainly concerned with judgments of familiarity. More central to the present thesis is the effect of fluency on evaluative judgments. Various experiments have shown that high processing fluency is experienced as hedonically positive, leading to positive affective responses (Reber, Schwarz, et al., 2004; Winkielman, Schwarz, Fazendeiro, & Reber, 2003). For example, everyday objects are liked better when processing fluency is high (Winkielman & Cacioppo, 2001). In two experiments participants were asked to

evaluate everyday objects. Fluency was manipulated by a brief exposure to the contours of the to-be-evaluated object before the object actually appeared on the computer screen (Experiment 1) or by duration of object presentation (Experiment 2). Higher fluency induced by both priming and presentation length led to a more positive evaluation of stimuli (Winkielman & Cacioppo, 2001). That feelings of fluency actually are mediating the effects of fluency manipulations on evaluative judgments has recently been demonstrated by Forster and colleagues (Forster, Leder, & Ansorge, 2012). They manipulated fluency by repeated exposure of stimuli and measured processing ease, subjective feelings of fluency, and evaluative judgments of stimuli. Evaluative judgments were driven by both processing ease and subjective feelings of fluency. The effect of subjective feelings of fluency, however, was much stronger than that of processing ease (Forster et al., 2012). This is evidence that fluency does not necessarily influence evaluative judgments directly but rather through the subjective appraisal of the processing experience.

Intriguingly, factors that are completely unrelated to the to-be-evaluated stimulus can influence fluency and subsequent judgments. As mentioned above, an example for this phenomenon is perceptual fluency. Experimental manipulations inducing perceptual fluency include symmetry, figure-ground contrast and font (Reber, Wurtz, & Zimmermann, 2004; Unkelbach, 2007; Willems & Van der Linden, 2006; Wurtz, Reber, & Zimmermann, 2008). Perceptual fluency has been shown to influence judgments in various domains including duration of stimulus presentation (Reber, Zimmermann, & Wurtz, 2004) and truth of statements (Unkelbach, 2007). Another example for stimulus-unspecific factors triggering fluency is covert pronunciations (Topolinski & Strack, 2009a). Through the repeated exposure of a particular stimulus, motor responses specifically associated to that stimulus are repeatedly simulated, thus becoming increasingly fluent over time (Topolinski, 2010). In line with this reasoning it has been shown that the mere-exposure effect vanishes when the motor simulation is blocked. For example, chewing gum while evaluating words destroyed the mere exposure effects for these words. The mere-exposure effect for non-verbal stimuli occurred independent of the blocking of covert pronunciation (Topolinski & Strack, 2009a). These sensorimotor simulations constitute an embodied form of fluency

(Topolinski & Strack, 2010; Topolinski, 2010, 2011).

Even though the influence of fluency has often been discussed as biasing in (evaluative) judgments (Jacoby et al., 1989; Topolinski & Strack, 2010), it can also be a valid cue, meaningfully informing a judgment. This is for example the case in judgments of statistical regularities. Here, fluency of retrieval from memory has been shown to be a proxy for real-world quantities (Hertwig, Herzog, Schooler, & Reimer, 2008, 2011). This so-called fluency heuristic (Hertwig et al., 2008) has so far only been applied to judgments regarding quantities and other statistical regularities. As it concerns fluency of retrieval from memory, it cannot be applied to evaluative judgments of given stimuli that are the main focus of this thesis.

1.7 Semantic Fluency and Consistency

Beyond the various forms of fluency introduced so far, semantic fluency is the concept that is most closely related to consistency, which is the present target of interest. Semantic consistency has been shown to lead to processing fluency and positive evaluative judgments. For example, groups of words that have a common associate (e.g., SALT, DEEP, FOAM) were identified faster in a lexical decision task than groups of words (e.g., DREAM, BALL, BOOK) that do not have a common associate (Topolinski & Strack, 2009b). As processing speed is an indicator of fluency, this shows that consistent sets of stimuli were more fluent than sets of inconsistent stimuli. Consistent sets of stimuli were not only processed faster than non-consistent sets, they were also evaluated more positively than non-consistent sets (Topolinski & Strack, 2009b). These differences in evaluative responses were mediated by processing speed (Topolinski & Strack, 2009b, 2009c). Likewise, consistent sets of stimuli triggered more positive facial muscular reactions than inconsistent sets of stimuli (Topolinski, Likowski, Weyers, & Strack, 2009). Even though the effects of semantic consistency on fluency are often very subtle, they are detectable on both explicit (Topolinski & Strack, 2009c) and implicit (e.g., Topolinski et al., 2009) affect measures.

In summary, research has shown that consistency, compared to inconsistency, is associated with higher processing fluency. This higher processing fluency leads to more positive affect and to more positive evaluations of consistent compared to inconsistent stimuli. This is true for visual patterns (Forster et al., 2012; Reber,

Schwarz, et al., 2004; Topolinski & Strack, 2009d), groups of words (Topolinski & Strack, 2009b, 2009c, 2009d) and social stimuli (Topolinski, 2012a).

1.8 Fluency-triggered Affect and Evaluative Judgments

The fact that fluency can lead to positive affect and to more positive evaluations is well-established. But how does fluency-triggered affect feed into evaluative judgments? In their work on motor influence on affect and evaluative judgments Neumann and Strack (2000) distinguished between an experiential and a non-experiential route. According to their reasoning, both knowledge and feelings feed into evaluative judgments. Feelings mainly rely on experiential representations that can vary in intensity and that do not have a truth value. Fluency can be conceptualized as such an experiential representation eliciting feelings via the experiential route. For the affect elicited by cognitive processing dynamics like familiarity (Jacoby, 1991; Mandler, 1980), feeling of knowing (Koriat, 1993, 1995), ease of retrieval (Schwarz et al., 1991; Winkielman, Schwarz, & Belli, 1998), or fluency (Reber, Wurtz, et al., 2004), the term "cognitive feelings" has been coined (Clore, Gasper, & Garvin, 2001; Clore, 1992; Clore, Wyer, et al., 2001).

According to Neumann and Strack (2000) knowledge on the other hand feeds into evaluative judgments via the non-experiential route. It is coded in noetic representations that are activated in an all-or-none fashion and have a definite truth value. Stimulus valence is the equivalent to knowledge in the account of cognitive processes underlying evaluative judgments proposed in this thesis. The affect elicited by both stimulus valence (feelings) and fluency (cognitive feelings) can subsequently be attributed to the target in the course of automatic object appraisal (Clore, 1992).

1.9 Account of Cognitive Processes Underlying Evaluative Judgments

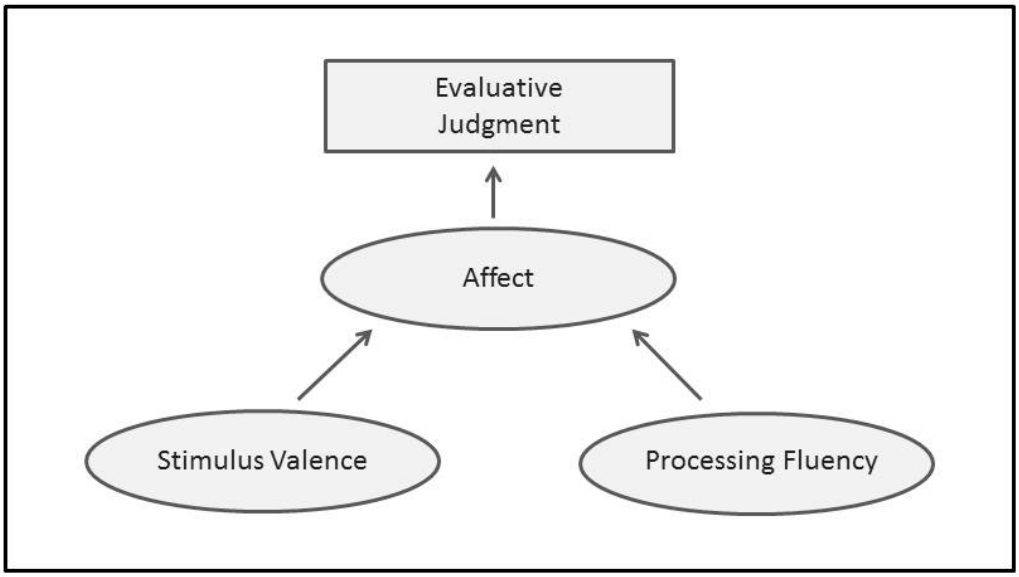
The theoretical ideas presented so far can be integrated into an account of cognitive processes underlying evaluative judgments. Evaluative judgments are proposed to be based on an affective state. This affective state is proposed to be influenced by stimulus valence (triggered by the semantic content of the stimulus) and processing fluency (influenced for example by consistency of the stimuli). A similar distinction has been made by Winkielman and colleagues (Winkielman, Huber,

Kavanagh, & Schwarz, 2012). They distinguished between specific feature-based information and non-specific processing dynamics. Stimulus valence can be seen as a special case of specific feature-based information and fluency is one of several possible non-specific processing dynamics. Stimulus valence is specific to a certain stimulus, whereas fluency is not triggered by a certain stimulus or its valence but by the consistency between different stimuli. Both stimulus valence and processing fluency are postulated to elicit affective reactions (Neumann & Strack, 2000). They are orthogonal and can both influence the affect underlying an evaluative judgment independently. The affective state resulting from both the affective reaction elicited by stimulus valence and by processing fluency then determines the evaluative judgment of the stimulus.

An application of this account to the introductory Scotsman example would result in the following: Stimulus valence would be determined by the valence of *skirt* (positive) and *beard* (neutral). Applying an additive account of information integration, this would lead to a moderately positive overall stimulus valence. This moderately positive stimulus valence would in turn result in moderately positive affect. The fact that *skirt* and *beard* are inconsistent would make cognitive processing difficult and disfluent. These difficulties in cognitive processing can elicit negative affect. The affective state underlying the evaluative judgment of the Scotsman would then be fed by the moderately positive affect resulting from stimulus content and by the negative affect elicited by the lack of processing fluency. The overall affect and the resulting evaluative judgment would depend on the respective intensity of the affective reaction triggered by stimulus valence and processing fluency.

The relationship between stimulus valence, processing fluency, affect and the evaluative judgment is illustrated in Figure 1.

Figure 1 : Account of Cognitive Processes Underlying Evaluative Judgments



This theoretical account and its components will be described in more detail now, before it is applied to the field of stereotype disconfirmation.

1.10 Evaluative Judgments in Stereotyping and Impression Formation

The account of cognitive processes underlying evaluative judgments outlined above could be applied to different kinds of evaluative judgments in various domains. Here it used to try to explain evaluative judgments in the domain of stereotyping and impression formation. In forming an impression of another person it is especially important to be able to deal with expected and unexpected stimuli (Macrae, Bodenhausen, Schloerscheidt, & Milne, 1999). One the one hand, using category information and related stereotypes to evaluate a person can immensely simplify navigating the social world (e.g., Tajfel, 2001). On the other hand, not correcting for stereotypic associations when they are not applicable can lead to misjudgements with dramatic consequences (Payne, 2001, 2006).

Additive models of information integration in impression formation (e.g., Anderson, 1962, 1971) outlined above are limited in their ability to account for empirical findings on stereotyping. An overall evaluative judgment is the first and most prominent process when forming an impression of another person (Abele & Bruckmüller, 2011). Is the other person good or bad; friend or foe? Different aspects of

the person are used to form such a judgment. If one or more of these aspects increase the activation of a social category by stereotypic association, this category is likely to be used to categorize the person (Hugenberg & Bodenhausen, 2004). The activation of a social category in turn activates more information stereotypically associated with this category (Kawakami, Dion, & Dovidio, 1998). For example, social category activation has been shown to shape the perception of a person (Leyens & Fiske, 1994) and subsequent behavior (Cesario, Plaks, & Higgins, 2006).

Additive accounts of information integration can account for the results as long as the category membership can be defined as an additional piece of information that can be assigned a certain value that in turn shapes the overall evaluation according to its weight. When applied to the example of the child-loving hooligan, child-loving would be one stimulus; the category membership (hooligan) would be the other. From an additive perspective, both child-loving and hooligan would be ascribed a certain value and a weight. These values would be averaged into the overall evaluation of the person according to their weight.

It has also been shown however that one stimulus (including category information) can influence the interpretation of another stimulus (Leyens & Fiske, 1994). This can also be illustrated with the example of the child-loving hooligan. Child-loving can be interpreted and valued differently depending on the other stimuli it coexists with. The usually positive value of child-loving can be neutralized or even turned into the opposite by the accompanying information that the child-loving person is a hooligan. As mentioned above when introducing the meaning maintenance model (Heine et al., 2006), individuals constantly try to make sense of the world. This can lead to the re-interpretation of unexpected information, restoring sense and meaning (Jaspers & Hewstone, 1990; Swim & Sanna, 1996). While a child-loving teacher does most likely not violate expectations, the pairing of child-loving and hooligan can lead to a re-interpretation of the attribute child-loving. One possible re-interpretation could be that the hooligan's displayed affection for children is due to the motivation to recruit future hooligans at an early stage of life. Additive accounts cannot explain these differences in the interpretation of one stimulus due to other stimuli presented simultaneously.

1.11 The Continuum Model of Impression Formation

One approach specifically trying to solve this problem in the domain of stereotyping is S. Fiske's continuum model (Fiske et al., 1999; Fiske & Neuberg, 1990; Fiske, 2012). It is one approach trying to account for effects both of category membership and of individuating information. It does not specifically address evaluative judgments but all judgments in impression formation. The continuum model proposes different stages in processing information about a target person, from initial categorization to attribute-by-attribute analysis of the person. Whether the evaluation of a target person is driven by category information or by individuating information depends on cognitive and motivational factors.

One of the factors important for the present research is the concept of information fit or consistency between category and attributes. According to the continuum model, if attributes are perceived as consistent with the category, category membership will drive the evaluation of the target person. If attributes are inconsistent with the category, the evaluation of the target person will be more strongly influenced by individuating information. This inconsistency between category and attributes can lead to *recategorization* (Fiske & Neuberg, 1990) or to piecemeal integration of the attributes. Fit between different attributes is not explicitly addressed by the model, but the argumentation can easily be applied to this case as well. Applying the reasoning of the continuum model to inconsistency, inconsistency between different attributes should lead to piecemeal integration of the stimuli and to individuating judgments. The role of category membership should therefore be diminished when the categorized target person is presented with inconsistent attributes.

According to the continuum model, inconsistency influences how information about a target person is processed, namely whether evaluative judgments rely on category information or on individuating information. Thus, inconsistency is one way among several that lead to the processing of individuating information instead of relying on category membership. Applying this reasoning to the hooligan example, a loud hooligan (stereotype consistent) would be evaluated using category information (hooligan). The evaluation of the child-loving hooligan (stereotype inconsistent) would

also incorporate individuating information (child-loving). If the stereotype inconsistent information is evaluated more positively than the category information, the stereotype-inconsistent target person should be evaluated more positively than the stereotype consistent target person. Thus, according to the continuum model, the child-loving hooligan should be evaluated more positively than the loud hooligan. This is contradictory to predictions from a fluency perspective. As consistent information is processed more fluently, the stereotype-consistent individual should be evaluated more positively than the stereotype-inconsistent individual. The respective influence of both stimulus valence and consistency and how they shape both cognitive processing and the outcome of the cognitive process in impression formation has not been investigated yet.

The account of effects of stimulus valence and processing fluency introduced above aims at filling this theoretical gap in research on evaluative judgments in stereotyping and impression formation. In the literature on stereotyping, inconsistency between category membership and attributes of a target person is referred to as *stereotype disconfirmation* (for a recent review see Sherman, Allen, & Sacchi, 2012). Novel information that is inconsistent with previously activated knowledge (e.g., via stereotypic association) elicits conflicts in cognitive processing that have to be resolved (Sherman et al., 2012). How these conflicts can be resolved is outlined in the next part of this thesis.

1.12 Effects of Stereotype Disconfirmation on Memory

Stereotype disconfirmation has been shown to effect memory for stereotype related information. Not only in the domain of stereotyping, information that is unexpected in a given context draws attention (W.-U. Meyer, Reisenzein, & Schützwohl, 1997; Schützwohl, 1998). Unexpected information is regarded as especially informative and is processed more deeply (Bargh & Thein, 1985; Fiske, 1980; Pezzo, 2003), and as a consequence is remembered better (Bargh & Thein, 1985; Schützwohl, 1998). These mechanisms lead to a memory bias for unexpected information in a social context. Stereotype inconsistent information is remembered better than stereotype consistent information. In an early experiment Hastie and Kumar had participants learn lists of sentences about a person (e.g., won the chess

tournament; made the same mistake three times) that were either consistent or inconsistent with a personality trait ascribed to that person (e.g., intelligent). The probability of correct recall was higher for trait inconsistent sentences than for trait consistent sentences (Hastie & Kumar, 1979). In a meta-analysis Stangor and colleagues found an overall memory bias towards expectancy-inconsistent information (Stangor & McMillan, 1992).

There is also empirical evidence for the opposite direction, however. In some studies, it was found that stereotype inconsistent relative to stereotype consistent information was ignored (Johnston, 1996; Trope & Thompson, 1997) or forgotten (Fyock & Stangor, 1994).

One way of explaining this mixed evidence is to assume two possible different motivational states during impression formation. When confronted with stereotype inconsistent information, one can either ignore or later forget the stereotype inconsistent information, thus minimizing processing effort (Macrae, Milne, & Bodenhausen, 1994). On the other hand, one can give special attention to the stereotype inconsistent information, thus maximizing informational input (Fiske, 1980). Consequently, Sherman and colleagues proposed a consistency model of stereotype disconfirmation to resolve the paradox (Sherman et al., 2012). They proposed that both defending and changing a stereotype (by integrating new information) can help to resolve the discrepancy between existing knowledge and new information, thus re-establishing consistency. According to their account, new information is integrated into the stereotype whenever possible and ignored when the stereotype is hard to change (Sherman et al., 2012).

Which of the two strategies is applied, namely whether stereotype inconsistent information is processed or ignored, respectively, is be influenced by several moderators like stereotype strength, processing capacity, and regulatory focus. People with strong stereotypes are more prone to enhanced processing of stereotype inconsistent information (Sherman, Stroessner, Conrey, & Azam, 2005). This especially the case when individuals have a chronic prevention focus (Förster, Higgins, & Strack, 2000), when the disconfirmation of the stereotype is experienced as a threat to the self (Förster, Higgins, & Werth, 2004), and when cognitive resources are available

(Allen, Sherman, Conrey, & Stroessner, 2009). Extremely unprejudiced people on the other hand have been found to actively seek stereotype inconsistent information, thus showing a motivation to disconfirm stereotypes (N. A. Wyer, 2004). The empirical evidence reviewed here shows the high relevance of stereotype inconsistent information. Several studies have shown that stereotype-inconsistent information is either ignored or given special attention but not processed like any other piece of information. As the focus of this thesis is on evaluative judgments, effects of stereotype inconsistent information on evaluative judgments are of even greater interest to the questions at hand. According effects will be discussed in more detail now.

1.13 Effects of Stereotype Disconfirmation on Affect

The effects of stereotype inconsistent information on memory are well established (Sherman et al., 2012). The effects of stereotype disconfirmation on evaluative judgments have scarcely been investigated, however. People who describe others in stereotype consistent ways are evaluated more positively than those who describe others in stereotype inconsistent ways (Castelli, Zecchini, Deamicis, & Sherman, 2005). More interesting, however, is the question how an (in)consistent target person is evaluated him- or herself. Some of the experiments on memory biases for stereotype inconsistent information also asked for evaluative judgments (Förster et al., 2000, 2004). In all of these experiments all target persons were presented with consistent and inconsistent information, because the main focus lay on the respective retrieval probabilities. As all target persons were presented with stereotype inconsistent information, a comparison of evaluative judgments of target persons with and without stereotype inconsistent information is impossible. Results will be reviewed nonetheless as some experiments also identified moderators possibly influencing memory and evaluation of stereotype inconsistent information. For example, Förster and colleagues (2000) had participants memorize behaviors of fictitious male and female target persons in a background-sensitive recognition test. A male and a female target person were presented with behaviors consistent or inconsistent with the respective gender stereotype (e.g., likes window shopping; likes to watch scary movies). Participants were asked to form an impression of the male and

female target persons. After reading all information about the two target persons participants were asked how much they liked the target person and how much they would like to meet the person if possible. The evaluation of the target person was not influenced by regulatory focus or sexism (Förster et al., 2000). However, due to the within-subject design of the experiment, effects of stereotype consistency on the evaluative judgment could not be tested, as both target persons were presented with stereotype consistent and inconsistent behaviors.

The same is true for a related study using the same materials, additionally manipulating social relevance (Förster et al., 2004). Here, sexism had a main effect on the evaluative judgment. Participants low in sexism liked the target person more than participants high in sexism. As the target person was always presented with stereotype inconsistent behaviors, one can conclude that stereotype inconsistent target persons are liked better by low-prejudiced than by high-prejudiced people. The question whether stereotype consistent or stereotype inconsistent target persons are evaluated more positively cannot be answered by these results either, as participants only saw stereotype inconsistent target persons.

One of the first experiments actually assessing effects of stereotype disconfirmation on evaluative judgments was conducted by Lambert and Wyer (1990). They had participants read a description of a dishonest person who was convicted of stealing in a local store and lying about it. Participants were told that the person was either a priest or a businessman. Immoral behavior had been pretested to be inconsistent with the stereotype of priests. Even though the general evaluation of priests was positive, the evaluation of the priest showing immoral behavior was just as negative as the evaluation of a businessman showing immoral behavior (Lambert & Wyer, 1990). Participants' evaluative judgment of the target person was not influenced by his group membership, but by his individual behavior. Like in the experiments on memory for stereotype inconsistent behavior, a comparison between stereotype consistent and inconsistent behavior was not possible because participants only evaluated target persons displaying stereotype inconsistent behaviors.

The same is true for research investigating the effects of stereotype disconfirmation on evaluations of a target person described as being inconsistent with

the stereotype about his or her social category. In an experiment by Bless and colleagues (2001) German participants read a description of a member of the ethnic group of Sinti and Roma, a group towards which most Germans hold negative stereotypic views. The target person however, was described rather favourably and therefore inconsistent with the general stereotype of Sinti and Roma in Germany. Additionally, the target person was described as being either typical and well-integrated or atypical and exceptional for the group of Sinti and Roma. Dependent variables were the stereotypic evaluation of the target person and of the group of Sinti and Roma as a whole. On the group level, inclusion (compared to exclusion) of the inconsistent target person into the group led to less stereotypic views of the group as a whole. On an individual level, the target person was described in more stereotypical terms when he was included (compared to excluded) into the group of the Sinti and Roma (Bless, Schwarz, Bodenhausen, & Thiel, 2001). As the main focus of these experiments was the relative influence of stereotype disconfirmation on evaluations of the target person and the category as a whole, participants only saw target persons who behaved inconsistently with the stereotype.

Only recently, the first work actually comparing evaluative judgments of stereotype consistent and stereotype inconsistent target persons appeared. A series of experiments comparing reactions towards typical and atypical members of a social category showed that stereotype inconsistent information led to a less favourable evaluation of a target person (Mendes et al., 2007). Participants actually interacted with a confederate that was either a typical or an atypical member of his or her social category. Interaction partners that were white with high socio-economic status or black with low socio-economic status (stereotype consistent) were liked better than interaction partners who were white with low socio-economic status or black with high socio-economic status (stereotype inconsistent). Likewise, Asians with a southern accent (stereotype inconsistent) were liked less than Asians and locals with a local accent (stereotype consistent). Additionally, the atypical members elicited physiological threat responses (Mendes et al., 2007). This is in line with the meaning maintenance model (Heine et al., 2006) that assumes that stereotype inconsistent information is perceived as threatening.

This is first evidence that stereotype inconsistent targets are evaluated less positively than stereotype consistent target persons. The cognitive processes underlying these differences remain unclear however. For instance, consistency-driven fluency might be a possible mediator of the effect. The lack of consistency between different pieces of information about the target person (e.g., ethnic and socio-economic background) might have led to difficulties in processing the information. This lack of processing ease or fluency in turn could elicit negative affect. If this fluency-triggered affect influences the subsequent evaluation of the target person, a lack of fluency will lead to a less positive evaluative judgment. As described earlier, these effects of consistency-driven fluency on affect and subsequent evaluative judgments has been shown in various domains (Forster et al., 2012; Topolinski & Strack, 2009b). In the following section the fluency account will be applied to evaluative judgments in stereotyping and stereotype disconfirmation.

1.14 Biasing effects of processing fluency on social-cognitive judgments

Winkielman and Cacioppo (2001) discussed fluency-triggered affect as a potential source of affective biases in social judgments. They showed that processing fluency elicits positive affect and subsequent evaluative judgments in a non-social domain and postulated that the same principles should be applicable to judgments in a social domain (Winkielman & Cacioppo, 2001). A prominent fluency related affective bias in social judgments is the so called prototypicality bias: Prototypical stimuli are generally preferred over non-prototypical stimuli (e.g., Halberstadt, 2006). This effect has been shown for a variety of domains like human faces (Halberstadt & Rhodes, 2000), music (Repp, 1997), animals and technical objects (Halberstadt & Rhodes, 2003), and even dot patterns (Hansen & Topolinski, 2011; Winkielman, Halberstadt, Fazendeiro, & Catty, 2006). How can fluency explain these effects? Prototypical stimuli are processed more fluently than non-prototypical stimuli (Winkielman et al., 2006). These differences in processing fluency partially mediate the effects of prototypicality on evaluative judgments (Winkielman et al., 2006).

Along these lines of thinking, recent research has shown that the negative evaluation of migrants is partly due to difficulties that people have in processing information about people who move from one social group to another (Rubin, Paolini,

& Crisp, 2010). Generally, for most reasoning on possible effects of consistency-driven fluency on social evaluative judgments one has to rely on analogies from fluency effects in other domains (e.g., Winkielman et al., 2003) or from effects in the stereotype literature that could possibly be explained by fluency (e.g., Mendes et al., 2007). For a recent overview of ideas regarding cognitive consistency in stereotyping, see Sherman and colleagues (Sherman et al., 2012).

Only recently effects of consistency-driven processing fluency have been investigated empirically. In an experiment similar to the work on consistency-driven fluency in non-social judgments (Topolinski & Strack, 2009b), participants were asked for evaluative judgments of consistent and inconsistent sets of social stimuli (Topolinski, 2012a). Triads of stereotypically consistent stimuli (e.g., INTELLIGENT, GLASSES, SHY) were evaluated more positively than stereotypically inconsistent triads (e.g., GREY, BAGUETTE, GLASSES). This is evidence that consistency-driven fluency can affect evaluative judgments not only in a non-social domain, but also in a social domain. In these experiments, stimuli were not strongly valenced, thus not strongly informing the evaluative judgment of the target person. The aim of the empirical work in this thesis is to investigate the respective impact of stimulus valence and processing fluency in evaluative judgments in the domain of stereotyping.

1.15 The Respective Impact of Stimulus Valence and Fluency on Evaluative Judgments

As outlined above, stimulus valence as well as processing fluency haven been shown to influence evaluative judgments in various domains. So far, the research on stimulus valence and the research on processing fluency in evaluative judgments have been two distinct lines of work. Whereas the research on stimulus valence goes a long way back, the idea of processing fluency is rather young. The aim of this thesis is the integration of these two aspects of information processing. Do stimulus valence and processing fluency both influence an evaluative judgment simultaneously? Are the effects additive? Or do they interact with each other? Does one override the other? What will an evaluative judgment be like if the affect elicited by stimulus valence (e.g., positive affect due to positive valence of a stimulus) is contrary to the affect elicited by the processing fluency (e.g., negative affect due to disfluency)? These questions were investigated in a research program of ten experiments, introduced in the following

section of the thesis.

2 Outline of the Research Programme

The research programme investigating the theoretical assumptions outlined above consists of ten experiments, including two pretests and two manipulation checks.

2.1 Generating a Standardized Stimulus Set

The little evidence there is on affective consequences of stereotype disconfirmation (e.g., Mendes et al., 2007) used specific social categories like skin color or ethnic origin. The stereotype inconsistent behavior or feature was chosen arbitrarily. Thus, material effects are not ruled out, and a conceptual generalization of effects is rather difficult. The same is true for materials used in experiments of stereotype disconfirmation in memory (e.g., Förster et al., 2000, 2004). To generate a standardized set of materials two pretests were conducted. Pretest 1 tested social categories for their overall valence, identifying positive, negative, and neutral categories. In a second pretest attributes stereotypically associated with these categories were gathered. This resulted in a pool of social categories with different overall evaluations and consistent attributes. The generated set of standardized materials was used as stimulus material in all of the following experiments. In all experiments participants evaluated several target persons, presented with varying attributes. This selection of consistent and inconsistent attributes from the same pool of stimuli is a main asset of the experiments presented here, compared to prior research. In the experiments of Mendes and colleagues (2007) for example, participants evaluated a single target person in a between-subject design. The strength of their experimental setup was that participants actually interacted with the to-be-evaluated target person, resulting in high external validity of results. A main weakness of the procedure was that only one inconsistent feature (e.g., accent) was chosen. Therefore, observed inconsistency effects could be (partly) due to specific qualities of the inconsistent feature chosen for the Experiment. In the experiments reported in this thesis, inconsistent attributes were chosen randomly from a list of possible

attributes. Both consistent and inconsistent attributes were chosen from the standardized set of attributes generated in Pretest 2. Additionally, each participant evaluated several consistent and inconsistent target persons in a within-subject design. This allowed for averaging effects over several trials and thus minimizing stimulus specific biases.

2.2 The Respective Influence of Stimulus Valence and Consistency on Evaluative Judgments

The first two experiments tested the respective influence of stimulus valence and consistency-driven fluency on evaluative judgments. The aim of Experiment 1 was to test whether spontaneous evaluative judgments of a target person mainly relied on the valence of the social category and the attributes ascribed to the target person, or the consistency-driven processing fluency of the information. Therefore target persons belonging to a positive or negative social category were presented with attributes that were either consistent or partly inconsistent with the stereotype about the social category. Inconsistent attributes were inconsistent in two respects: They were not semantically associated with the category and they were valence inconsistent (e.g., a positive attribute for a target person from a negative social category). Strongly valenced categories and attributes were chosen to allow for a direct test of effects of stimulus valence against consistency effects. In a critical condition, a target person from a negative category was presented with (partly) positive attributes. The attribute itself should elicit positive affect, whereas the inconsistency between the positive attribute and the negative category should lead to negative affect. Both aspects should then be reflected in the overall judgment of the person. Thus, the respective influence of category valence, attribute valence and consistency could be tested in one experiment.

Experiment 2 investigated how the availability of cognitive resources influenced the effects of stimulus valence and consistency-driven fluency on evaluative judgments in an impression formation task. Thus, Experiments 2 tested whether effects of stimulus valence and consistency-driven fluency on evaluative judgments operate via reflective or impulsive processing (Strack & Deutsch, 2004).

2.3 Holding Stimulus Valence Constant

Three further experiments tested the effects of stimulus valence and consistency-driven fluency on evaluative judgments. In contrast to Experiments 1 and 2, stimulus valence was held constant, and consistency was manipulated in semantic terms only. Therefore, to-be-evaluated target persons were presented with attributes that were semantically inconsistent but valence-consistent (e.g., lazy hooligan). Thus, Experiments 3, 4 and 5 allowed for conclusions about the effect of semantic consistency on evaluative judgments independently from affective consistency.

2.4 Coherence Judgments

Two more Experiments tested whether the inconsistent attribute sets used in this series of experiments actually were perceived as inconsistent compared to consistent sets. Experiments 6 and 7 thus served as both a manipulation check for Experiments 3, 4, 5, and 8, but also as a means to assess the impact of consistency-driven fluency on a different than an evaluative judgment, namely a judgment of coherence.

2.5 Effects of Consistency in Evaluative Judgments of Neutral Categories

In a last experiment, effects of semantic consistency were tested with social categories and according attributes that were not strongly valenced but rather neutral. This allowed testing effects of consistency-driven fluency in the absence of possibly overshadowing effects of strong stimulus valence.

3 Generating a Standardized Stimulus Set

Two prestests were conducted to generate a standardized set of stimulus materials. This was done to minimize stimulus effects and to be able to generalize the results of the following experiments to numerous social categories.

3.1 Pretest 1

Pretest 1 was designed to identify social categories that are strongly valenced. Therefore the evaluation of 57 social categories was tested. To be tested categories were sampled using various internet sources and by personal communication with other social scientists. The eventual categories were social and occupational (e.g., professor, gardener), recreational (e.g., rock climber, dancer) or other (e.g., criminal, billionaire).

N = 49 participants (mean age = 23.84, *SD* = 4.09; 39 female, 10 male) rated the categories as part of a multi-experiment session, earning course credit or financial compensation. Participants saw one category at a time on a computer screen in random order and were asked to evaluate each category by pressing the according key on the keyboard (*What are your feelings towards …,* with a scale ranging from 1 = *very negative* to 7 = *very positive*, Tarrant & Hadert, 2010). Averaged ratings varied between *M* = 1.27 (*SD* = .57, Kidnapper) and *M* = 6.47 (*SD* = .89, Volunteer). The overall evaluation of the 57 categories was *M* = 4.24 (*SD* = .48).

The categories that were used for the subsequent experiments were the most extremely valenced according to their evaluation ($M < 3$ for negative categories, $M > 5$ for positive categories). Additionally, the chosen categories had to be rated as sufficiently distinctive from each other by the author (e.g., kidnapper and criminal were judged to be not sufficiently distinctive). According to these criteria as negatively evaluated categories kidnapper, hooligan, early school leaver, and insurance salesman were chosen. Neutral categories ($3 < M < 5$) were racing driver, butcher, detective, and bookbinder. Positive categories were pilot, midwife, fireman, and volunteer. Means for these categories can be found in Table 1. Means for all categories can be found in the Appendix together with additional materials (e.g., instructions) for all experiments.

3.2 Pretest 2

Pretest 2 aimed at generating attributes that are semantically associated with the four negative, four neutral and four positive social categories chosen after Pretest 1. Therefore an independent sample of participants was asked to list attributes they associated with each of the twelve categories. 36 participants (mean age = 26.23, *SD* = 7.83; 28 female, 7 male, 1 unknown) listed their associations as part of a multi-experiment session, earning course credit or financial compensation. Participants saw the category labels on a computer screen, one at a time in random order and were asked for attributes they associated with each category (*Which ATTRIBUTES do you spontaneously associate with* …). Participants typed in their associations using the computer keyboard. After 40 seconds the next trial started automatically.

Depending on the different categories, between seven (detective) and eighteen (bookbinder) attributes were named by at least two participants. Semantically very similar or identical attributes were grouped by the author and integrated with the most commonly named attribute. From the resulting pool of associations five attributes were chosen for each category using the following criteria: Each attribute had to be among the ten most frequently named attributes for each category and it had to be rated as sufficiently specific for the particular group by the author (e.g., “nice” is an attribute fitting almost all positive groups and hence was regarded as too unspecific). Pretest 1 and 2 thus resulted in a standardized set of four negative, four neutral and four positive social categories with five semantically consistent attributes each. The chosen categories and attributes can be found in Table 1 .

Table 1 Standardized Set of Categories and Consistent Attributes

Negative	**Kidnapper** ***(Erpresserin)***[a]	**Hooligan** ***(Hooligan)***	**Early School Leaver** ***(Schulabbrecherin)***	**Insurance Salesman** ***(Versicherungs-vertreter)***
	M = 1.27, *SD* = .57	*M* = 1.31, *SD* = .71	*M* = 2.51, *SD* = .91	*M* = 2.57, *SD* = 1.26
	evil	violent	lazy	pushy
	(böse)	*(gewaltbereit)*	*(faul)*	*(aufdringlich)*
	ruthless	brutal	stupid	sneaking
	(skrupellos)	*(brutal)*	*(einfältig)*	*(hinterlistig)*
	greedy	disrespectful	aimless	deceitful
	(habgierig)	*(respektlos)*	*(orientierungslos)*	*(verlogen)*
	unfair	loud	dull	insistent
	(ungerecht[b]/feige[c])	*(laut)*	*(lustlos)*	*(hartnäckig)*
	unfeeling	hard-drinking	undisciplined	selfish
	(kaltherzig)	*(trinkfreudig[b]/-fest[c])*	*(undiszipliniert)*	*(egoistisch)*
Neutral	**Book Binder** ***(Buchbinder)***	**Detective** ***(Detektiv)***	**Butcher** ***(Fleischer)***	**Racing Driver** ***(Rennfahrer)***
	M = 4.84, *SD* = 1.30	*M* = 4.14, *SD* = 1.43	*M* = 3.63, *SD* = 1.55	*M* = 3.41, *SD* = 1.24
	literate	clever	strong	adventurous
	(belesen)	*(schlau)*	*(kräftig)*	*(risikofreudig)*
	boring	nondescript	rough	young
	(langweilig)	*(unscheinbar)*	*(grob)*	*(jung)*
	accurate	nosy	plump	fast
	(sorgfältig)	*(neugierig)*	*(dick)*	*(schnell)*
	industrious	brave	friendly	athletic
	(fleißig)	*(mutig)*	*(freundlich)*	*(sportlich)*
	skillful	precise	down-to-earth	competetive
	(geschickt)	*(gewissenhaft)*	*(bodenständig)*	*(ehrgeizig)*
Positive	**Volunteer** ***(Ehrenamtliche)***	**Fireman** ***(Feuerwehrmann)***	**Midwife** ***(Hebamme)***	**Pilot** ***(Pilot)***
	M = 6.47, *SD* = .89	*M* = 6.00, *SD* = 1.37	*M* = 5.96, *SD* = 1.17	*M* = 5.24, *SD* = 1.16
	helpful	brave	caring	confident
	(hilfsbereit)	*(mutig[b]/tapfer[c])*	*(fürsorglich)*	*(souverän)*
	friendly	athletic/heroic	child-loving	intelligent
	(nett)	*(sportlich[b]/*	*(kinderlieb)*	*(intelligent)*
	sedicated	*heldenhaft[c])*	affectionate	educated
	(engagiert)	strong	*(herzlich)*	*(gebildet)*
	selfless	*(stark)*	warm-hearted	attractive
	(selbstlos)	fast	*(warmherzig)*	*(attraktiv)*
	fair	*(schnell)*	empathic	open-minded
	(gerecht)	assiduous	*(einfühlsam)*	*(weltoffen)*
		(gewissenhaft)		

[a] Original German Stimuli in Italics; [b] attribute used in Experiment 1; [c] attribute used in Experiments 2 to 6.

4 Experiment 1

As outlined in the introduction, evaluative judgments are influenced by stimulus valence and consistency-driven fluency. Experiment 1 was the first of the current series to investigate the respective contributions of stimulus valence and consistency-driven fluency on evaluative judgments in the domain of stereotype disconfirmation.

Obviously, the semantic content or valence of the information given about a target person is a main determinant of the evaluation (e.g., a brutal person is evaluated negatively; a child loving person is evaluated positively). This is due to the fact that positive information elicits positive affect and is evaluated positively, negative information elicits negative affect and is evaluated negatively (e.g., Fazio & Olson, 2003). Affect is also influenced by processing fluency, however. Stimuli that are easy to process elicit positive affect and are evaluated more positively compared to stimuli that are difficult to process. In comparison, stimuli that are difficult to process elicit less positive affect and are evaluated less positively (e.g., Forster et al., 2012; Topolinski & Strack, 2009d).

To investigate the respective influence of stimulus valence and consistency-driven fluency, target persons from negative or positive social categories were presented together with consistent or (partially) inconsistent attributes. If a target person from a positive category is presented with consistent, positive information (e.g. a caring midwife), both stimulus valence and consistency-driven high fluency of processing the information should elicit positive affect and lead to a positive evaluation. If a target person from a positive category is presented together with inconsistent, negative information (e.g., a brutal midwife), both the stimulus valence and the lack of fluency should lead to a less positive evaluation of the target person. In this case, both processes result in a decrease of positivity compared to a target person from a positive category presented with positive attributes only.

The affect elicited by stimulus valence and consistency-driven fluency, respectively lead to different outcomes in the cases of target persons from a negative category presented with inconsistent and consistent information. In this critical condition, a target person from a negative social category (e.g., a hooligan) was presented with an inconsistent, positive attribute (e.g., child loving). The valence of

the information about the target person (child loving) is positive and should therefore elicit positive affect, leading to a more positive evaluation. At the same time, the information is unexpected and therefore difficult to process. This inconsistency-driven low fluency should lead to negative affect and a more negative evaluation of the target person. So, whereas stimulus valence should lead to a more positive evaluation of the target person, the lack of processing fluency should lead to more negative evaluation of the target person, compared to a target person with consistent attributes only. Thus, this condition is critical in disentangling the respective influence of stimulus valence and consistency-driven fluency.

4.1 Method

4.1.1 Participants and Design

Participants were *N* = 50 students (36 female, 14 male) with a mean age of 24.8 years (*SD* = 5.0). The design was a 2 x 2 with the factors Valence (negative vs. positive social category, within) and Consistency (inconsistent vs. consistent information, within).

4.1.2 Materials

Stimuli. For the four negative (kidnapper, hooligan, early school leaver, and insurance salesman) and the four positive (pilot, midwife, fireman, and volunteer) categories participants were presented with one target person and five attributes for each category (e.g., *"Andreas is a Hooligan. He is… brutal, loud, violent, hard drinking, rude"*). Each target person was presented with either five stereotype consistent attributes (consistent condition) or four consistent and one inconsistent attribute (inconsistent condition). The inconsistent attributes were randomly sampled from a list of opposite-valenced attributes (Hastie & Kumar, 1979). For the positive categories the inconsistent attribute was randomly selected from a list containing all attributes presented as consistent with the negative categories and vice versa (e.g., *"Andreas is a Hooligan. He is… brutal, loud, violent, CARING, rude"*). The position of the inconsistent attribute varied between positions three, four and five. Consistent attributes were always presented on the two first positions to allow for stereotype activation. As participants should see only one exemplar per category, consistency was balanced

across two versions of the material. Each participant evaluated two positive target persons with consistent attributes only, two positive target persons with four consistent and one inconsistent attribute, two negative target persons with consistent attributes only and two negative target persons with four consistent and one inconsistent attribute. Exemplary materials for Experiment 1 can be found in Figure 2.

Evaluation. Participants were asked for their evaluation of the target person (*What are your feelings towards …,* 1 = *very negative,* 7 = *very positive*, Tarrant & Hadert, 2010).

4.1.3 Procedure

Participants were instructed that they would be introduced with different persons. They were to read the provided information and to form a personal impression of each person. They then saw the description of the first target person with the name of the person, the social category he or she belonged to and the five attributes describing the target person. When done reading, participants and could press a button to see the next slide. On this slide, they were asked for the evaluation of the person by pressing the according number key on the keyboard. Information about the next person followed immediately. The eight target persons (four negative, four positive) were presented in random order, re-randomized anew for each participant. The experiment took between five and ten minutes and was administered as part of a multi-experiment session.

Figure 2 Exemplary Materials (consistent/inconsistent) for Experiment 1

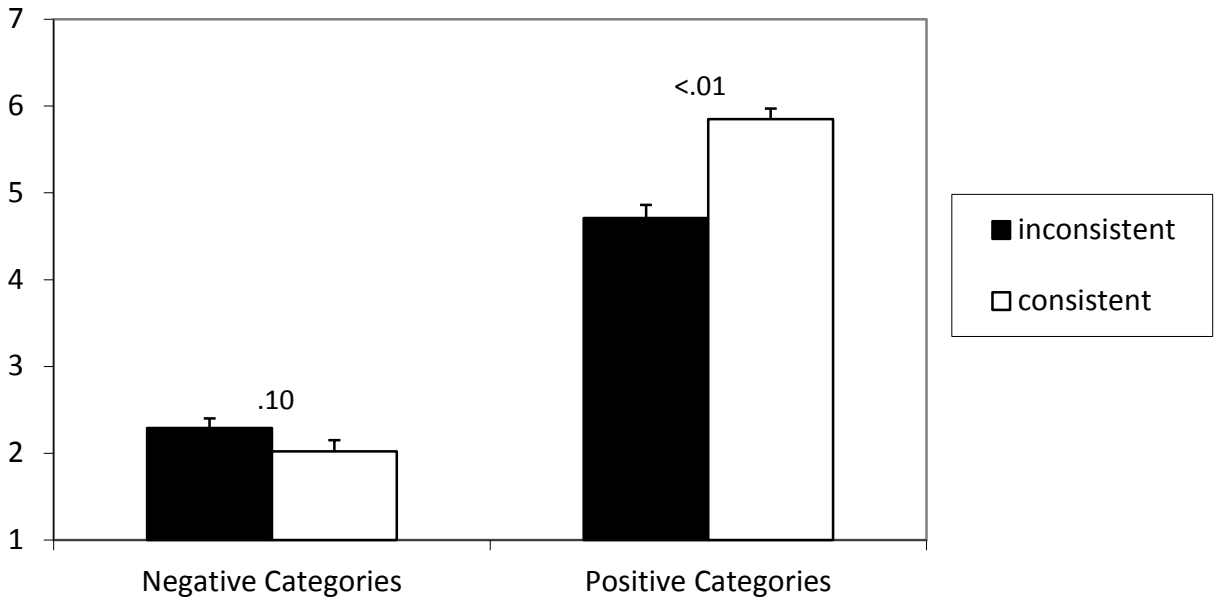
Alexander is a hooligan. He is…	Alexander is a hooligan. He is…
loud violent hard-drinking brutal disrespectful	loud violent hard-drinking child-loving disrespectful

4.2 Results

For the evaluation of the target persons means were calculated for negative inconsistent trials, negative consistent trials, positive inconsistent trials and positive consistent trials. This score was then entered into a 2 (Valence: negative, positive; within) x 2 (Consistency: inconsistent, consistent; within) repeated measures ANOVA.

There was a main effect of Valence with more positive evaluations of target persons from positive categories than of target persons from negative categories, Valence F (1, 49) = 525.48, $p < .01$, $\eta_p^2 = .92$. The evaluation of target persons with consistent attributes only was more positive than the evaluation of target persons presented with an inconsistent attribute, Consistency F (1, 49) = 14.11, $p < .01$, $\eta_p^2 = .22$. There was also an interaction of Valence and Consistency, F (1, 49) = 35.34, $p < .01$, $\eta_p^2 = .42$. Simple comparisons showed a marginally less positive evaluation of negative target persons with consistent attributes only (M = 2.02, SE = .13) than towards negative target persons with an inconsistent (positive) attribute (M = 2.29, SE = .11), F (1, 49) = 2.88, p = .10, $\eta_p^2 = .06$. For target persons from positive categories, consistent attributes led to a more evaluation of the target (M = 5.85, SE = .12) than an inconsistent (negative) attribute (M = 4.71, SE = .15), F (1, 49) = 43.91, $p < .01$, $\eta_p^2 = .47$. Findings are illustrated in Figure 3.

Figure 3 Means and Standard Errors for Evaluation of Target persons in Experiment 1 (1 = very negative, 7 = very positive)



4.3 Discussion

Experiment 1 showed that the evaluation of a target person depends on the valence of the attributes presented with the target person. The higher the number of positive attributes ascribed to a target person, the more positive the evaluation of the target person. This is also the case when part of the information violates norms and expectations. The effect of inconsistent information is particularly strong when negative information is presented in an overall positive context (e.g., the brutal midwife). This can be interpreted as a classic negativity bias (Rozin & Royzman, 2001) or a contrast effect due to shifting standards (Biernat & Manis, 1994; Biernat, Vescio, & Manis, 1998). Counter-stereotypic behavior can lead to a devaluation of a target person. For example, women behaving in an aggressive or assertive way are evaluated less positively than man displaying the same behavior (e.g, Costrich, 1975).

A negative attribute presented with a target person of a positive category can elicit negative affect and lead to a less positive evaluation of the target person in two ways. First, the specific feature-based information of the attribute (e.g., brutal) is negative. This elicits negative affect and leads to a less positive evaluation of the target person (Fazio & Olson, 2003). Second, the inconsistent attribute does neither fit the other attributes nor the stereotype about the social category. It is therefore disfluent and difficult to process, thus eliciting negative affect (Topolinski & Strack, 2009d). Both the negative valence of the attribute and the inconsistency-induced lack of processing fluency point to the same direction: a less positive evaluation of a target person of a positive category presented with a negative attribute.

More interesting however is the critical condition in which a target person from a negative social category is presented with a positive attribute (e.g., the child loving hooligan). The child loving hooligan is evaluated less negatively than a more prototypical hooligan with no such positive attribute. The evaluation of the target person is driven by the valence of the attributes presented with the target person. The inconsistency-driven lack of processing fluency and the presumably resulting negative affect did not influence the evaluative judgment of the target person. The findings are in line with additive accounts of information integration (e.g., Anderson, 1962, 1971): the higher the number of positive attributes ascribed to a target person, the more

positive the evaluation of the target person.

The findings are intriguing because the effect of processing fluency on affect and evaluative judgments is well established (e.g., Forster et al., 2012; Reber, Schwarz, et al., 2004; Topolinski & Strack, 2009b, 2009d; Winkielman et al., 2006) and consistency is one of the main factors shown to influence processing fluency (Winkielman et al., 2012). Still, no effects of consistency-driven processing fluency on evaluative judgments were observed in Experiment 1.

Two different processes could be responsible for this non-occurrence of consistency effects. The affect elicited by stimulus valence could be much stronger than the affect elicited by consistency-driven fluency. The affect feeding into the evaluative judgment would then be driven by the stronger affect elicited by stimulus valence, overriding the weaker affect elicited by consistency-driven fluency. Another way to explain the results is assuming two different processing routes in forming a judgment. An evaluative judgment can be driven by impulsive and reflective processes (Strack & Deutsch, 2004). The inconsistency of the attributes can directly influence the evaluative judgment via the impulsive system: the inconsistency-driven lack of fluency can elicit negative affect without further deliberative reasoning. Processing and integrating the specific information of the attributes however might require deliberation and influence the judgment via the reflective system. Reflective processing of the valence of each single attribute could thus override an impulsive negative affect elicited by the inconsistency of the attributes.

As the reflective system requires cognitive resources, its performance is impaired when cognitive resources are scarce (Strack & Deutsch, 2004). If the inconsistency-driven lack of fluency elicits spontaneous negative affect that is then overridden by the positive affect elicited by the reflective processing of the valence of the single attributes, consistency effects should emerge when cognitive resources are limited.

To sum it up, only the affect elicited by stimulus valence influenced evaluative judgments in Experiment 1. To determine whether the affect elicited by consistency-driven processing fluency was outweighed or overridden by effects of stimulus valence via reflective processing, Experiment 2 aims at disentangling these two possible

processes by replicating Experiment 1 under conditions of low processing capacity.

5 Experiment 2

Experiment 2 tested the respective influence of stimulus valence and consistency-driven fluency on evaluative judgments under conditions of cognitive load. The aim of Experiment 2 was to investigate whether consistency effects were outweighed or overridden by effects of stimulus valence via reflective processing in Experiment 1. If the affect elicited by the valence of the stimuli and the affect elicited by fluency fed into the evaluative judgment simultaneously, effects should not be influenced by the availability of cognitive resources. If however the valence of the attributes had to be processed reflectively whereas consistency-driven fluency directly influenced the evaluative judgment via the impulsive route, effects of consistency-driven fluency should be observable when reflective processes are impaired by cognitive load.

Cognitive load was induced by auditory to-be-attended non-verbal stimuli. This manipulation was chosen because it provides continuous load, thus binding working memory capacity, impairing executive functioning and higher level cognition (McCabe, Roediger, McDaniel, Balota, & Hambrick, 2010). This distinguishes the present procedure from other manipulations of cognitive load like memorizing numbers. Memory tasks bind capacities in short term memory, whereas vigilance tasks like the one used here bind capacities in working memory, thus impairing higher cognitive processes (Baddeley, 1986). Another advantage of the procedure is the fact that the stimuli are non-verbal and thus not semantically interfering with the main task of encoding and evaluating social information.

5.1 Method

5.1.1 Participants and Design

Participants were 89 students (46 female, 43 male) with a mean age of 20.45 years (*SD* = 4.55). The design was a 2x2x2x2 with Valence (negative vs. positive social category) and Consistency (inconsistent vs. consistent) as within subject factors and load during stereotype presentation (load vs. no load) and load during evaluation (load

vs. no load) as between subject factors.

5.1.2 Materials

Stimuli. Materials were similar to those of Experiment 1 with the only difference that four specific attributes of the whole pool were changed because they were ambiguous in their (in)consistency to some of the categories. A positive attribute can become negative in a negative context and vice versa (Fiske, Neuberg, Beattie, & Milberg, 1987; Leyens & Fiske, 1994). For example, athletic is consistent with fireman and positive in this context. When presented with the category hooligan it might also be consistent and less positive[1].

Evaluation. Evaluation of the target person was measured with the same item as in Experiment 1.

Cognitive load procedure. Cognitive load was manipulated by means of auditory to-be-attended stimuli (Reese, Steffens, & Jonas, in press). Participants listened to noise and chatter via headphones. Embedded in this background noise were bell rings that randomly occurred at intervals of null to five seconds. Participants were asked to count the number of bell rings and to memorize the correct number until asked to report it. The total number of bell rings per trial varied between null and three.

5.1.3 Procedure

The evaluation task was similar to Experiment 1. Participants were first presented with a target person, its social category and according (in)consistent attributes. To enable synchronization with the second task (cognitive load), stimuli were presented for five seconds and were then automatically replaced by the next slide. The to-be-attended auditory stimuli were either presented during the presentation and the evaluation of the target person, during only one of the phases or before each trial (control). Thus all participants heard noise at some point in the

[1] For Experiment 1 data analyses were repeated without trials in which inconsistency was questionable. Effects were a little bit stronger but did not differ substantially from the results presented here. In Experiment 2 we therefore improved materials and did not conduct separate analyses for questionable trials.

experiment.

In the condition with load during presentation only (load presentation, no load evaluation), the auditory stimuli were played for five seconds while participants read the information about the target person. They were then asked for the correct number of bell rings on a separate slide. The correct number had to be typed in via keyboard. On the next slide, they were asked for their evaluation of the target person. After typing in their answer, a new slide with the next trial appeared.

In the condition with load during evaluation only (no load presentation, load evaluation), participants first read the information about the target person. The slide with the evaluation task automatically appeared after five seconds. The auditory stimuli started simultaneously and stopped when participants had answered the evaluation task and the next slide appeared. Here, participants were asked for the correct number of bell rings. The next trial started on a new slide when participants had given their answer by typing in the correct number of bell rings.

In the condition with load during presentation and evaluation (load presentation, load evaluation), the auditory stimuli started with the presentation of the information about the target person (five seconds), lasted through the evaluation task and ended automatically when participants gave their answer on the evaluation task. A new slide appeared and participants were asked for the correct number of bell rings before the new trial started.

In the control condition (no load presentation, no load evaluation), the load task and the evaluation task did not run simultaneously but sequentially. Participants first listened to the auditory stimuli for five seconds while seeing a blank screen. They were then asked for the correct number of bell rings. Afterwards, they saw the information about the target person on a new screen for five seconds and were then asked for their evaluation of the target person.

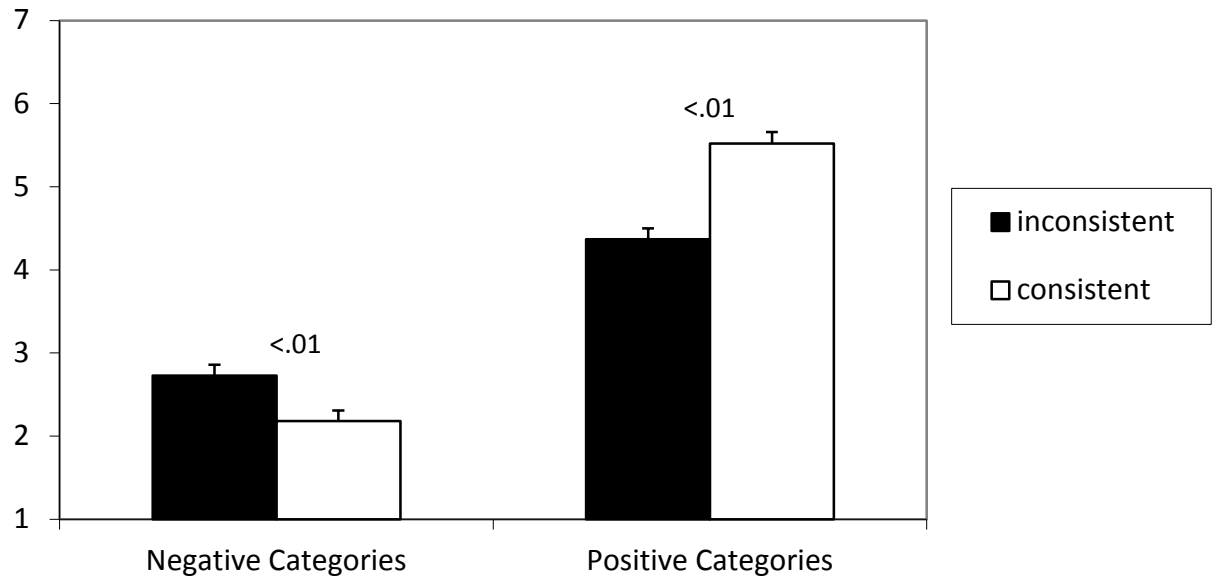
Because of the increased complexity of the task due to the load manipulation, participants were given five practice trials with neutral, non-social stimuli (e.g., X) before starting with the actual task. The experiment took about ten minutes and was administered as part of a multi-experiment session.

5.2 Results

For the evaluation of the target persons means were calculated for negative inconsistent trials, negative consistent trials, positive inconsistent trials and positive consistent trials like in Experiment 1. This score was then entered into a 2 (Valence: negative, positive; within) x 2 (Consistency: inconsistent, consistent; within) x 2 (Load presentation: no load, load; between) x 2 (Load evaluation: no load, load; between) repeated measures ANOVA.

There was a main effect of Valence with a more positive evaluation of target persons from positive categories than the evaluation of target persons from negative categories, Valence F (1, 85) = 185.43, $p < .01$, $\eta_p^2 = .69$. The evaluation of target persons with consistent attributes only was more positive than the evaluation of target persons presented with an inconsistent attribute, Consistency F (1, 85) = 9.59, $p < .01$, $\eta_p^2 = .10$. However, there was also an interaction of Valence and Consistency, F (1, 85) = 52.67, $p < .01$, $\eta_p^2 = .38$. Simple comparisons showed a less positive evaluation of negative target persons with consistent attributes only (M = 2.18, SE = .13) than of negative target persons with an inconsistent (positive) attribute (M = 2.73, SE = .13), F (1, 85) = 14.74, $p < .01$, $\eta_p^2 = .15$. For target persons from positive categories, consistent attributes led to a more positive evaluation of the target (M = 5.52, SE = .14) than an inconsistent (negative) attribute (M = 4.37, SE = .13), F (1, 85) = 51.43, $p < .01$, $\eta_p^2 = .38$. Findings are illustrated in Figure 4.

Figure 4 Means and Standard Errors for Evaluation of Target Persons in Experiment 2 (1 = very negative, 7 = very positive)



Neither Load during presentation nor Load during evaluation had an effect on liking: Valence x Consistency x Load presentation F (1, 85) = 1.11, p = .30, Valence x Consistency x Load evaluation F (1, 85) = 2.10, p = .15, Consistency x Load presentation x Load evaluation F (1, 85) = 2.59, p = .11, Consistency x Load presentation F (1, 85) = 2.50, p = .12, Consistency x Load evaluation F (1, 85) = 2.18, p = .14, Valence x load presentation x Load evaluation F (1, 85) = 2.15, p = .15, all other Fs < 1. All means and standard errors can be seen in Table 2.

Table 2 Means and Standard Errors for all Conditions in Experiment 2

		Negative Categories		Positive Categories	
		No Load Evaluation	Load Evaluation	No Load Evaluation	Load Evaluation
Inconsistent	No Load Presentation	2.76 (.25)	2.91 (.25)	3.94 (.26)	4.80 (.26)
	Load Presentation	2.69 (.26)	2.57 (.26)	4.52 (.27)	4.23 (.27)
Consistent	No Load Presentation	2.11 (.26)	1.91 (.26)	5.48 (.27)	5.50 (.27)
	Load Presentation	2.19 (.28)	2.52 (.27)	5.91 (.28)	5.21 (.27)

5.3 Discussion

Experiment 2 fully replicated the results of Experiment 1. The higher the number of positive attributes presented with a target person, the more positive the evaluation of the target person. This was also the case when the positive attribute was inconsistent with the rest of the information about the target person (e.g., the child loving hooligan) and should therefore have elicited negative affect due to an inconsistency-driven lack of processing fluency.

Cognitive load did not influence the effects. No effects of consistency-driven processing fluency were observed when cognitive resources were scarce and reflective reasoning was impaired. Thus Experiment 2 rules out the possibility that impulsive effects of processing fluency were overridden by reflective reasoning.

Let us look at the present results from the perspective of the continuum model (Fiske et al., 1999; Fiske & Neuberg, 1990). As outlined in the theoretical part of this thesis, the continuum model postulates that impressions are mainly influenced by category information. Individuating information is only processed when both cognitive capacity and motivation are available. Inconsistency is one of the factors leading to a higher motivation to process individuating information. Thus, the results of Experiment 1 are in line with the continuum model. Individuating information, namely the valence of the specific attributes presented with the target person, influenced the evaluative judgment of the target person. Whether the evaluative judgment of target persons presented with consistent attributes only was driven by the valence of the attributes or by the valence of the category cannot be tested in the experimental setup used here.

According to the continuum model, in Experiment 2, when cognitive capacity was limited, the evaluative judgments of the target person should have mainly relied on the category label, resulting in the same evaluative judgment for consistent and inconsistent target persons. This was not the case however. Even when cognitive capacity was limited, a piecemeal integration of individuating information about the target person was reflected in the evaluative judgment. The applicability of the continuum model to the results of the Experiments presented here will be addressed again in Experiment 4 where no category information was provided.

How can the repeated lack of effects of consistency-driven fluency on the evaluative judgment of the target person be explained? An extensive body of research has shown effects of consistency on processing fluency (Topolinski & Strack, 2009b; Winkielman et al., 2012) and effects of processing fluency on affect and evaluative judgments (Topolinski & Strack, 2009b, 2009d). In Experiments 1 and 2 however, the evaluation of the target person was only driven by stimulus valence and not by consistency-driven fluency. The fact that this was independent of processing capacity is more evidence for the hypotheses that the fluency effect is outweighed by the effect of stimulus valence.

It has to be noted however that in Experiments 1 and 2 inconsistent attributes were inconsistent with the rest of the information on two dimensions. First, the inconsistent attributes were semantically inconsistent attributes that are not stereotypically associated with the category. For example, *child loving* is not part of the hooligan stereotype and is not usually activated with *hooligan*. At the same time, the attribute is not only semantically inconsistent but also inconsistent regarding its valence (*child loving* is positive while *hooligan* is negative). In the critical case of a target person from a negative category with a positive attribute, these two forms of inconsistency work against each other. The negative affect that should be elicited by the inconsistency-driven lack of processing fluency is met by the positive affect elicited by positive stimulus valence.

One can also imagine cases were an attribute is consistent regarding its valence but still inconsistent semantically. For example, *lazy* is not part of the hooligan stereotype and not usually activated with *hooligan*, but still negative. In this case, the affect elicited by stimulus valence (*lazy* is negative) has the same valence as the affect elicited by the inconsistency-driven lack of fluency (*lazy* is inconsistent with *hooligan*). The fluency-triggered affect and the stimulus-triggered affect do not play against each other in this case, thus making an effect of consistency-driven fluency more likely to emerge.

6 Experiment 3

Experiment 3 was designed to investigate effects of stimulus valence and effects of processing fluency driven by *semantic* consistency on evaluative judgments. Therefore to-be-evaluated target persons were presented with valence consistent but semantically inconsistent attributes (e.g., *lazy hooligan*). To ensure that target persons actually were perceived as inconsistent, the number of inconsistent attributes was increased from one to three (e.g., a *hooligan* that is *lazy*, *presumptuous*, and *greedy*). Inconsistent attributes were randomly sampled from a pool of attributes that were part of the stereotypes of the other categories used in the experiment. For target persons from negative categories, inconsistent attributes were randomly chosen from a list of all attributes consistent with the other negative categories. For target persons from positive categories, inconsistent attributes were chosen from a list containing all attributes consistent with the other positive categories. Thus, the average stimulus valence of attributes presented with the target person was the same for consistent and inconsistent target persons and only varied as a function of category valence (positive attributes for positive categories, negative attributes for negative categories). The affect elicited by stimulus valence should therefore only vary between target persons of negative and positive categories and not between consistent and inconsistent target persons. This is the main difference between Experiment 1 and 3. The affect elicited by processing fluency should vary as a function of consistency however. Inconsistent attributes are more difficult to process, resulting in negative affect. This should lead to a less positive evaluation of inconsistent target persons, compared to consistent target persons of the same category valence. Furthermore, this pattern should emerge regardless of each particular category valence. That is, for both negative and positive categories, inconsistent attributes should lead to a less positive evaluation.

In contrast to Experiment 1 and 2, in Experiment 3 semantic consistency and valence consistency are not confounded. Remember the formerly critical case of a target person from a negative category presented with (partly) inconsistent attributes. Experiment 1 and 2 showed that the valence of the inconsistent attribute influenced the evaluative judgment of the target person, while the inconsistency-driven lack of

fluency was not mirrored in the evaluation. In Experiment 3 the inconsistent attributes have the same valence as the consistent attributes, making the occurrence of valence effects of inconsistent attributes impossible. Therefore the same effect of consistency-driven fluency is expected for target persons from positive and negative categories, namely a less positive evaluation of target persons with (partly) semantically inconsistent attributes compared to target persons with semantically consistent attributes only.

6.1 Method

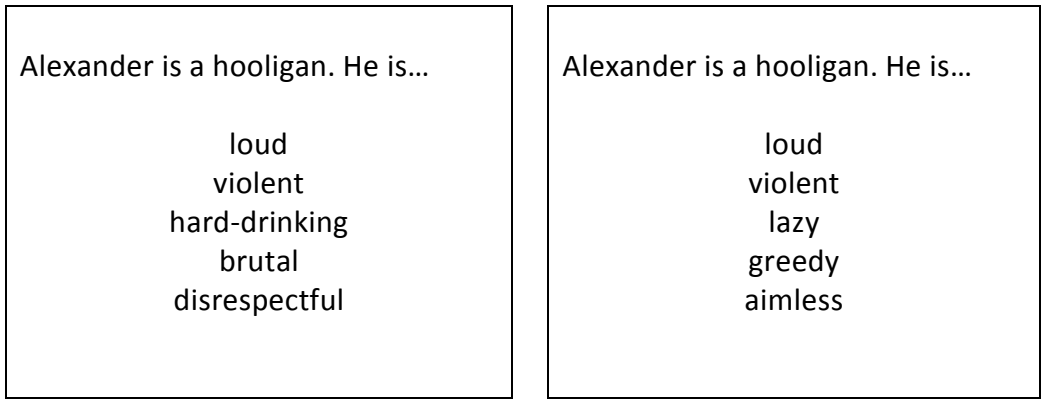
6.1.1 Participants and Design

Participants were 44 students (38 female, 6 male) with a mean age of 25.66 years (*SD* = 6.46). The design was a 2x2 with the factors Valence (negative vs. positive social category, within) and Consistency (semantically inconsistent vs. consistent information, within).

6.1.2 Materials and Procedure

Experiment 3 was similar to Experiment 1 but for the following changes. For categories and attributes the adjusted material from Experiment 2 was used. The semantically inconsistent attributes for positive categories were randomly sampled from the attributes consistent with one of the other three positive categories (e.g., athletic midwife). Semantically inconsistent attributes for negative categories were sampled from the attributes semantically consistent with the three other negative categories (e.g., lazy hooligan). The number of inconsistent attributes was increased to three. The first two attributes were always semantically consistent with the category of the target person, the following three were either consistent or inconsistent, depending on condition. Exemplary materials can be seen in Figure 5. The dependent variable and the procedure were identical to Experiment 1. The experiment took between five and ten minutes and was administered as part of a multi-experiment session.

Figure 5 Exemplary Materials (semantically consistent/inconsistent) for Experiment 3

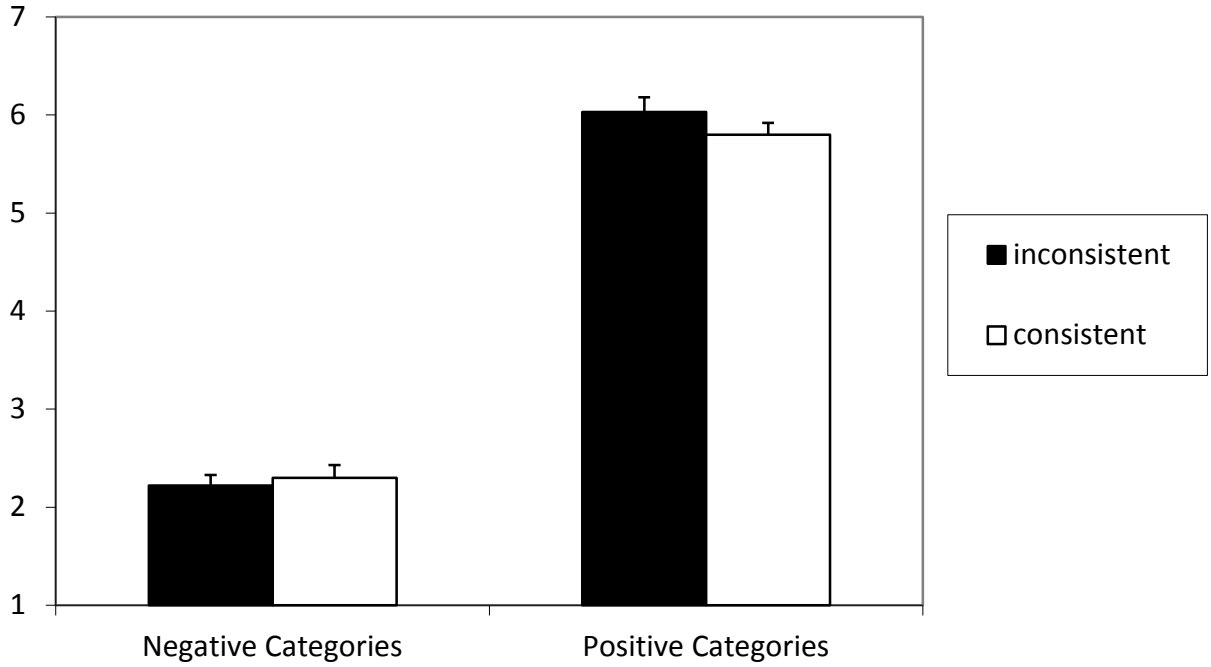


6.2 Results

For the evaluation of the target persons means were calculated for negative inconsistent trials, negative consistent trials, positive inconsistent trials and positive consistent trials like in prior experiments. This score was then entered into a 2 (Valence: negative, positive; within) x 2 (Consistency: inconsistent, consistent; within) repeated measures ANOVA.

There was a main effect of Valence with a more positive evaluation of target persons from a positive category than of target persons from a negative category, Valence F (1, 43) = 347.64, $p < .01$, $\eta_p^2 = .89$. Consistency of the attributes did not affect the evaluation of the target, Consistency ($F < 1$). There was a marginal interaction of Valence and Consistency, F (1, 43) = 3.05, $p = .09$, $\eta_p^2 = .07$. Simple comparisons showed no significant differences however. Findings are illustrated in Figure 6.

Figure 6 Means and Standard Errors for Evaluation of Target Persons in Experiment 3 (1 = very negative, 7 = very positive)



6.3 Discussion

Again, the evaluation of a target person was only influenced by stimulus valence and not by consistency-driven processing fluency. When the information had the same overall valence (e.g., five negative attributes), the evaluation of the target person with these five attributes was the same when the five attributes were semantically consistent and when the five attributes were (partly) semantically inconsistent with each other and with the social category of the target person. This is additional evidence that the evaluative judgment in an impression formation task is driven by stimulus valence and not by consistency-driven processing fluency. This shows that the lack of effects of consistency-driven fluency in Experiments 1 and 2 was not due to the valence of the inconsistent stimulus. Thus, valence of the specific inconsistent attribute is ruled out as a possible explanation for the repeated non-occurrence of fluency effects in the Experiments reported here. Target persons from negative categories were evaluated negatively and target persons from positive

categories were evaluated positively, respectively, independent of consistency of the attributes with each other and with the category. As inconsistent attributes were chosen randomly from a list of attributes consistent with other categories, the average valence of consistent and inconsistent attributes were the same in consistent and inconsistent trials. It is therefore unclear whether the evaluative judgment was mainly driven by the valence of the category information or by the overall valence of the attributes. Or to put it in terms of the continuum model (Fiske et al., 1999; Fiske & Neuberg, 1990; Fiske, 2012): it is unclear whether evaluative judgments were mainly driven by the valence of the category information or if piecemeal processing of individuating information is responsible for the effects. According to the model, inconsistency should have motivated piecemeal processing of the single attributes in inconsistent trials. In consistent trials participants should have relied on category information when making their evaluative judgment. The fact that evaluative judgments did not differ between consistent and inconsistent target persons could therefore be interpreted as evidence that inconsistency was not sufficiently motivating participants to process individuating information. The complete reliance on category information when forming an evaluative judgment could explain the non-occurrence of effects of inconsistency-driven fluency in Experiment 3. To investigate this possibility, Experiment 4 replicates Experiment 3 without providing category information, thus forcing participants to use individuating information in forming their judgments.

7 Experiment 4

Experiment 4 replicates Experiment 3 with the sole difference that target persons are not assigned to a social category. Social category membership is commonly used in evaluative judgments of others (e.g., (Fiske et al., 1999; Fiske & Neuberg, 1990; Fiske, 2012; Ford, Stangor, & Duan, 1994) and stereotypically associated traits and attributes are activated from memory by merely perceiving the category label (Devine, 1989). Assigning a target person to a social category leads to more stereotypic judgments of the target person by assimilating the target person to the stereotype (Bodenhausen & Macrae, 1998; Darley & Gross, 1983). In Experiments 1, 2 and 3 participants learned a target person's name, his or her category

membership and five attributes about him or her. Thus, they were provided with stereotypic information (category label) and individuating information about the target person (attribute). The continuum model of impression formation (Fiske et al., 1999; Fiske, 2012) poses that processing priority is given to category information over individuating information. As outlined in the discussion for Experiment 3, in the experiments presented here, processing priority of category information over individuating information could explain the absence of effects of consistency-driven processing fluency. If the evaluative judgment is mainly driven by the (positive or negative) category information, the comparatively smaller effects of consistency-driven processing fluency might have been unable to modulate the evaluative judgment over and beyond the effect of category valence. To test this possibility, no category information was given in Experiment 4.

7.1 Method

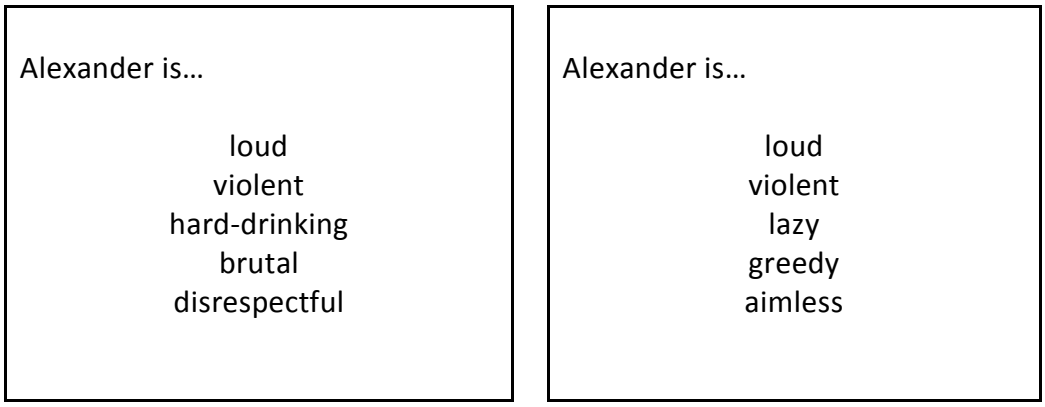
7.1.1 Participants and Design

Participants were 42 students (32 female, 9 male, 1 unknown) with a mean age of 25.12 years (*SD* = 5.69). The design was a 2x2 with the factors Valence (negative vs. positive social category, within) and Consistency (inconsistent vs. consistent information, within).

7.1.2 Materials and Procedure

Experiment 4 was similar to Experiment 3 with the only difference that category labels were not presented. Exemplary materials for Experiment 4 can be seen in Figure 7. The experiment took between five and ten minutes and was administered as part of a multi-experiment session.

Figure 7 Exemplary Materials (consistent/inconsistent) for Experiment 4

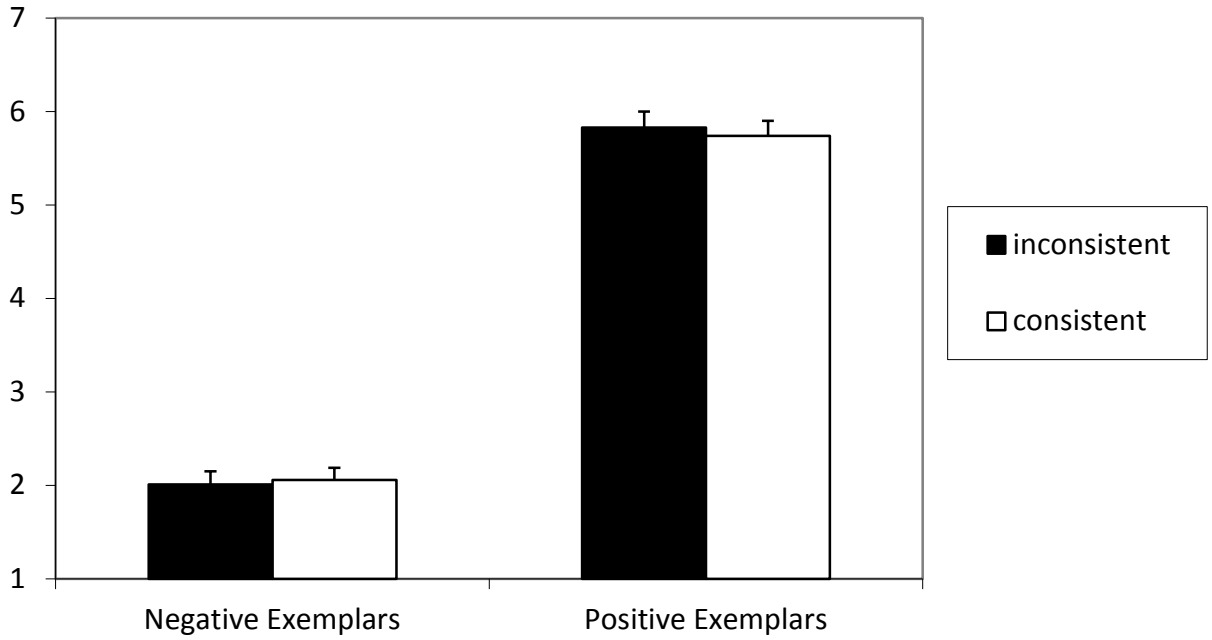


7.2 Results

For the evaluation of the target persons means were calculated for negative inconsistent trials, negative consistent trials, positive inconsistent trials and positive consistent trials like in prior experiments. This score was then entered into a 2 (Valence: negative, positive; within) x 2 (Consistency: inconsistent, consistent; within) repeated measures ANOVA.

There was a main effect of Valence F (1, 41) = 228.77, $p < .01$, $\eta_p^2 = .85$, with a more positive evaluation of target persons presented with positive attributes compared to those presented with negative attributes. Consistency of the attributes had no effect ($F < 1$) and did not interact with Valence ($F < 1$). Findings are illustrated in Figure 8.

Figure 8 Means and Standard Errors for Evaluation of Target Persons in Experiment 4 (1 = very negative, 7 = very positive)



7.3 Discussion

In Experiment 4 the evaluation of the target person was again only influenced by stimulus valence and not by consistency-driven processing fluency. The fact that no category label was provided and that participants had to rely on individuating information in making their evaluative judgments did not lead to the emergence of an effect of consistency-driven fluency. This is evidence that the non-occurrence of consistency effects in Experiment 3 was most likely not due to the fact that participants ignored individuating information, simply relying on category information when making an evaluative judgment about a target person. If this had been the case, effects of consistency-driven fluency should have emerged in the absence of category information.

As described earlier, there is ample evidence for effects of consistency-driven processing fluency on evaluative judgments (Topolinski & Strack, 2009d; Winkielman et al., 2012). Still, the experiments presented here found strong effects of stimulus valence but no effects of consistency-driven fluency. This is in clear contrast to prior effects of consistency-driven processing fluency that have now also been shown to

emerge in evaluating social information (Topolinski, 2012a). In these experiments participants were presented with three semantically consistent or inconsistent stimuli and asked for their overall evaluation of the stimuli. In this setup, semantically consistent groups of stimuli were evaluated more positively than semantically inconsistent groups of stimuli. In these experiments, the evaluation task was not framed under impression formation instructions however.

It remains unsolved, however, whether the non-occurrence of effects of consistency-driven fluency reported here can be due to impression formation instructions. In the literature on effects of inconsistency on memory, an impression formation focus has been shown to be of influence. Inconsistent information was remembered better than consistent information under impression formation instructions but not under memory instructions (e.g., Srull, Lichtenstein, & Rothbart, 1985; R. S. Wyer & Gordon, 1982). These findings have been attributed to the higher social relevance of information provided in an impression formation context compared to a memory context (Förster et al., 2000). This evidence from the memory literature makes it rather unlikely that the non-occurrence of effects of consistency-driven fluency are due to the impression formation instructions as they should strengthen rather than weaken inconsistency effects.

On the other hand, the increased attention to inconsistency following impression formation instructions could also lead to awareness of effects of consistency-driven fluency and to subsequent suppression of fluency-triggered affect or correction of the evaluative judgment. However, awareness of biasing effects of fluency is a pre-requisite for correction processes (Topolinski & Strack, 2010). Maybe impression formation instructions led to increased awareness of inconsistency, thus motivating participants to correct their evaluative judgments accordingly in Experiments 3 and 4.

To test this possibility, Experiment 5 replicated Experiments 3 and 4 without impression formation instructions and without category labels or individual names. This also allows for testing the material used in the experiments reported here in an experimental setup as close to the one used by Topolinski (2012a) as possible.

8 Experiment 5

Experiment 5 replicated Experiment 4 with the sole difference that the attributes were not presented as belonging to a specific target person. Accordingly, participants were not asked for their evaluation of a target person but for their evaluation of a group of words.

8.1 Method

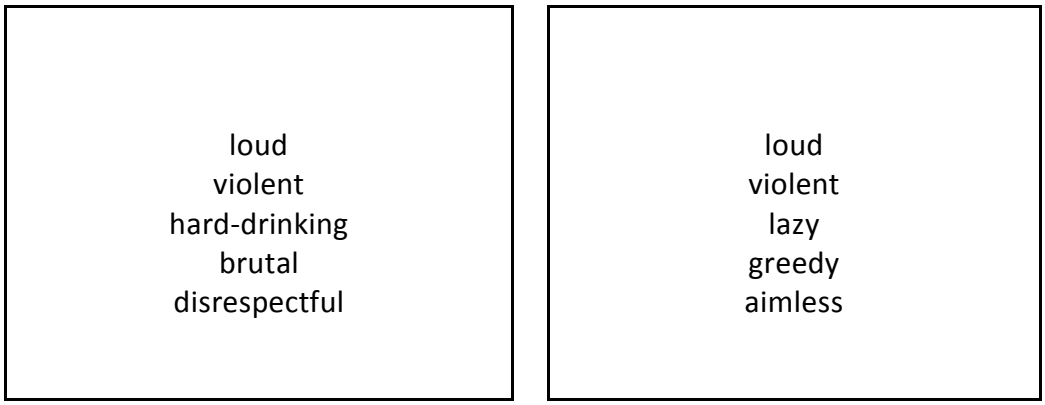
8.1.1 Participants and Design

Participants were 28 students (22 female, 5 male, 1 unknown) with a mean age of 25.33 years (*SD* = 4.10). The design was a 2x2 with the factors Valence (negative vs. positive social category, within) and Consistency (inconsistent vs. consistent information, within).

8.1.2 Materials and Procedure

Experiment 5 used the same stimuli as Experiments 3 and 4. The only difference was that participants were not presented with target persons and their attributes but with lists of attributes only. Consequentially, they were asked for an evaluation of "this group of words", instead of an evaluation of a person like in Experiment 1 to 4. Exemplary materials for Experiment 5 can be seen in Figure 9. The experiment took between five and ten minutes and was administered as part of a multi-experiment session.

Figure 9 Exemplary Materials (consistent/inconsistent) for Experiment 5

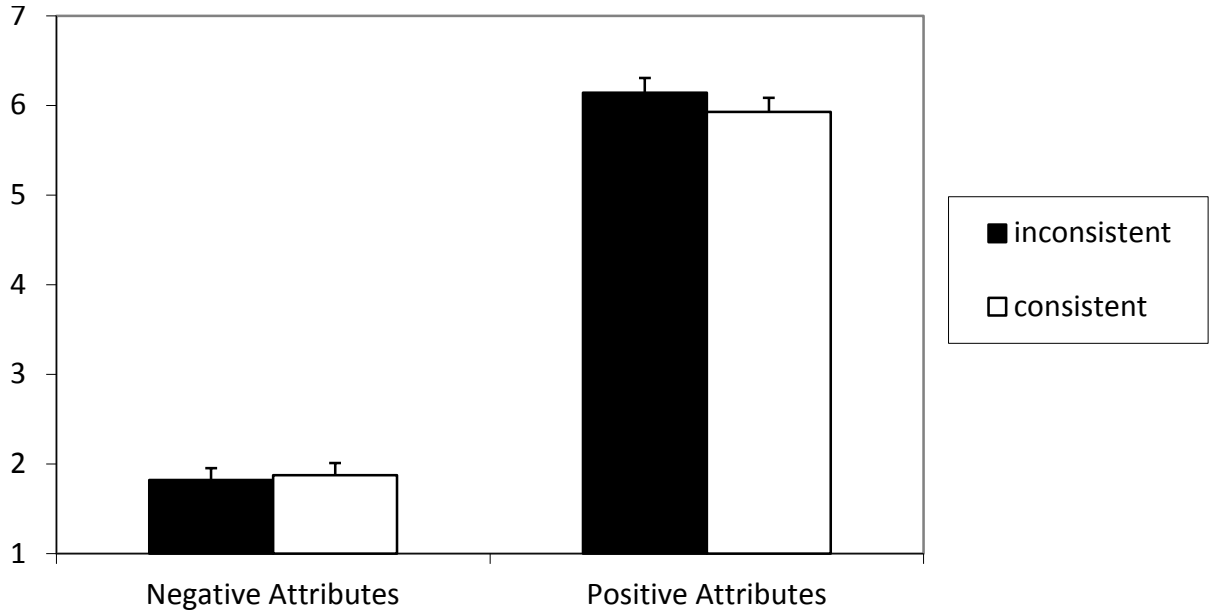


8.2 Results

For the evaluation of the groups of attributes means were calculated for negative inconsistent trials, negative consistent trials, positive inconsistent trials and positive consistent trials like in prior experiments. This score was then entered into a 2 (Valence: negative, positive; within) x 2 (Consistency: inconsistent, consistent; within) repeated measures ANOVA.

There was a main effect of Valence F (1, 27) = 382.00, $p < .01$, $\eta_p^2 = .93$, with more a more positive evaluation of groups of positive attributes than of groups of negative attributes. There was no effect of Consistency $F < 1$ and no interaction of Valence and Consistency $F < 1$. Findings are illustrated in Figure 10.

Figure 10 Means and Standard Errors for Evaluation of Sets of Words in Experiment 5 (1 = very negative, 7 = very positive)



8.3 Discussion

Like in Experiments 3 and 4, evaluative judgments in Experiment 5 were influenced by stimulus valence and not by consistency-driven processing fluency. Even when not evaluating a person but merely a group of words, processing fluency did not affect the overall evaluative judgment. This shows that the non-occurrence of effects of consistency-driven fluency in Experiments 3 and 4 were not due to a motivation to

make an unbiased judgment elicited by impression formation instructions.

It is intriguing that consistency did not affect evaluative judgments, even in an experimental setup almost identical to the setup in which effects of consistency-driven fluency on social judgments have been demonstrated (Topolinski, 2012a). However, Experiments 3, 4 and 5 clearly showed that the experimental setup and the framing of the task cannot explain the non-occurrence of consistency-driven fluency in the experiments reported here.

So far, five experiments showed that the evaluation of a target person (or a group of words) is influenced by stimulus valence and not by consistency-driven processing fluency. Higher cognitive processes (Experiment 2), valence of inconsistent attributes (Experiment 3), processing priority of category information (Experiment 4), and impression formation instructions (Experiment 5) have all been ruled out as possible explanations for the non-emergence of consistency-driven fluency effects. One explanation that was not ruled out yet is the possibility that attributes were not actually perceived as inconsistent. Pretest 2 identified consistent sets of attributes for each category. For inconsistent sets, attributes from different categories were sampled randomly. The verification that these random sets actually were perceived as inconsistent is still due.

9 Experiment 6

The aim of Experiment 6 was to test the consistency of the sets of attributes used in Experiment 3, 4, and 5. Instead of their evaluation of the group of words, participants were now asked for the coherence of the material. Experiment 6 thus functions as a manipulation check for Experiments 3, 4, and 5. The experiment took between five and ten minutes and was administered as part of a multi-experiment session.

9.1 Method

9.1.1 Participants and Design

Participants were 29 students (22 female, 5 male, 2 unknown) with a mean age

of 26.89 years (*SD* = 8.32). The design was a 2x2 with the factors Valence (negative vs. positive social category, within) and Consistency (inconsistent vs. consistent information, within).

9.1.2 Materials and Procedure

Stimuli. Stimuli for Experiment 6 were identical to those of Experiment 5.

Coherence. Coherence of the material was measured by a single item asking how coherent the group of words seemed to participants (*How coherent does this group of words seem to you …*, 1 = *completely random,* 7 = *very coherent*, cit?).

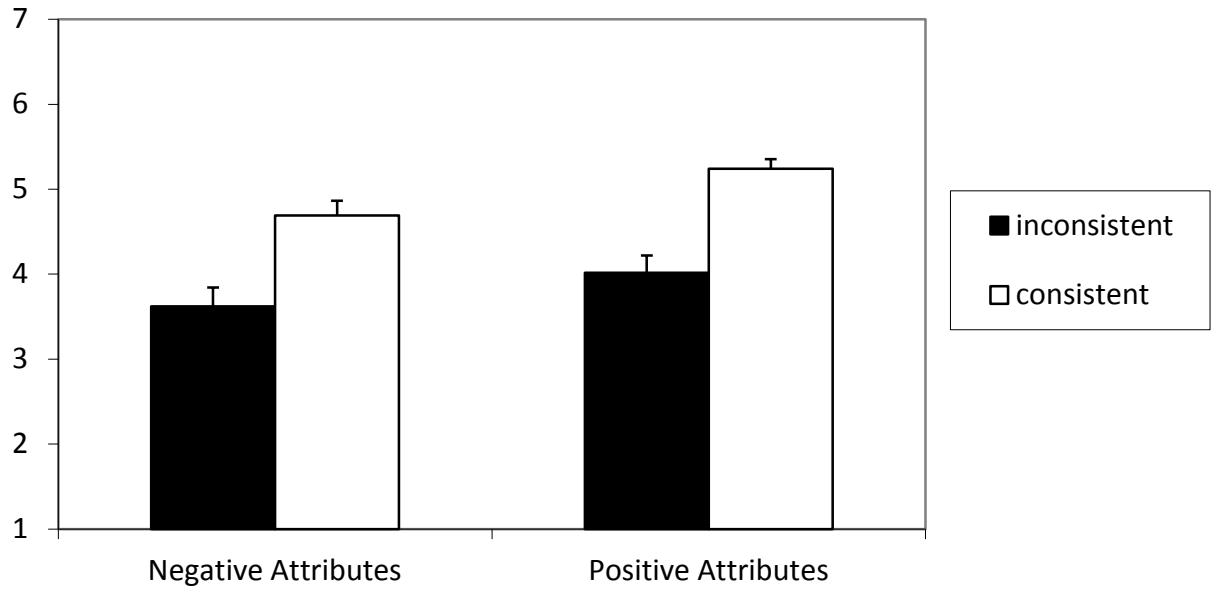
The procedure was identical to Experiment 5.

9.2 Results

For coherence means were calculated for negative inconsistent trials, negative consistent trials, positive inconsistent trials and positive consistent trials like in prior experiments. This score was then entered into a 2 (Valence: negative, positive; within) x 2 (Consistency: inconsistent, consistent; within) repeated measures ANOVA.

There was a main effect of Valence, F (1, 28) = 8.67, $p < .01$, $\eta_p^2 = .24$. Sets of positive attributes were perceived as more coherent than sets of negative attributes. There was also a main effect of Consistency, F (1, 28) = 40.93, $p < .01$, $\eta_p^2 = .59$. Consistent sets of attributes were perceived as more coherent that inconsistent sets of attributes. There was no interaction of Valence and Consistency ($F < 1$). Findings are illustrated in Figure 11.

Figure 11 Means and Standard Errors for Coherence of Sets of Words in Experiment 6
(1 = completely random, 7 = coherent)



9.3 Discussion

Experiment 6 showed that inconsistent sets of attributes actually were perceived as less coherent than consistent sets of attributes. The lack of consistency-driven fluency effects in Experiment 3, 4, and 5 can therefore not be due to a failed manipulation of consistency. Additionally, Experiment 6 showed that inconsistency-driven fluency can influence a non-evaluative judgment. Even though consistency-driven fluency did not feed into evaluative judgments in the first five experiments reported here, it was perceivable and able to influence subsequent judgments. Likewise, the fact that effects of stimulus valence on the evaluation of a target person were shown in Experiment 1 to 5 shows that the dependent measure is sensitive and able to detect differences in the evaluation of the target person.

A self-evident conclusion at this point would be that the consistency of information does not play a role in the evaluation of a target person in a social context. This is in conflict with prior research showing effects of consistency-driven processing fluency on evaluative judgments however. Mendes and colleagues (2007)

showed that stereotype consistent target persons were evaluated more positively than stereotype inconsistent target persons (Mendes et al., 2007). Topolinski (2012a) showed that semantically consistent social triads were evaluated more positively than semantically inconsistent social triads. However, unlike in the experiments presented here, the stimulus material was not strongly valenced in the experiments of Mendes and Topolinski. Both lines of experiments did use social stimuli that activated stereotypes, but stereotyped categories (e.g., nationalities) were not tied to strong evaluations.

In the discussion of results of Experiment 1 and 2 the possibility that effects of stimulus valence outweighed possible effects of consistency-driven fluency was raised. Through this mechanism, the different results between the results presented here and prior empirical evidence could be explained. If the evaluative judgment is strongly informed by stimulus valence, consistency-driven fluency might be unable to modulate the effects on top of the strong influence of stimulus valence. In the Experiments of Mendes and colleagues (2007) and Topolinski (2012a), evaluative judgments were not influenced by strong stimulus valence because stimuli were rather neutral (e.g. BAGUETTE, Topolinski, 2012a). Thus, effects of consistency-driven fluency could drive evaluative judgments. Two factors give support to this reasoning: extremity of evaluative judgments presented here and comparatively low effect size of effects of consistency-driven fluency reported elsewhere. In Experiments 3 to 5 evaluative judgments of target persons from negative categories ranged between 1.5 and 2.5 on a seven-point scale. Evaluative judgments of target persons from positive categories ranged from 5.5 to 6.5. This shows how strongly evaluative judgments were influenced by stimulus valence. This is also illustrated when looking at effect sizes: the effect sizes (η_p^2) of stimulus valence in the experiments reported here ranged from .85 to .93. At the same time, the effects of consistency-driven processing fluency on evaluative judgments observed in earlier studies were rather small (Topolinski et al., 2009).

It is therefore possible that nuanced effects of consistency-driven fluency could not be observed in the experiments presented here, because they carried no weight compared to the stronger effects of stimulus valence. For the experiments presented so far, categories that are tied to strong preferences were chosen in the first place

because they allowed for testing effects of specific feature-based information against effects of unspecific processing dynamics (see Experiment 1). To investigate whether effects of consistency-driven fluency were outweighed by strong effects of stimulus valence, Experiments 7 and 8 tested the effects of consistency-driven processing fluency with neutral categories.

10 Experiment 7

Analogous to Experiment 6, Experiment 7 tested whether randomly selected sets of neutral attributes were perceived as less coherent than sets of neutral attributes that were pretested as consistent (see Pretest 2). Experiment 7 was designed to serve as a manipulation check for the then following Experiment 8.

10.1 Method

10.1.1 Participants and Design

Participants were 16 students (6 female, 3 male, 7 unknown due to technical failure) with a mean age of 27.38 years (*SD* = 7.39). The design was a one factorial within subject design with the factor Consistency (inconsistent vs. consistent information).

10.1.2 Materials and Procedure

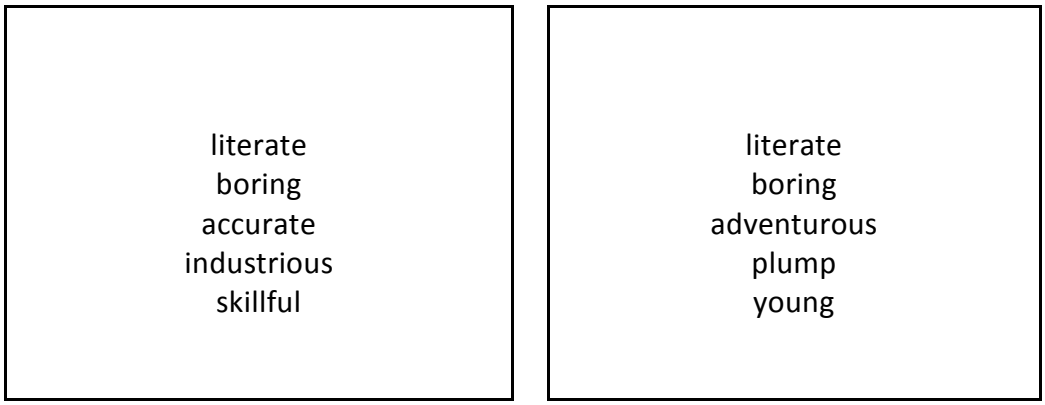
Stimuli. Experiment 7 used attributes of social categories that were rated as neither positive nor negative in Pretest 1 (racing driver, butcher, detective, and bookbinder). The attributes as such are not necessarily neutral, as almost all attributes used in a social context are more or less strongly valenced. The overall neutrality of the sets of attributes is due to a mix of positive and negative attributes that balance each other.

Like in Experiment 6, five attributes that were associated with a certain category were presented in consistent trials. For inconsistent trials, two attributes consistent with the category and three attributes randomly selected from other category sets were presented. Note that category labels were not shown (like in Experiment 6). Exemplary materials can be seen in Figure 12.

Coherence. Coherence was measured with the same items as in Experiment 6 (*How coherent does this group of words seem to you …*, 1 = *completely random,* 7 = *very coherent*).

The procedure was similar to Experiment 6 with the sole difference that participants only saw four trials (two consistent, two inconsistent). The experiment took about five minutes and was administered as part of a multi-experiment session.

Figure 12 Exemplary Materials (consistent/inconsistent) for Experiment 7

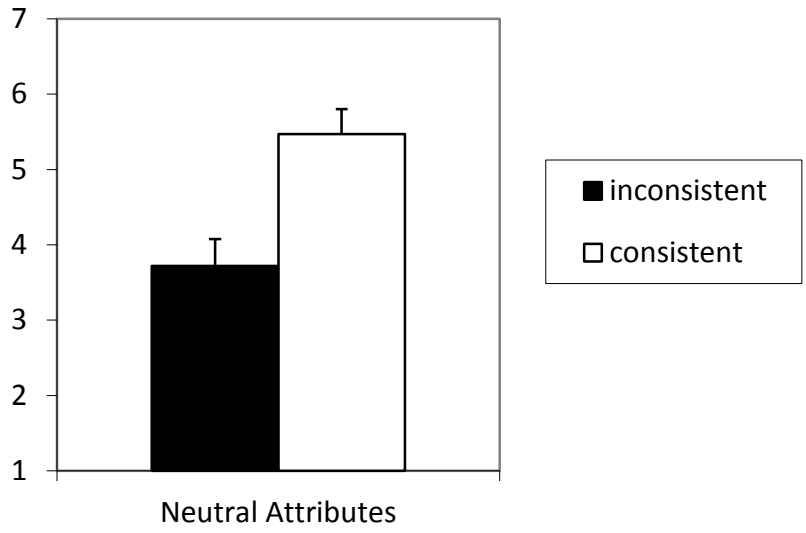


10.2 Results

For coherence means were calculated for inconsistent and consistent trials. This score was then entered into a repeated measures ANOVA with the single factor Consistency.

There was a main effect of Consistency, F (1, 15) = 12.67, $p < .01$, $\eta_p^2 = .46$. Consistent sets of attributes were perceived as more coherent that inconsistent sets of attributes. Findings are illustrated in Figure 13.

Figure 13 Means and Standard Errors for Coherence of Sets of Words in Experiment 7 (1 = completely random, 7 = coherent)



10.3 Discussion

Experiment 7 showed that inconsistent sets of attributes were perceived as less coherent than consistent sets of attributes. It therefore replicated findings of Experiment 6 for attributes of neutral social categories. Experiment 7 served as a manipulation check for Experiment 8 that investigated the effects of consistency-driven fluency on the evaluation of a target person with neutral categories.

11 Experiment 8

Quite possibly no effects of consistency-driven fluency emerged in Experiments 1 to 5 because they carried no weight compared to the effects of stimulus valence. Therefore, Experiment 8 tested the effect of consistency-driven processing fluency on the evaluative judgment of a target person in the context of neutral social categories. Attributes were presented with category labels like in Experiment 3 or without category labels like in Experiment 5. If effects of consistency-driven fluency on evaluative judgments were not observed in the experiments presented so far because they were outweighed by strong valence effects, they should emerge in Experiment 8.

11.1 Method

11.1.1 Participants and Design

Participants were 157 students (34 female, 8 male, 115 missing due to technical failure) with a mean age of 25.52 years (*SD* = 6.15). The design of Experiment 8 was a 2 (inconsistent vs. consistent attributes, within) x 2 (without or with category label, between).

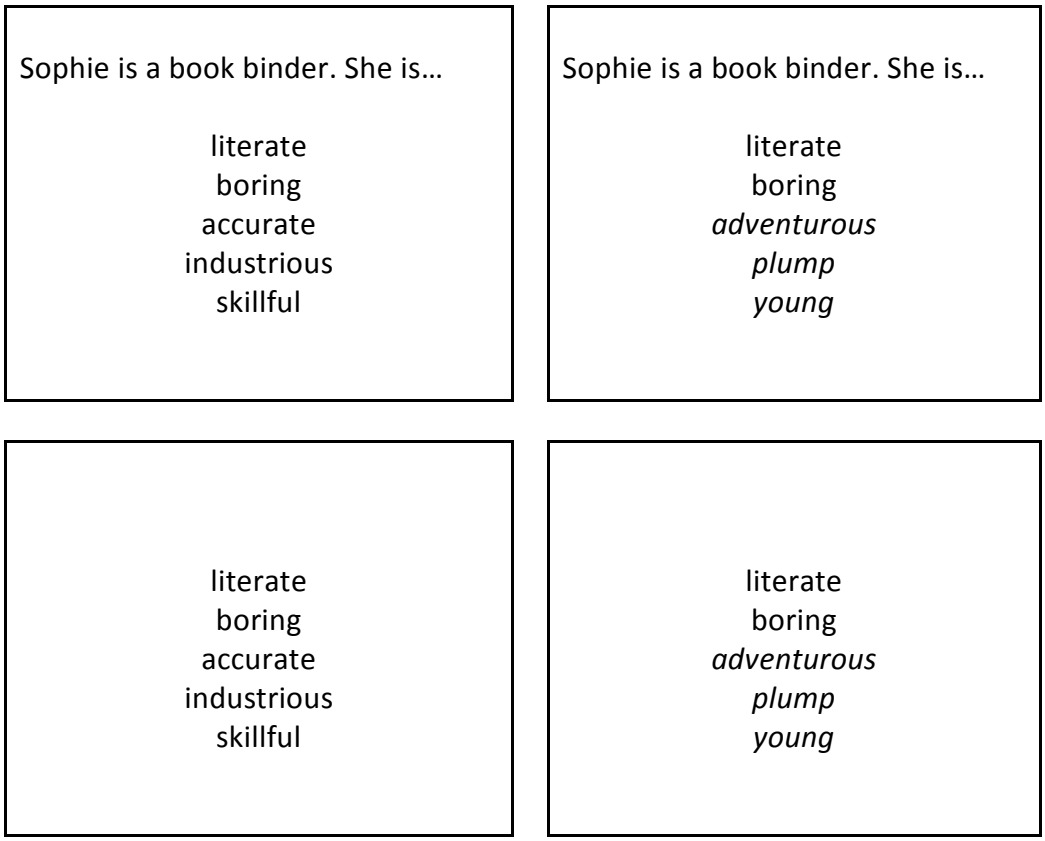
11.1.2 Materials and Procedure

Stimuli. Experiment 8 used the same attributes as Experiment 7. In the condition without category labels, presentation was identical to Experiment 7. In the condition with category labels, participants saw the name of the target person, the category label and the five attributes (like in Experiment 3). Exemplary materials can be seen in Figure 14.

Evaluation. Like in Experiment 1 to 5 participants were asked for their evaluation of the target person (condition with category labels) or for their evaluation of a group of words (condition without category labels; *What are your feelings towards …,* 1 = *very negative,* 7 = *very positive*, Tarrant & Hadert, 2010).

The procedure was identical to Experiment 7. The experiment took about five minutes and was administered as part of a multi-experiment session.

Figure 14 Exemplary Materials (consistent/inconsistent) for Experiment 8

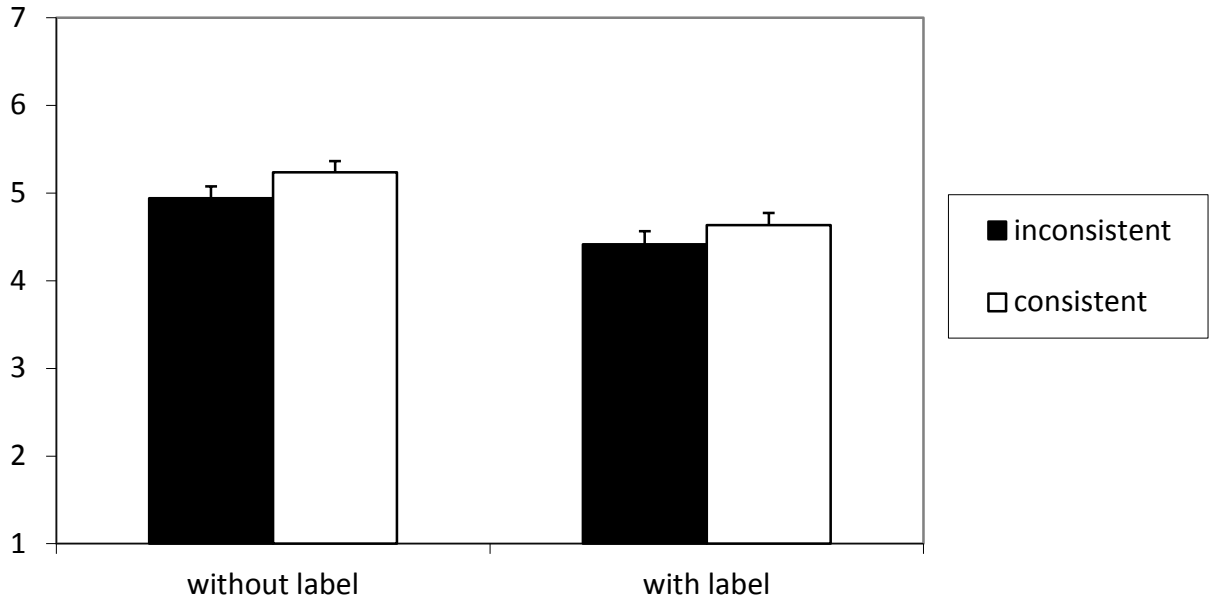


11.2 Results

For evaluation means were calculated for inconsistent and for consistent trials separately for each of the between subject conditions. This score was then entered into a 2 (Consistency: inconsistent, consistent; within) x 2 (Label: without or with category label; between) mixed measures ANOVA.

There was a main effect of Consistency, F (1, 155) = 4.58, p = .03, η_p^2 = .03. Sets of consistent attributes were evaluated more positively than inconsistent sets of attributes. There was also a main effect of Label, F (1, 155) = 13.43, p < .01, η_p^2 = .08. Attributes presented without a category label were evaluated more positively than attributes presented with a category label. There was no interaction of Consistency and Label (F < 1). Findings are illustrated in Figure 15.

Figure 15 Means and Standard Errors for Evaluation of Sets of Words/Target Persons in Experiment 8 (1 = very negative, 7 = very positive)



11.3 Discussion

Experiment 8 showed an effect of consistency-driven processing fluency on the evaluation of social stimuli. In the context of neutral categories, consistent sets of attributes were evaluated more positively than sets of inconsistent attributes. This was the case both when attributes were presented as belonging to a target person form a social category and when they were just presented as a group of words. This shows that not only stimulus valence but also consistency-driven processing fluency can influence evaluative judgments in the domain of stereotype disconfirmation. However, this is only the case when the evaluative judgment is not strongly influenced by stimulus valence. This is in line with the findings by Mendes and colleagues (2007) and Topolinski (2012a), discussed above.

The fact that the same effect of consistency-driven fluency was observed independent of the framing of the task (individual with category label vs. group of words) is interesting for the further development of fluency theory. The *adventurous bookbinder* is an example of propositional inconsistency whereas the combination of

literate and *adventurous* in one group of words is an example for nonpropositional inconsistency. This distinction is interesting because early theories concerning consistency, e.g., Festinger's theory of cognitive dissonance (Festinger, 1957) or Heider's balance theory (Heider, 1958) as well as recent work on consistency (Gawronski, Peters, Brochu, & Strack, 2008; Gawronski & Strack, 2004) focused on propositional processes such as attitudes that people hold consciously and generate with effort and intention. The possibility of nonpropositional consistency, namely the associative consistency between stimuli, has only been addressed lately (Topolinski, 2012b). Propositional inconsistency is constituted by logical contradictions between propositions held in working memory in a reflective operation mode (Strack & Deutsch, 2004), such as during conscious consideration of a *caring* but *brutal* midwife in Experiment 1. Nonpropositional inconsistency, however, refers to the phenomenon that concepts can elicit feelings of disfluency not only when they contradict each other in a proposition, but also when they are merely encoded, namely in the case when they are not associated in memory and not usually activated and processed at the same time (Topolinski, 2012b). Both propositional and nonpropositional inconsistency have been shown to lead to disfluency, resulting in negative affect (Topolinski et al., 2009) and negative evaluations (Topolinski, 2012b). However, the relative strength of propositional and non-propositional inconsistency has not been tested before. The results of Experiment 8 show that effects of propositional and non-propositional inconsistency do not differ in direction or strength. This can be interpreted as evidence that consistency-driven processing fluency operates in a general manner, and does not differ due to awareness or cognitive operation mode.

12 General Discussion

Eight experiments investigated the respective influence of stimulus valence and consistency-driven fluency on evaluative judgments in the field of stereotyping and stereotype disconfirmation. In the following part of the thesis, the reported empirical findings will be summarized and integrated. Implications of the results for theories of impression formation and fluency will be discussed. In the last part of the general discussion, the conclusions drawn from the empirical evidence here will be transferred to the applied field of stereotype change.

12.1 Summary of Results

In the experiments reported here, stimulus valence and consistency-driven processing fluency were manipulated in an impression formation task. Participants saw target persons from social categories and attributes consistent or partly inconsistent with each other and with the social category. The main dependent variable was an evaluative judgment of the target person. The aim of this series of experiments was to investigate the respective influence of stimulus valence and consistency-driven processing fluency on evaluative judgments in the domain of stereotype disconfirmation.

Results showed that consistency-driven processing fluency had an effect on evaluative judgments of social information (Experiment 8). This is in line with earlier research showing effects of consistency on evaluative judgments in the domain of stereotyping (Mendes et al., 2007; Topolinski, 2012a). In the series of experiments presented here, this effect of consistency-driven processing fluency was limited to stimuli that were not strongly valenced, however. When the stimulus material itself was strongly valenced, the evaluative judgment was only influenced by stimulus valence and not by consistency-driven fluency (Experiments 1 to 5).

The effects of stimulus valence outweighed the effects of consistency-driven processing fluency by far. This is evidenced by the great difference in effect sizes: The observed effects of feature-based information varied between .85 and .93 (Experiments 3 to 5) whereas the effect of consistency-driven fluency was only .03

(Experiment 8). A second indicator for the relative strength of the effects of stimulus valence compared to effects of consistency-driven processing fluency is the fact that inconsistent information was evaluated more positively than consistent information when the valence of the inconsistent stimulus was positive in the context of a negative social category (Experiments 1 and 2). This effect was not a result of higher cognitive processes as it was not influenced by the availability of cognitive resources (Experiment 2).

Furthermore, when stimulus valence was held constant between consistent and inconsistent sets of stimuli, evaluative judgments of strongly valenced stimuli were still not influenced by consistency-driven processing fluency (Experiments 3 to 5). Coherence judgments for the material used in Experiments 3 to 5 ruled out the possibility that failure to manipulate consistency was responsible for the non-occurrence of consistency effects under conditions of strong stimulus valence (Experiment 6).

In summary, the present research shows that consistency-driven processing fluency influences evaluative judgments only if the to-be-evaluated stimuli are not strongly valenced.

12.2 Possible Explanations for the Non-occurrence of Fluency Effects

Prior research has repeatedly shown effects of consistency-driven processing fluency on evaluative judgments of both social (Mendes et al., 2007; Topolinski, 2012a) and non-social information (Forster et al., 2012; Topolinski & Strack, 2009b). However, in these experiments stimuli where rather neutral as the main focus of these experiments was to investigate whether consistency-driven processing fluency was able to influence evaluative judgments at all. The present line of research is the first to investigate boundary conditions to the fluency approach. Therefore, effects of consistency-driven fluency were first tested against effects of stimulus valence (Experiments 1 and 2) and then in the environment of strongly valenced stimuli (Experiments 3 to 5). Results revealed that consistency-driven fluency did not play a role in evaluative judgments in an environment of strongly valenced stimuli. This is illustrated by the fact that a target person with partly inconsistent information was even evaluated more positively than a target person with only consistent information

if the valence of the inconsistent stimulus was positive and the social category of the target was negative. Possible explanations for the non-occurrence of effects of consistency-driven processing fluency under conditions of strong stimulus valence will be discussed in more detail now.

12.2.1 Consistency was not Perceived

The simplest explanation for the non-occurrence of consistency-driven fluency would be the fact that the material was not actually perceived as inconsistent. In Experiments 1 and 2, inconsistent attributes influenced the evaluative judgment of the target person. This implies that inconsistent stimuli were not ignored but used to form an evaluative judgment. However, in Experiments 3, 4, and 5, evaluative judgments of consistent and inconsistent target persons did not differ. Therefore, it cannot be ruled out that inconsistent attributes were ignored in these experiments or that all attributes were used to form an evaluative judgment but were not perceived as inconsistent with each other.

To rule out a lack of perceived consistency as an explanation for the non-occurrence of effects of consistency-driven fluency in Experiments 3, 4, and 5, coherence judgments for consistent and inconsistent sets of stimuli were assessed. To this end, perceived consistency was measured with the coherence judgment in Experiment 6. Results showed that participants perceived consistent sets of stimuli as more coherent than inconsistent sets of stimuli. This shows that consistency of the stimulus material used here was perceivable. However, it cannot rule out the possibility that consistency was not perceived spontaneously, when the judgment was evaluative, and the task did not explicitly require a coherence judgment.

This explanation is unlikely to be true as effects of consistency-driven fluency were observed in Experiment 8. Here, participants were asked for evaluative judgments and not for coherence of the material. Still, results of Experiment 8 mirrored effects of consistency-driven fluency. The present research cannot rule out the possibility, that the strong stimulus valence in Experiments 1 to 5 prevented participants form perceiving the inconsistency between stimuli. However, the fact that inconsistent stimuli clearly influenced evaluative judgments in Experiments 1 and 2 makes the non-perception of consistency an even more unlikely candidate to explain

the non-occurrence of consistency effects.

12.2.2 Consistency did not Drive Processing Fluency

Following the reasoning above, it can be assumed that inconsistency was perceived in the present studies. Somehow unresolved, however, is the issue whether consistent information really was easier to process than inconsistent information, thus eliciting a sensation of fluency? In the experiments reported here, processing fluency was not measured directly. One proxy to processing fluency is processing speed (Topolinski & Strack, 2009b, 2009c) and reaction times were logged in all experiments. All experiments but Experiment 2 were self-paced, and participants could look at the person description as long as they wanted before pressing a key to see the next slide, asking for the evaluative judgment. Thus, the reading time for consistent and partly inconsistent attributes could serve as a possible approximation of fluency. However, participants had no time pressure in the present experiments and reading times varied strongly and were not systematically influenced by consistency of attributes. Strictly speaking, reading times in trials with consistent information only were not faster than reaction times in trials with partly inconsistent information. This is possibly due to the lack of time pressure and to the fact that participants were not asked to press a key when they finished reading (like in the Experiments by Topolinski and Strack, 2009c) but when they were ready for the next slide (which asked for the evaluative judgment of the target person).

Therefore, conclusions about processing fluency experienced in the present experimental setup can only be inferred from prior research directly measuring fluency. Consistency, compared to inconsistency between stimuli has been shown to lead to shorter reading times (Topolinski & Strack, 2009c) and to faster performance in a lexical decision task (Topolinski & Strack, 2009b). This is evidence that consistency can drive processing fluency.

The materials used here are very similar to those used by Topolinski and Strack (2009c) and Topolinski (2012a). Here, stimuli were sets of three words that either had (consistent) or did not have (inconsistent) a common remote associate. For example, GREY, OLD, and GRAND-SON share the common remote associate ELDERLY PERSON and are therefore consistent with each other. Participants were asked for spontaneous

evaluative judgments of consistent and inconsistent sets of stimuli. Thus, the experimental setup used by Topolinski (2012a) and Topolinski and Strack (2009c) are almost identical to the setup of Experiment 5. The only difference is that they used three consistent or inconsistent stimuli whereas in the present experiments five consistent or inconsistent stimuli were shown.

The direct analogy from the research of Topolinski and Strack can only be drawn for Experiment 5. In their experiments, participants were not informed about the common remote associate and did not receive interpersonal impression formation instructions but were simply asked for and evaluative judgment of a group of words. In the present line of experiments, all but Experiment 5 framed the task under impression formation instructions. Additionally, all present experiments besides Experiments 4, 5, and the no label conditions in Experiment 8 displayed the category label, thus providing participants with the remote common associate.

As results presented here did not differ between conditions and experiments with and without impression formation instructions and category labels, it seems reasonable to draw conclusions from the findings of Topolinski and Strack (2009c) and Topolinski (2012a) for all present experiments.

It is therefore concluded that the well-established link between consistency and fluency should also have operated in the present experiments. The fact that effects of consistency-driven fluency did occur in when stimuli were not strongly valenced (Experiment 8) is further evidence for the consistency-fluency link.

Moreover, recent research has shown that effects of fluency on liking are mainly driven by subjective fluency and less so by objective fluency (Forster et al., 2012). In these Experiments, duration of presentation (objective fluency) influenced evaluative judgments of depicted objects. Evaluative judgments were even more strongly influenced by self-reported felt fluency (subjective fluency).

Future research could resolve the problem whether consistency actually drives fluency for strongly valenced social stimuli (Experiments 1 to 5) by directly manipulating and measuring objective and subjective processing fluency of consistent and inconsistent sets of stimuli.

12.2.3 Consistency-driven Fluency did not Elicit Positive Affect

Another possible explanation for the non-occurrence of effects of consistency-driven fluency could be a lack of fluency-triggered positive affect. The dependent variable in the experiments reported here were evaluative judgments of target persons. Affective responses to consistent and inconsistent stimuli were not measured directly for the following reasons. In all experiments, participants were asked to evaluate between four and eight consistent and inconsistent target persons or sets of stimuli. The time between the single evaluations was approximately one minute. Repeatedly measuring affect explicitly in such short intervals is likely to render no or little variance because of the tendency for consistent self-reports (Baumeister, 1998; Koriat, 2012; Markus, 1977). Thus, repeatedly asking for current affect is likely to result in a genuine report of affect at the time of the first measurement. In subsequent trials, a back-referral to the first judgment and identical answers for all trials is likely. This problem could be resolved by using a between-subject design because the problem only emerges when repeatedly asking for current affect. However, a within-subject design was chosen here to control for stimulus effects and individual differences in the reaction to stereotype disconfirmation. The goal of these measures was to assure generalizability of the results to various stereotyped groups.

Moreover, asking for both, affect and evaluative judgments is no solution to the problem either for the following reasons. Affect elicited by consistency-driven fluency is assumed not to correctly inform but to bias subsequent evaluative judgments. However, biasing effects of affect can be controlled for when the source for the affective reaction is made salient (Schwarz & Clore, 1983). Thus, asking for affective as well as for evaluative responses is likely to lead to reduced variance on evaluative judgments.

Implicit or physiological measures (e.g., EMG) of affect could be one solution to the dilemma. Consistency-driven fluency has been shown to elicit facial muscular reaction associated with positive affect (Topolinski et al., 2009). Even though fluency-triggered affect was not measured directly, it is very likely that consistent sets of stimuli elicited more positive affect than inconsistent sets of stimuli. This inference can be drawn from earlier research (for a review see Topolinski, 2012b) and from the

effects of consistency-driven fluency on evaluative judgments in Experiment 8. Even though fluency-triggered affect was not measured directly, it is very likely that inconsistent compared to consistent stimulus sets were more difficult to process and elicited relatively less positive affect.

12.2.4 Evaluative Judgments Were Corrected for Fluency-triggered Affect

Concluding from the reasoning above, it is highly probable that (in)consistency was perceived in all experiments and that the consistent stimuli were processed with higher fluency than inconsistent stimuli. This higher fluency in turn most likely led to more positive affect in consistent compared to inconsistent trials. Still, these affective differences were not mirrored in the evaluative judgments of Experiments 1 to 5. Could this be due to a debiasing mechanism, correcting fluency-driven influences in evaluative judgments?

Fluency effects have been shown to be corrected for when they are rendered irrelevant for the task at hand. For example, authors of texts that are hard to read because of low contrast are judged to be less intelligent than authors of texts that are easy to read. This biasing effect of fluency is (over-)corrected for when the source of disfluency is obvious and can be attributed away from the target person (in the previous exymple: technical printing problems; Oppenheimer, 2006). However, awareness of processing fluency and resulting biasing effects is a prerequisite for an according correction (Reber, Schwarz, et al., 2004; Topolinski & Strack, 2009c). Awareness of fluency effects was not tested in the present research and can only be speculated about. At least in the experiments were category labels were provided, inconsistent stimuli were obviously violating expectations. It is likely that participants were aware of the more effortful processing and integration of these stimuli. Still, an active correction is unlikely to be responsible for the lack of consistency-driven fluency effects in the experiments with strongly valenced stimuli. First, effects of consistency-driven fluency did also not emerge when cognitive resources were scarce (Experiment 2), even though correction processes need cognitive resources (e.g., Martin, Seta, & Crelia, 1990).

Second, there is no reason to assume a different motivation or ability for correction of consistency-driven fluency effects depending on stimulus valence.

Accordingly, the correction process should have occurred across all experiments, independent of stimulus valence. Thus, the fact that effects of consistency-driven fluency were observed in Experiment 8 is further evidence against the correction hypothesis. The same is true for other strategies of judgmental correction like disregarding internal cues (R. S. Wyer & Budesheim, 1987; R. S. Wyer & Unverzagt, 1985) or discounting them from the judgment (Clore, 1992; Kelley & Rhodes, 2002; Sanna, Schwarz, & Kennedy, 2009; Schwarz, 2004).

12.2.5 Effects of Stimulus Valence Outweighed Effects of Consistency-driven Fluency

So far, it can be concluded that consistency-driven fluency most likely triggered an affective response and that this affective response was not actively corrected for. This means that none of the possible explanations discussed so far can actually explain the differences in the effects of consistency-driven fluency on evaluative judgments in experiments with and without strongly valenced stimuli. Therefore, stimulus valence suggests itself as the decisive factor explaining the different effects of consistency-driven fluency in the present experiments.

So why did (in)consistency not influence the evaluative judgment when stimuli were strongly valenced but did so when stimuli were neutral? As pointed out before, the effects of stimulus valence observed in Experiments 3 to 5 were immense compared to the small effect of consistency-driven fluency in Experiment 8. Therefore it is very likely that effects of consistency-driven fluency did also occur when stimuli were strongly valenced but was outweighed by the strong effects of stimulus valence (Experiments 1 to 5). In the absence of strongly valenced stimuli, the effects of consistency-driven fluency could reflect onto the evaluative judgment of the target person (Experiment 8).

Moreover, iit has to be considered whether stimulus valence itself could possibly be responsible for the differences in evaluative judgments of consistent and inconsistent target persons in Experiment 8. Target persons with partly inconsistent attributes were evaluated less positively than target persons with consistent attributes only. These differences could be explained by stimulus valence if inconsistent stimuli were less positive than consistent stimuli. However, this cannot be the case as consistent and inconsistent attributes were chosen from the same pool of attributes.

Therefore, differences in evaluative judgments of consistent and inconsistent target persons cannot be due to stimulus valence. Accordingly, the observed differences can only be explained by (in)consistency.

In summary, this shows that the non-occurrence of effects of consistency-driven fluency for strongly valenced stimuli is due to the fact that effects of consistency-driven fluency are marginal compared to the strong effects of stimulus valence. Effects of stimulus valence are therefore likely to outweigh effects of consistency-driven fluency.

12.3 Theoretical Implications of Present Findings

The present line of research is the first to investigate the respective influence of specific feature-based information and unspecific processing dynamics on evaluative judgments. So far, both aspects of cognitive processing have been investigated separately (e.g., Anderson, 1971; Reber, Schwarz, et al., 2004). The influence of stimulus valence on evaluative judgments is evident from a lay perspective and well established in psychological research (e.g., Anderson, 1962, 1971; Do et al., 2008). The effects of unspecific processing dynamics such as processing fluency however are less obvious and have only recently drawn wider attention in experimental research (Gawronski & Strack, 2012). Implications of the empirical evidence for theories of information processing in evaluative judgments and for fluency research will be outlined in the following.

12.3.1 Implications for Additive Accounts of Impression Formation

Most of the empirical evidence presented here can be accounted for by additive theories of information integration (e.g., Anderson, 1962, 1971). The first five experiments showed that the overall evaluative judgment of a target person was simply driven by stimulus valence. The higher the number of positive attributes presented with the target person, the more positive was the evaluation of the target person. Especially Experiment 1 and 2 could be interpreted as supporting additive accounts of impression formation. Here, the greater the number of positive attributes, the more positive was the overall evaluative judgment of the target person.

In contrast, in Experiment 8 evaluative judgments differed according to

(in)consistency, even though stimulus valence was constant between consistent and inconsistent target persons. Additive accounts of information integration have difficulties in explaining the differences in the evaluation of consistent and inconsistent neutral target persons. As consistent and inconsistent stimuli were sampled from the same pool of attributes, the observed difference in the evaluative judgment of consistent and inconsistent target persons cannot stem from differences in stimulus valence. The only difference between the two conditions was the semantic consistency of the attributes presented with the target person.

In additive accounts of impression formation, selective attention or different weighing of stimuli (Anderson, 1971; Fredrickson & Kahneman, 1993; Kahneman et al., 1993) is the only way to explain motivational influences on evaluative judgments. In the present studies, even if some attributes informed the evaluative judgment more than others, the overall evaluation of consistent and inconsistent stimuli should have been the same, as across conditions all stimuli were drawn from the same pool of attributes. Therefore, additive accounts cannot explain the effects of (in)consistency on evaluative judgments of target persons from neutral categories.

Thus, the different evaluations of consistent and inconsistent target persons have to be due to factors not captured by additive accounts of information integration. To fully explain the pattern of results, an account integrating effects of both stimulus valence and processing dynamics is needed.

12.3.2 Limitations to the Continuum Model of Impression Formation

Another account of impression formation especially tailored to the domain of stereotyping is the continuum model (Fiske et al., 1999; Fiske & Neuberg, 1990; Fiske, 2012). The main assumption of the continuum model is that individuals first and foremost rely on category information when forming judgments of others. Individuating information is only processed when the motivation and capacity to do so is available. One of the factors discussed to motivate individuals to process individuating information is inconsistency (Fiske et al., 1999). Therefore, the continuum model is actually able to account for differences in evaluative judgments due to consistency-driven processing fluency. However, the continuum model only postulates different information processing styles triggered by an inconsistency-driven

lack of fluency. Whereas fluent processing should lead to reliance on category information, disfluency should lead to piecemeal integration of individuating information. Thus, the results of Experiment 1 to 5 can be explained by this reasoning, as long as the same valence is assumed for category information and individuating information. This assumption has to be made to bring the present findings in line with the continuum model for the following reasons. No difference in evaluative judgments of consistent and inconsistent target persons was found in Experiments 3 to 5. However, according to the continuum model, evaluative judgments of consistent target persons should have relied on category information while evaluative judgments of inconsistent target persons should have relied on individuating information. Thus, according to the continuum model, the same evaluative judgment of consistent and inconsistent target persons is only reasonable when the overall valence of the individuating information is the same as the valence of the category information.

How can the differences in evaluative judgments between consistent and inconsistent target persons obtained in Experiment 8 be explained by the continuum model? Again, the continuum model postulates that evaluative judgments of consistent target persons should rely on category information whereas evaluative judgments of inconsistent target persons should be influenced by individuating information. For Experiment 8, this would result in evaluations influenced by the category label (e.g., *book binder*) for consistent target persons and in evaluations influenced by individuating information (e.g., *literate, boring, adventurous, plump, young*) for inconsistent target persons. The less positive evaluation of inconsistent target persons could be explained by the continuum model if the overall evaluation of individuating information was less positive than the evaluation of the category information. This was not the case however. Pretest 1 revealed an average evaluation of M = 4.01 for the categories used in Experiment 8. The evaluation of inconsistent target persons in Experiment 8 was M = 4.41 (with label) and M = 4.94 (without label). Thus, evaluations of inconsistent target persons in Experiment 8 were actually more positive than the evaluation of the mere category information in Pretest 1. However, the continuum model would have predicted the opposite effect in is therefore not able to explain the differences in evaluative judgments of consistent and inconsistent target

persons in Experiment 8.

Even though the continuum model theoretically can account for differences in evaluative judgments due to inconsistency, it cannot explain the present pattern of results.

12.3.3 Boundary Conditions to the Fluency Approach

The main assumption of the fluency approach is that information differs in the ease and speed with which it can be processed cognitively (Winkielman et al., 2012). Ease and speed of processing or fluency elicits positive affect (Topolinski et al., 2009) that can in turn lead to a more positive evaluation of fluent information (Forster et al., 2012; Reber, Schwarz, et al., 2004; Topolinski & Strack, 2009b). The line of research presented here adds further evidence to the fluency account, while simultaneously showing limitations and boundary conditions. It is the first work actually testing effects of stimulus valence against effects of processing fluency. In summary, the observed effects of consistency-driven fluency were very small and outweighed by effects of stimulus valence when stimuli were strongly valenced.

The psychological processes underlying this effect are not completely clear yet. The experiments presented here ruled out some possible explanations for the non-occurrence of effects of consistency-driven processing fluency. Among these factors were higher cognitive processes (Experiment 2), valence of inconsistent attributes (Experiment 3), processing priority of category information (Experiment 4), and impression formation instructions (Experiment 5).

In summary, effects of consistency-driven fluency were only observed when stimulus valence did not decisively predetermine the evaluative judgment, namely when stimuli were not strongly valenced. It is important to note however that classical accounts of impression formation like additive accounts (Anderson, 1962, 1971) or the continuum model (Fiske et al., 1999; Fiske & Neuberg, 1990; Fiske, 2012) are not able to account for inconsistency effects like the one observed in the present line of experiments. This shows that, albeit small, fluency effects are very interesting from a theoretical perspective. Future accounts of impression formation should aim at integrating effects of processing dynamics in making judgments of others. While effects of processing dynamics are intriguing and give us further insight into the

functioning of human cognition, their relative impact on evaluative judgments is small.

12.4 Implications for Stereotype Change

To what extent are the recent findings applicable to the field of stereotyping? Stereotypes have been shown to be pervasive (Devine & Sharp, 2009; Devine, 1989), mostly negative (Stangor, 2009) and varying in their accuracy (Jussim, Cain, Crawford, Harber, & Cohen, 2009). But above all, stereotypes tend to be stable and hard to change (Weber & Crocker, 1983). Because activation and application of stereotypes can have negative effects (Stangor, 2009), the attempt to reduce the application of stereotypes or to even change stereotypic representations is one of the oldest and most prominent target persons of research in social psychology (Allport, 1954; Bodenhausen, Todd, & Richeson, 2009). One of the factors frequently discussed as a possible means to stereotype change is the confrontation with stereotype inconsistent behavior or atypical members of stereotyped groups (Allport, 1954; Tausch & Hewstone, 2010; Weber & Crocker, 1983).

Will an individual's stereotype about hooligans be altered by encountering a child-loving hooligan? Will he or she draw the conclusion that probably most hooligans are friendly with children and will incorporate child-loving into his or her stereotype of hooligans? This is exactly what theories of intergroup contact would predict and what empirical research on stereotype change has found (Allport, 1954; R. Brown & Hewstone, 2005; for a review see Pettigrew & Tropp, 2006). However, stereotype change through contact with stereotype inconsistent members of the stereotyped group does not work under all conditions. For example, stereotype inconsistent information has been shown to be ignored (Trope & Thompson, 1997) or forgotten (Fyock & Stangor, 1994; Stangor & McMillan, 1992), thus not influencing cognitive representations of the stereotyped group. Another possibility to deal with stereotype inconsistent behavior without changing stereotypic beliefs is the subtyping of the inconsistent target person (Weber & Crocker, 1983). Here, the inconsistent target person is classified as not representative for the group as a whole, thus making alterations to the stereotype obsolete. Applied to the hooligan example this would mean that the special hooligan described here is not typical for the group of hooligans as a whole, for example because he is a parenting hooligan. Consistent with this idea

are findings showing that exposure to moderately inconsistent group members leads to greater stereotype change than exposure to extremely inconsistent exemplars (Kunda & Oleson, 1997; Tausch & Hewstone, 2010).

In summary, it has been shown that intergroup relations can profit from intergroup contact (Pettigrew & Tropp, 2006) and that exposure to (moderately) stereotype inconsistent individuals can change stereotypic beliefs about the stereotyped group as a whole (Kunda & Oleson, 1995, 1997; Weber & Crocker, 1983).

As changing stereotypes on a large scale promises the solution to many problems and intergroup conflicts, it has received immense attention over the last hundred years (Stangor, 2009). A widely ignored factor in this equation is the stereotype inconsistent individual. What does the child-loving hooligan gain or suffer from displaying stereotype inconsistent behavior? Are stereotype inconsistent individuals evaluated more or less positively than stereotype consistent individuals? This question is directly related to the present empirical research. The answer that can be derived from the present findings is twofold. When participants held strongly valenced stereotypes about the group in the first place, inconsistent information had no effect on evaluative judgments of the individual unless the inconsistent information was strongly valenced as well. For example, the hooligan was evaluated more positively when child-loving than when brutal (Experiments 1 and 2). However, the lazy hooligan was not evaluated more positively or negatively than the brutal hooligan (Experiments 3 to 5). So in the case of strong negative stereotypic beliefs about the group in the first place, stereotype inconsistent individuals are evaluated just like stereotype consistent members. However, inconsistent members may gain from their inconsistency if the inconsistent attribute is positive. When stereotyped groups were evaluated negatively, inconsistent target persons profited from their inconsistency when evaluated by others or the inconsistency had no effect on evaluative judgments. In no case were inconsistent members of negative groups evaluated more negatively than consistent members.

However, the situation was different when beliefs about stereotyped groups were not strongly valenced in the first place. Stereotype inconsistent individuals from neutral groups were evaluated less positively than stereotype consistent individuals.

For example, the adventurous book binder was evaluated less positively than the literate book binder (Experiment 8). This shows that the effects of stereotype inconsistent information that can possibly help to alter stereotypic beliefs about the stereotyped group as a whole can be at the expense of the inconsistent individual. As the differences in evaluative judgments of consistent and inconsistent target persons were very small, negative consequences for the inconsistent individual should not be overestimated.

What are the implications of these findings for stereotype change? Taking into account the positive effects for the inconsistent individual for negative groups and the minor negative effects for the inconsistent individual for neutral groups, effects on the individual can probably be disregarded compared to the positive effects of a possible change in stereotypic beliefs for the group as a whole. Therefore, from the perspective of the present findings, stereotype change trough contact with inconsistent individuals from a stereotyped group offers changes on the group level while having no dramatic consequences on the individual level.

This is in contrast to other empirical findings regarding the evaluation of a-typical members of stereotyped groups. One relevant line of research described earlier is the work of Mendes and colleagues (2007). Findings showed that members of stereotyped groups were evaluated less positively when they showed unexpected behavior compared to when showing expected behavior. Additionally, interacting with expectancy-violating partners elicited physical threat responses, higher self-reported stress levels, poorer task performance, and more friendly behavior (Mendes et al., 2007). Similarly, empirical research on counterstereotypical behavior has shown so-called backlash effects (Phelan, Moss-Racusin, & Rudman, 2008; Rudman, Moss-Racusin, Glick, & Phelan, 2012). Backlash theory describes the phenomenon that counterstereotypical behavior can lead to social and economic penalties and resulting disadvantages for the individual displaying the counterstereotypical behavior. For example, white participants chose unhelpful rather than helpful hints for Asians performing successfully in a knowledge test on beer. This means that members from a stereotyped group were sabotaged for succeeding in a stereotype inconsistent knowledge domain, thus re-enacting the status quo of the social hierarchy (Phelan &

Rudman, 2010).

From the perspective of the backlash theory, stereotype change through contact with individuals displaying stereotype inconsistent behavior does not seem to be safe for the stereotype inconsistent individual. This conclusion is orthogonal to the conclusions drawn from the present empirical findings. How can this difference be accounted for?

In the experiments by Mendes and colleagues (2007) and in the research by Phelan and colleagues (2010), participants actually interacted with confederates displaying stereotype (in)consistent behaviors. In the present experiments, participants merely read about (in)consistent target persons from stereotyped groups. It is very likely that the threat response towards stereotype inconsistent individuals (Mendes et al., 2007) and the behavioral response re-enacting the status-quo of the social hierarchy (Phelan & Rudman, 2010) are stronger when the individual displaying stereotype inconsistent behavior is actually present. When directly confronted with unexpected behavior, mechanisms of stereotype maintenance seem to play a greater role than when participants are sitting safely in front of a laboratory computer. Even though merely reading about a counterstereotypical individual does not lead to devaluation of the individual and could thereby be a "safe" way to stereotype change, it is by no means certain that stereotypes can actually be altered by simply reading about a stereotype inconsistent individual.

A solution to the dilemma between interests of the individual and the stereotyped group as a whole could be vicarious contact (Herek & Capitanio, 1997) and imagined contact (Crisp & Turner, 2009; Vezzali, Capozza, Stathi, & Giovannini, 2012). Both imagined contact and vicarious contact with individuals from stereotyped groups, for example through mass media, has been shown to decrease stereotyping and stigmatization (Crisp & Turner, 2009; Dovidio, Eller, & Hewstone, 2011; Herek & Capitanio, 1997; Vezzali et al., 2012). In vicarious and imagined contact, devaluation of the stereotype inconsistent individual or even backlash effects do not have a direct impact on the stereotype inconsistent individual. Thus, these forms of intergroup contact can help changing stereotypes while not risking the welfare of individual members of stereotyped groups.

13 Conclusion

The present line of experiments showed that evaluative judgments in stereotype disconfirmation are mainly driven by stimulus valence. Inconsistency-driven processing fluency did only influence evaluative judgments in the absence of strongly valenced stimuli. This shows that while effects of processing dynamics are intriguing and give us further insight into the functioning of human cognition, their relative impact on evaluative judgments is small.

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Appendix A – Experimental Material

Pretest 1

Pretest 1 - Instruction

Nun beginnt eine neue Aufgabe.
Im Folgenden werden dir eine Reihe gesellschaftlicher Gruppen gezeigt. Bitte gebe für jede Gruppe möglichst spontan an, wie positiv oder negativ deine Gefühle gegenüber dieser Gruppe sind. Denke nicht lange darüber nach, sondern antworte einfach nach deinem Bauchgefühl. Es geht lediglich um deine spontanen Gefühle, es gibt keine richtigen oder falschen Antworten.

Pretest 1 - Stimuli

Altenpfleger	Apotheker	Arbeitsloser	Archäologe
Architekt	Arzt	Ballerina	Banker
Bankräuber	Bestatter	Bootsbauer	Börsenspekulant
Boxer	Buchbinder	Detektiv	Diplomat
Drogenabhängiger	Ehrenamtlicher	Erpresser	Erzieher
Feuerwehrmann	Fleischer	Florist	Förster
Fotograf	Gärtner	Gebrauchtwagen-händler	Gerichts-vollzieher
Goldschmied	Häftling	Hebamme	Hooligan
Imker	Immobilienmakler	Kinderkrankenschwester	Kletterer
Künstler	Lokomotivführer	Milliardär	Nonne
Notarzt	Paraglider	Pilot	Politiker
Professor	Rennfahrer	Restaurator	Schriftsteller
Schulabbrecher	Skinhead	Sozialarbeiter	Sozialpädagoge
Straftäter	Tänzer	Tierarzt	Türsteher
Versicherungsvertreter			

Pretest 1 – Dependent Variable

Wie sind Ihre Gefühle gegenüber [category]?

sehr negativ 1 2 3 4 5 6 7 sehr positiv

Pretest 2

Prestest 2 – Instruction

Im Folgenden werden dir eine Reihe gesellschaftlicher Gruppen genannt. Gebe bitte an,

welche EIGENSCHAFTEN du spontan mit diesen Gruppen verbindest. Hierbei gibt es keine richtigen und falschen Antworten. Es geht nicht um eine möglichst korrekte Beschreibung dieser Gruppen, sondern darum, welche EIGENSCHAFTEN dir zuerst in den Sinn kommen, wenn du an diese Gruppe denkst.
Schreibe die Eigenschaften die dir einfallen einfach in das dafür vorgesehene Feld. Nach einiger Zeit wird dir automatisch der nächste Begriff gezeigt.
Klicke auf Continue um mit der ersten Aufgabe zu beginnen.

Pretest 2 – Stimuli

negative	**neutral**	**positive**
Erpresser	Rennfahrer	Pilot
Hooligan	Fleischer	Hebamme
Schulabbrecher	Detektiv	Notarzt
Türsteher	Diplomat	Feuerwehrmann
Versicherungsvertreter	Buchbinder	Ehrenamtlicher

Pretest 2 – Dependent variable

Welche EIGENSCHAFTEN verbindest du spontan mit [category]?

Experiment 1

Experiment 1 – Instruction

Auf den folgenden Seiten werden Ihnen verschiedene Personen vorgestellt. Bitte lesen Sie sich die Informationen über diese Personen aufmerksam durch und versuchen Sie sich einen persönlichen Eindruck von den Personen zu bilden. Drücken Sie die Leertaste um die erste Personenbeschreibung zu sehen.

Experiment 1 – Dependent Variable

Wie sind Ihre Gefühle gegenüber [name]?

sehr negativ 1 2 3 4 5 6 7 sehr positiv

Experiment 2

Experiment 2 – Instruction

Auf den folgenden Seiten werden Ihnen verschiedene Personen vorgestellt. Bitte lesen Sie sich die Informationen über diese Personen durch und versuchen Sie sich einen persönlichen Eindruck von den Personen zu bilden. Außerdem werden Sie über Kopfhörer

Stimmen und im Hintergrund klingeln hören. Bitte zählen Sie, wie oft die Klingel zu hören ist und behalten Sie diese Zahl bis Sie danach gefragt werden. Drücken Sie die Leertaste um zu beginnen.

Experiment 2 – Dependent Variables

Wie oft hat die Klingel geklingelt? Bitte geben Sie die richtige Zahl ein.

Wie sind Ihre Gefühle gegenüber [name]?

1	2	3	4	5	6	7
sehr negativ						sehr positiv

Experiments 3 & 4

Experiments 3 & 4 – Instruction

Auf den folgenden Seiten werden Ihnen verschiedene Personen vorgestellt. Bitte lesen Sie sich die Informationen über diese Personen aufmerksam durch und versuchen Sie sich einen persönlichen Eindruck von den Personen zu bilden. Drücken Sie die Leertaste um die erste Personenbeschreibung zu sehen.

Experiments 3 & 4 – Dependent Variable

Wie sind Ihre Gefühle gegenüber [name]?

1	2	3	4	5	6	7
sehr negativ						sehr positiv

Experiment 5

Experiment 5 – Instruction

Auf den folgenden Seiten sehen Sie Wortgruppen. Bitte lesen Sie sich diese Wortgruppen aufmerksam durch und geben Sie dann ganz spontan Ihr Bauchgefühl an. Drücken Sie die Leertaste um die erste Wortgruppe zu sehen.

Experiment 5 – Dependent Variable

Wie sind Ihre Gefühle gegenüber dieser Wortgruppe?

1	2	3	4	5	6	7
sehr negativ						sehr positiv

Experiments 6 & 7

Experiments 6 & 7 – Instruction

In dieser Voruntersuchung schauen wir ob man zusammenhängende von zufälligen Wortgruppen unterscheiden kann. Bitte entspannen Sie. Strengen Sie sich nicht besonders an sondern entscheiden einfach nach Ihrem Gefühl wie zusammenhängend eine Wortgruppe auf Sie wirkt. Lassen Sie die Wortgruppe jeweils einfach auf sich wirken und beurteilen Sie spontan wie zusammenhängend oder zusammengewürfelt die jeweilige Wortgruppe auf sie wirkt. Drücken Sie die Lehrtaste um die erste Wortgruppe zu sehen.

Experiments 6 & 7– Dependent Variable

Auf mich wirkt diese Wortgruppe

1	2	3	4	5	6	7
zufällig zusammen-gewürfelt						zusammen-hängend

Experiment 8

Experiment 8 - Instruction

Label condition:

Auf den folgenden Seiten werden Ihnen verschiedene Personen vorgestellt. Bitte lesen Sie sich die Informationen über diese Personen aufmerksam durch und versuchen Sie sich einen persönlichen Eindruck von den Personen zu bilden. Drücken Sie die Leertaste um die erste Personenbeschreibung zu sehen.

No label condition:

Auf den folgenden Seiten sehen Sie Wortgruppen. Bitte lesen Sie sich diese Wortgruppen aufmerksam durch und geben Sie dann ganz spontan Ihr Bauchgefühl an. Drücken Sie die Leertaste um die erste Wortgruppe zu sehen.

Experiment 8 – Dependent Variable

Label condition:

Wie sind Ihre Gefühle gegenüber [name]?

1	2	3	4	5	6	7
sehr negativ						sehr positiv

No label condition:

Wie sind Ihre Gefühle gegenüber dieser Wortgruppe?

1	2	3	4	5	6	7
sehr negativ						sehr positiv

Appendix B – Additional Data

Pretest 1 - Means and Standard Deviations for evaluations of all categories

	M	*SD*		*M*	*SD*
Erpresser	1.27	.569	Fotograf	4.88	1.409
Hooligan	1.31	.713	Lokomotivführer	4.90	1.159
Bankräuber	1.53	.793	Professor	4.98	1.164
Skinhead	1.53	1.082	Kletterer	5.02	1.315
Straftäter	1.73	1.114	Archäologe	5.06	1.519
Drogen-abhängiger	2.04	1.020	Künstler	5.08	1.592
Häftling	2.12	1.148	Tänzer	5.08	1.455
Schulabbrecher	2.51	.916	Restaurator	5.10	1.262
Türsteher	2.53	.981	Apotheker	5.14	1.208
Versicherungs-vertreter	2.57	1.258	Goldschmied	5.20	1.190
Arbeitsloser	2.82	.928	Gärtner	5.22	1.462
Börsen-spekulant	2.84	1.700	Förster	5.24	1.164
Gebraucht-wagenhändler	2.90	1.295	Pilot	5.24	1.164
Gerichts-vollzieher	2.94	1.281	Sozialpädagoge	5.24	1.601
Politiker	3.12	1.438	Architekt	5.27	1.303
Boxer	3.14	1.307	Florist	5.33	1.214
Banker	3.37	1.692	Sozialarbeiter	5.41	1.457
Immobilien-makler	3.39	1.539	Erzieher	5.49	1.340
Rennfahrer	3.41	1.240	Imker	5.51	1.227
Milliardär	3.53	1.371	Tierarzt	5.53	1.174
Fleischer	3.63	1.550	Schriftsteller	5.59	1.153
Bestatter	4.08	1.441	Arzt	5.73	1.319
Detektiv	4.14	1.429	Altenpfleger	5.88	1.166
Diplomat	4.29	1.399	Hebamme	5.96	1.172
Nonne	4.43	1.696	Feuerwehrmann	6.00	1.369
Paraglider	4.53	1.430	Kinderkranken-schwester	6.06	.988
Ballerina	4.55	1.555	Notarzt	6.18	1.054
Buchbinder	4.84	1.297	Ehrenamtlicher	6.47	.892
Bootsbauer	4.86	1.275	Total	4.24	.48

Appendix C - Lebenslauf

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