

THE SURVIVAL AND TRANSFORMATION OF JUDGMENTS ABOUT PERSONS:
MATCHING EFFECTS IN PERSON IMPRESSIONS

By

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ACKNOWLEDGMENTS

I give all of my thanks to Dolores Albarracin, who showed me what a researcher should be.

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Abstract of Thesis Presented to the Graduate School
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This thesis examines the relative influence of stereotypes on the formation of first impressions and subsequently in changing that impression. With the model of activation-comparison, the present study aimed to test that when receiving “matching” information, individuals would more change their impressions of others that they have made before, compared when receiving “mismatched” information, regardless of types of information (either categorical or individuating).

With a roommate-matching service scenario, participants received different types of information at Time 1 about the target applicant and were asked to rate the person in terms of how good the applicant would be for the other’s roommate on the basis of information about that person’s ethnicity or individualized beliefs. Later, participants received further information about the same person that was either categorical or individuating and countered the implications of the first information. We expected that

participants would change their first impression more when they received the same level of information (categorical-categorical or individuating-individuating) both at Time 1 and at Time 2 than when participants received different level of information (categorical-individuating or individuating-categorical).

We consistently found a strong effect of individuating information both on impression formation and on impression change. Participants who received the same level of individuating information both at Time 1 and at Time 2 most changed their impressions of the target applicant compared to other experimental conditions. In contrast, we failed to find the matching effect with categorical information. Participants who received categorical information both at Time 1 and at Time 2 did not significantly change their impressions of the target applicant. In contrast to the previous research about making person impressions that proposed categorical information is more dominant than individuating information, the results of the present study showed a different perspective. That is, individuating information exerted the most dominant role when changing impressions and when making first impressions as well.

INTRODUCTION

Social interaction requires that people make judgments and decisions concerning other individuals and groups. Because these activities necessitate the use of limited cognitive resources, individuals may occasionally use well-organized cues to help them make decisions rather than draining their cognitive resources to carefully consider every piece of stimulus information. For example, applying heuristics or simple decision rules to form person impressions frees up cognitive energy for other activities that also need to be completed (Eagly & Chaiken, 1993; Fiske & Taylor, 1991; Markus & Zajonc, 1985; Petty & Cacioppo, 1986; Stangor & Schaller, 1996). One such heuristic is the use of stereotypes, which are generally regarded as cognitive structures comprising people's knowledge, beliefs, and expectancies about specific social groups or members of those groups (Fiske & Taylor, 1991; Hamilton & Sherman, 1994; Markus & Zajonc, 1985).

For several decades, social psychologists have studied stereotype formation and activation (Hamilton & Gifford, 1976; Jussim, 1991; Schaller & O'Brien, 1992; Stangor & Duan, 1991), stereotype maintenance (Brewer & Feinstein, 1999; Fiske, Lin, & Neuberg, 1999; Hamilton & Rose, 1980; Stangor & McMillan, 1992), and the change of stereotypes (Hewstone & Brown, 1986; Weber & Crocker, 1983). This research has shown that stereotypes are pervasive: they may change as a result of repetitive disconfirmation, but they rarely disappear completely (Geller, 2002; Hewstone, Hassebrauck, Wirth, & Waenke, 2000; Johnston & Coolen, 1995; Queller & Smith, 2002;

Richards & Hewstone, 2001). It is also well known that stereotypes influence the information individuals seek (Johnston & Macrae, 1994; Rothbart, 1981; Snyder, 1981), attend to (Belmore & Hubbard, 1987), and remember (Fyock & Stangor, 1994) with respect to members of social groups. Most of this research, however, involves forming an impression about a target person for the first time (Brewer, 1988; Fiske & Neuberg, 1990). Because of this emphasis on impression formation, little is known about the relative weight of stereotypes and individuating information when people *change* prior impressions of others.

With respect to the relative role of stereotypes and individuating information, some models suggest that stereotypes dominate the formation of personal impressions. For instance, Brewer's (1988; Brewer & Feinstein, 1999) dual process model and Fiske and Neuberg's (1990; Fiske, 1998) continuum model both maintain that people generally use stereotypes about a social group to make a judgment about a member of that group (stereotype-based processing), only occasionally relying on more complex and specific knowledge about the person (attribute-based processing). Although Brewer's dual process model and Fiske's continuum model differ in their specification of the factors that presumably influence stereotype- and attribute-based processes, they both assume a processing series in which people first identify and categorize a person as a member of a stereotyped group and only later consider individuating information, if at all (Brewer & Feinstein, 1999; Fiske, Lin, & Neuberg, 1999). Thus, these models predict that, in forming a person impression, people will use stereotypes more often than information about individual traits and behaviors.

Although Brewer's (1988) dual process model and Fiske and Neuberg's (1990) continuum model provide important insights into stereotyping, they do not address the relative influence of categorical and individuating information when people change an initial impression about a person. One line of research concerning this issue comes from Kunda and Thagard's (1996) parallel-constraint-satisfaction model. In their account stereotypes and individuating information, rather than being processed serially, are concurrently activated and both reciprocally influence impressions of individuals as well as each other's meaning. Although categorical information receives greater attention early in social interactions, as time goes by, both stereotypes and individuating information have similar influences (Kunda, Davies, Hoshino-Browne, & Jordan, 2003).

A model that appears to further illuminate changes in stereotype-based or individualized judgments over time was recently proposed by Albarracín, Wallace, and Glasman (in press). Their activation-comparison model assumes that the processes by which people initially form a certain judgment are not identical to the processes involved when people need to report a judgment about the same object at a later time. Whereas forming an initial judgment entails evaluating information and integrating that information into an overall judgment, changing a judgment can comprise activating the prior judgment, activating information related to the prior judgment, and comparing the prior judgment with the judgment-related information. Consequently, the extent to which people who spontaneously activate prior judgments change these judgments depends on whether the prior judgments are compared with relevant information (Albarracín, Wallace, and Glasman, in press). Because comparable information will trigger more change than noncomparable information, a person impression based on a social category should

change more as a result of new categorical information than as a result of new individuating information. Thus, an impression based on individuating information should also change more in response to new individuating information than in response to new categorical information. The proposed study aims to examine this prediction.

Understanding changes in person impressions requires an explication of the processes by which people form and revise these impressions. In the following sections, I review Brewer's (1988) dual process model and Fiske and Neuberg's (1990) continuum model, describing each model's assumptions and applicability to judgment formation. I next discuss Kunda and Thagard's (1996) parallel-constraint-satisfaction model and Albarracín, Wallace, and Glasman's (in press) model of activation and comparison, both of which address judgment change. These models share a number of features but differ in others. To facilitate comparison between the models, Table 1 summarizes the implications of each conceptualization.

Models of Impression Formation

Two models have considered the mechanisms underlying the formation of person impressions in *tabula rasa* situations. These models describe the influence of external information without considering prior judgments about a target person.

Brewer's (1988) dual process model

Brewer (1988) proposed a model of person judgment that incorporates top-down processing as well as data-driven constructions. This model is represented in Figure 1, and suggests that people who make a judgment about a target person can rely on either stereotypes or personalized information. In her model, *category-based processing* comprises a “top-down” cognitive activity that leads to categorizing a target individual on

the basis of a previously-formed category schema. Once this categorical processing begins, the activated category acts as a “template,” guiding subsequent awareness, interpretation, judgment, and encoding of incoming information about the target person (Brewer & Feinstein, 1999). In contrast, a *personalized judgment* describes the integration of the incoming information about the target person’s attributes and behavior into an individualized inference about the person in question.

As shown in Figure 1, the processing of information and the formation of a judgment are determined by the perceiver’s motivation to make an accurate judgment of the target person (self-involvement). After the initial information has been encoded (identification level), whether people engage in category-based or personalized judgments is contingent on whether or not forming an impression is important to the perceiver. If forming an impression is not self-involving, people attempt to match the target with a relevant category that the target explicitly or implicitly exemplifies (Path 1). In this situation, if the information about the target is consistent with the characteristics of the category as a whole, people are likely to use the category as a basis for their judgment of the target person. In contrast, when the information of the target is inconsistent with the general characteristics of some (but not all) members of the relevant category, people may divide the category into subclasses, designate the target as representing one of these subclasses, and ultimately base their judgment on the features of the subclass.

For instance, a person who assesses an African-American target as a potential roommate for another person (low involvement) may apply negative stereotypes about African Americans and conclude that the target is an unattractive candidate. However, if the target is African American and goes to Church, the perceiver may conclude that the

target belongs to the sub group of religious African-Americans. Thus, the perceiver is likely to make an impression based on features associated with that subcategory.

Alternatively, if forming an impression is self-involving, individuals are likely to engage in a careful analysis and integration of the individual features, resulting in a personalized judgment beyond the consideration of the target's membership in a social group (Path 2). In our example, the perceiver should judge actual traits and behaviors of the candidate that allow for an evaluation of his or her desirability as a roommate. In sum, according to Brewer's model, people make judgments about other people by relying on the category, the subcategory, or the individuating information (Path 2) (for more details about this conceptualization, see Brewer, 1988; Brewer & Feinstein, 1999). In any case, the category's influence predominates as long as people can apply it in making a judgment and personal involvement is low.

Fiske and Neuberg's (1990) continuum model

In contrast to Brewer (1988), who provided a motivational account of category-based and individualized judgmental modes, Fiske and Neuberg (1990) emphasized the importance of the characteristics of the information people analyze as determinants of their judgment of the target person. Their model appears in Figure 2 and suggests that the initial impression a person makes about a target person begins with a categorization of a target of the basis of either (a) explicit information about the target's membership in the relevant category, which is activated spontaneously, or (b) attributes and behaviors of the target that are associated with the category or its exemplars.

Table 1. Comparisons among Models of Impression Formation and Change

	Dual Process Model Brewer (1988)	Continuum Model Fiske & Neuberg (1990)	Parallel Model Kunda and Thagard (1996)	Activation and Comparison Albarracín et al. (2003)
Description of process	<ol style="list-style-type: none"> 1. Selection of processing mode occurs relatively early in the information-processing sequence. 2. Once the stimulus person is identified as being relevant, processing of incoming information is determined jointly by (a) the self-involvement of the perceiver and (b) the nature of the stimulus information. 3. Category-based and personalized processing occur exclusively through different paths. 	<ol style="list-style-type: none"> 1. Initial categorization occurs regardless of the perceiver's intent. 2. If the target person is interesting or personally relevant, attention to available information (e.g., individuating information) mediates the possibility of response along the remainder of the continuum. 3. Category-based and personalized processing are on a continuum. 	<ol style="list-style-type: none"> 1. Stereotypes, traits, and behaviors are represented as interconnected nodes in a spreading activation network, which is constraint by positive (excitatory) and negative (inhibitory) associations. 2. Impression formation occurs holistically by parallel constraint satisfaction resulting from spreading activation. 3. Stereotypes and individuating information are important as long as they are active. This sometimes occurs later rather than earlier in interactions with the target person. 	<ol style="list-style-type: none"> 1. The processes of impression formation and change are different. 2. Change depends upon the outcome of three processes: (a) recalling a prior impression, (b) recalling or receiving other impression-related information, and (c) comparing the prior impression with impression-related information.
Priority to categorical or individuating information	Definite priority to stereotype-based information.	Definite priority to stereotype-based information.	Relative priority to stereotype-based information at the time of impression formation, but no priority at the time of impression change.	No priority to stereotype-based information.
Impression formation versus change	No distinction between impression formation and change.	No distinction between impression formation and change.	Explains impression change.	Explains impression change.
Moderators to processing	Level of involvement and effort; consistency between the information and the category.	Outcome relevance, accountability, fear of invalidity, and self-esteem threats.	Attention to and availability of categorical or individuating information in memory, and motivation.	Prior-attitude accessibility; comparative cues and motivation.
Distinction between automatic and controlled processing	Automatic processing (initial categorization) first, controlled processing (either confirmatory categorization or personalized processing) later.	Automatic processing (initial categorization) first, controlled processing (personalized integration) later.	Most of the time, automatic processing occurs and prevails. Controlled processing occurs later if necessary.	Occurrence of either automatic or controlled processing depends upon (a) cognitive ability and (b) motivation.

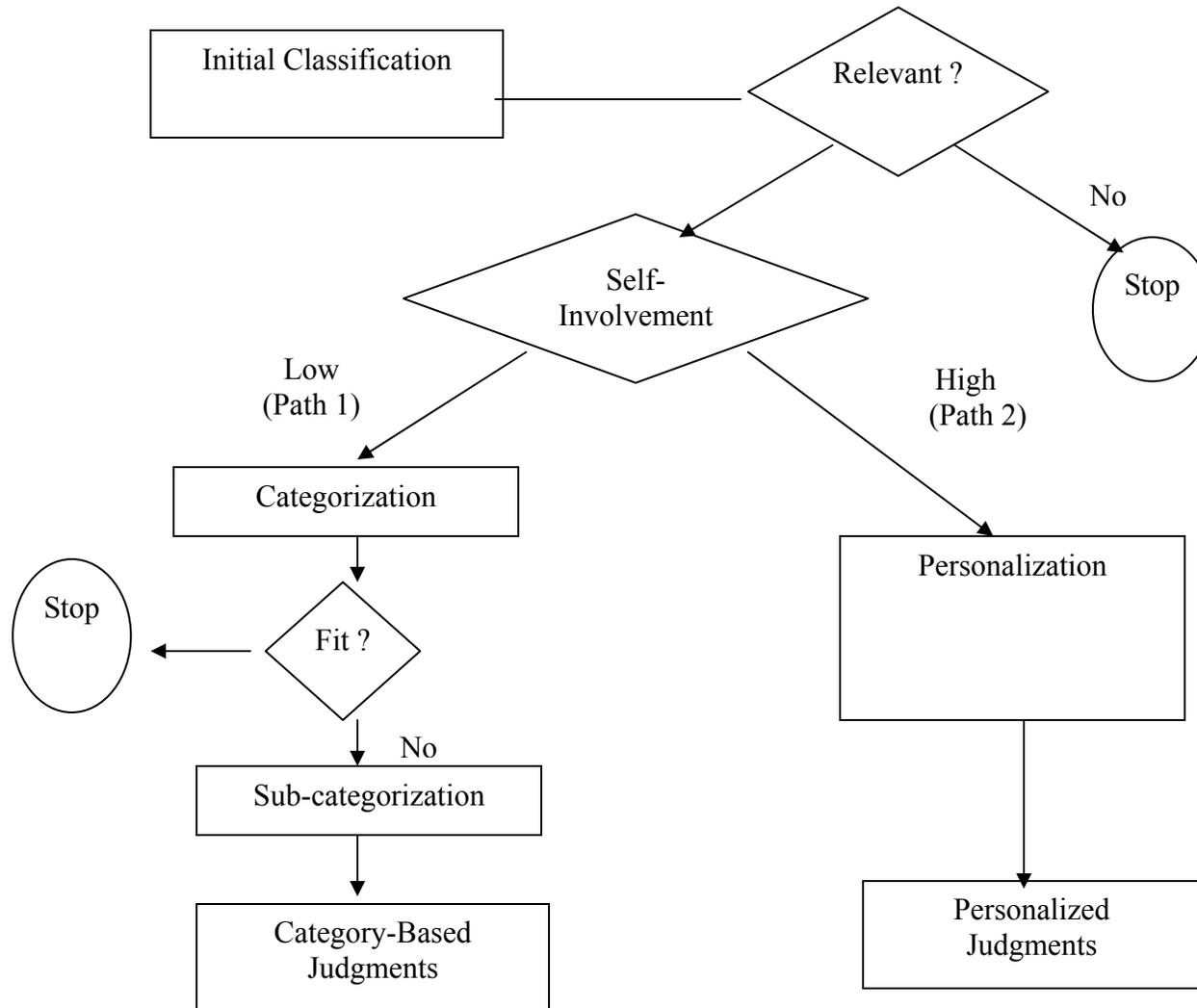


Figure 1. Dual Process Model (Brewer, 1988). After initial classification, either category-based or personalized judgments occur based on (a) self-involvement and (b) nature of information.

Significantly, the perceiver's motivation affects whether individuals make more *category-oriented* or more *piecemeal, personalized judgments*. For example, the relevance of the outcome, accountability, fear of invalidity, and threats to self-esteem can all encourage attribute-based processing (for more details, see Fiske, 1988, 1998; Fiske & Neuberg, 1990; Fiske, Lin, & Neuberg, 1999).

When individuals are not alerted by such motivations, they are more likely to use category-based processing. When perceivers assign the target person to a category and when individuating attributes of the target are compatible with the category, perceivers generally make an evaluation of the target on the basis of their liking of the category as a whole, ignoring the implications of the individuating information about the target. In contrast, when perceivers cannot assign the target person to a preexisting social category or the assignment results in inconsistencies with the target's other attributes, people are likely to engage in "piecemeal" processing. That is, they integrate the implications of the target's individual attributes into a final judgment that sidesteps the categorical information.

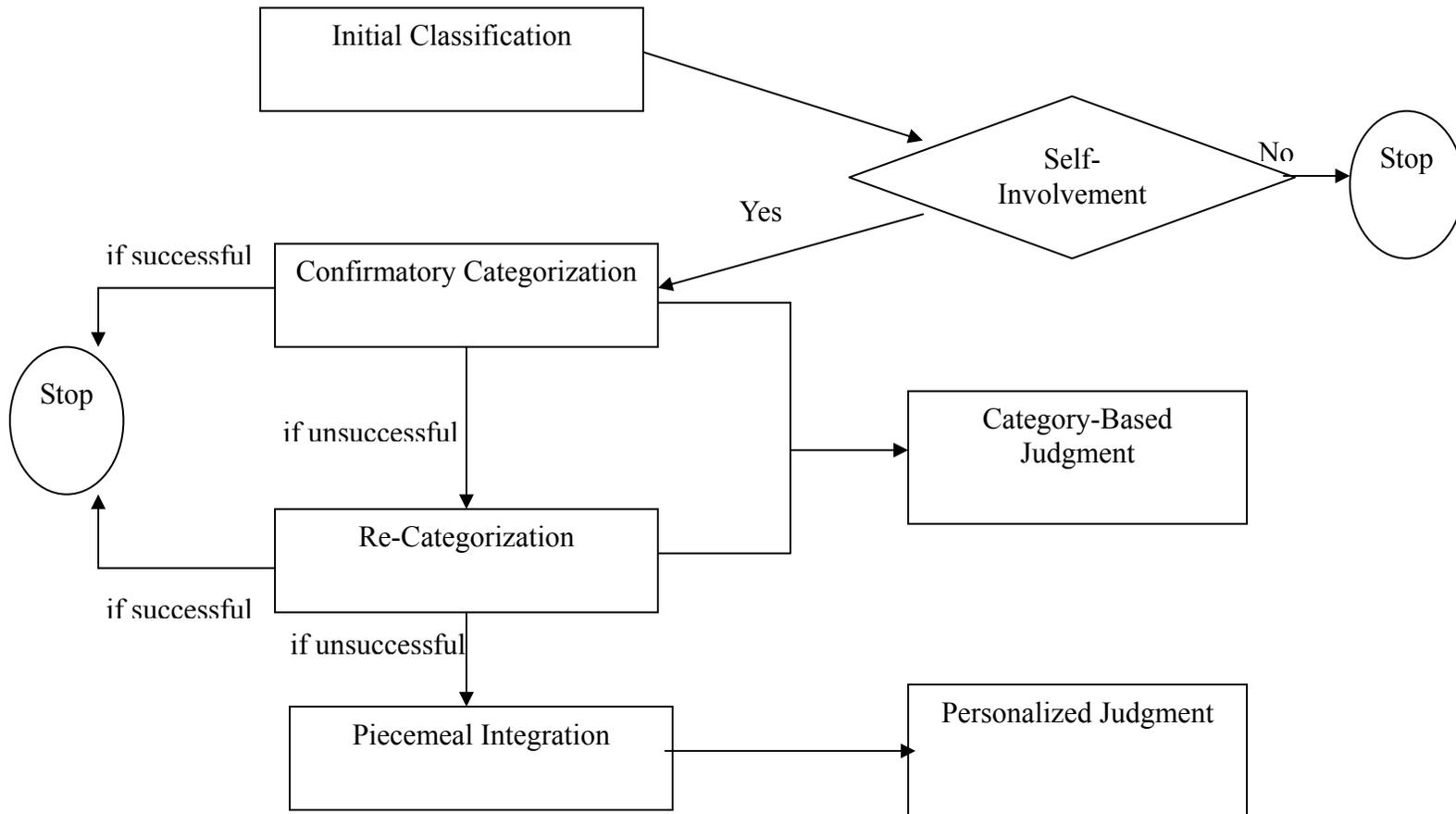


Figure 2. Continuum Model (Fiske & Neuberg, 1990). After initial classification, categorization and piecemeal integration occur based on (a) a condition of information and (b) motivation of a perceiver.

Summary of the implications of models of impression formation. Brewer's (1988) dual process model and Fiske and Neuberg's (1990) continuum model share some basic assumptions. Both distinguish between category-based processes, which result in impressions dominated by stereotypes, and attribute-based processes, which result in judgments dominated by individuating information. The two models are serial because they assume that people first identify and categorize the target person as a member of a stereotyped group. Although people often stop at this point, they can move to attribute-based or personalized impressions provided that they are motivated to gain a deeper understanding of the target or that they cannot readily reconcile the person's attributes or behaviors with the stereotype they activated. Both models assume that stereotypes play a primary role in person judgments (Fiske, Lin, & Neuberg, 1999; Kunda, 1999).

Because Brewer's (1988) and Fiske and Neuberg's (1990) serial models do not specify a role for prior impressions about a target, it seems likely that their predictions apply to the formation of impressions rather than impression change. That is, people who receive initial information about a target person should use categorical information to a greater extent than individuating material. This greater influence of the categorical information should be particularly likely when people have low involvement with the target or the decision to be made and when the individuating and categorical information do not conflict.

Hypothesis 1: When people form judgments about the same target person for the first time, they rely on stereotypes more than on individuating information provided that their involvement is low and that the individuating information confirms the stereotype.

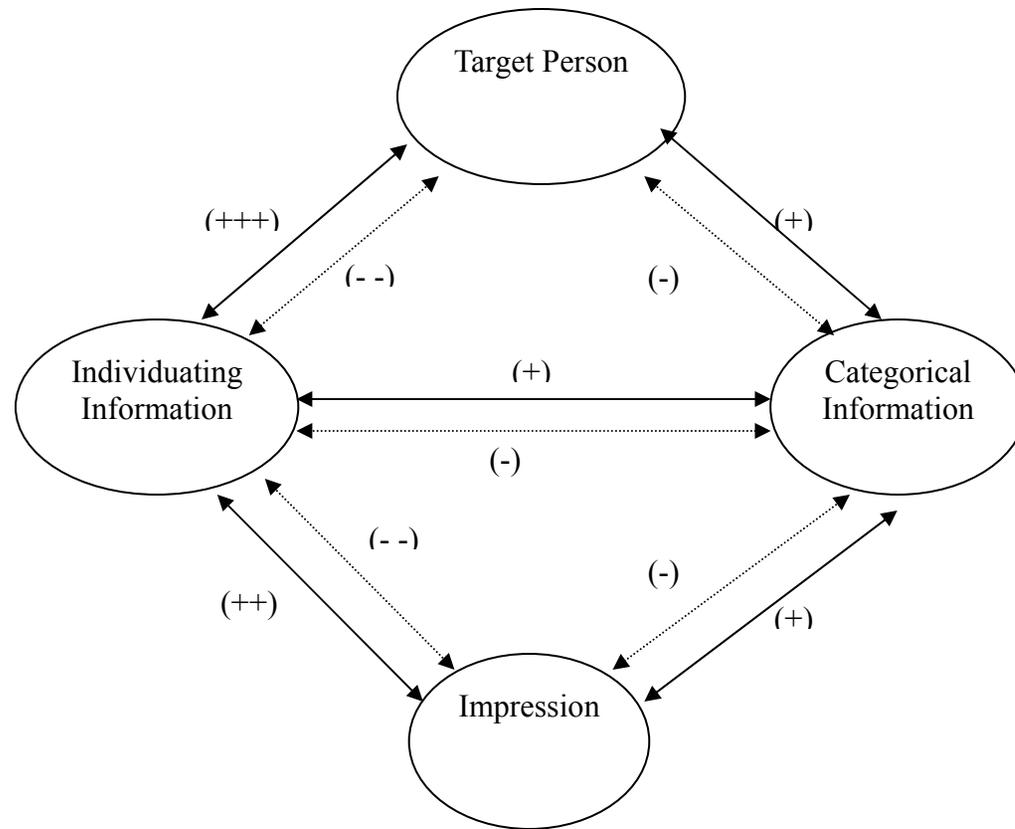


Figure 3. Parallel-Constraint-Satisfaction Model (Kunda & Thagard, 1996). Impression formation occurs holistically by parallel constraint satisfaction in which individuating and categorical information are constraint to each other's meaning. (+) or (-) represents strength of the connection, dashed lines represent a negative association (inhibited) between nodes, and solid lines represent a positive association (activated) between nodes.

Models of Impression Change

Kunda and Thagard's (1996) parallel-constraint-satisfaction model.

In contrast to the previous serial models, Kunda and Thagard's (1996) model assumes that impression formation occurs holistically by satisfaction of parallel constraints performed by spreading activation networks (see figure 3). As a result, one's final impression of a target person will depend on the relative strengths of direct positive and negative associations with the information about the target (either categorical or individuating), and the strengths of associations with other nodes in the network (e.g., stereotypes). Furthermore, the model posits that impression formation is context-driven. Therefore, even though the perceiver's preexisting knowledge networks might lead to a category-based impression of the target person at any given moment, later impressions of the same person can change based on new individuating information.

Consider the task of employees at a roommate matching company who must rate each applicant based on various pieces of information including his or her ethnicity. When the roommate-matcher forms a first impression, the applicant is likely to seem more desirable if the application form denotes Caucasian ethnicity than if it denotes African-American ethnicity. However, later judgments about the same applicant might change if the employee receives further written information or interviews the applicant in person.

Kunda and her colleagues (2003) provided support for changes in category-based first impressions. They showed that stereotypes dominate first impressions when people only have categorical information about a given target. Over time, however, individuating features of the target are likely to contribute just as much to impressions. To this extent,

the relative influence of stereotypes versus individuating information can change even in the absence of changes in self-involvement or in the consistency between the individuating information and the stereotype.

Hypothesis 2: When people change prior judgments, individuating information has similar weight to stereotypes that also apply to the target person.

Summary of implications of Kunda's model in relation to Brewer and Fiske and Neuberg's models. There are many areas of agreement between the serial models of stereotyping and Kunda and Thagard's (1996) parallel model. For one thing, all three conceptualizations predict that stereotypes dominate impressions when people do not notice individuating information. Moreover, all three models agree that stereotypes dominate impressions when people become aware of them before they notice individuating information, as when people first find out about a person's gender, race, or profession, and later learn about the person's traits or behaviors. The models diverge, however, in their predictions about what happens when both stereotypes and individuating information are available at the same time. Brewer and Fiske and Neuberg's models assume that category-based and individualized processes are mutually exclusive. People will first judge target individuals through the lenses of their salient stereotypes, and analyze individuating behaviors or traits only when they are especially interested in the person or they cannot reconcile the individuating information with the stereotype. In contrast, Kunda and Thagard's parallel-constraint-satisfaction processing model maintains that the stereotype and the individuating behaviors can influence person impressions simultaneously (Kunda et al., 2003).

Albarracín, Wallace, and Glasman's activation/comparison model

In contrast to models that do not make a clear distinction between formation and change, Albarracín, Wallace, and Glasman (in press) argued that when people have prior judgments of an object, the transformation or maintenance of these judgments depends on three processes: activation of prior judgments, activation of judgment-related information, and comparison between the two. Judgments made at two points of time may, of course, be different because people construe them afresh each time and use different sets of information on different occasions. However, when a prior judgment such as a person impression is activated, change can only occur when people compare that impression with other information about the target.

Comparison processes can elicit changes in prior judgments even when the relevant information is consistent with the prior judgment. People who receive information that supports their earlier attitude are likely to become more confident and extreme in their position, provided that they perceive both elements as sound or subjectively valid (e.g., Treadwell & Nelson, 1996). For example, one's prior judgments about an applicant for roommate matching may agree with the judgment of another service provider. As a result of this attitude-confirming comparison, one may even more confidently view one's judgment as "twice as valid". In contrast, people who activate their prior judgment along with strong but conflicting judgment-related information are likely to develop a new attitude that falls somewhere between a position based solely on the activated prior attitude and one based solely on the attitude-related information. In these situations, people's current attitude should be less extreme than at least one of the two elements.

One aspect that will increase the likelihood of attitude comparison is the extent to which the new information is ‘comparable’ to the prior judgment. In our example, the roommate matcher may form his/her first impression of the applicant based on either categorical information (e.g., “the applicant is Asian”, “the applicant is African American”) or individuating information (e.g., “the applicant can clean up for his roommates”). When the matcher considers the applicant’s information several times, the comparability of the prior impression and the new information determines change. Thus, a category-based impression may change more when the level of the first information set matches the level of the second set. Consequently, stereotype-based impressions should change more in response to new categorical information, whereas individualized judgments should change more in response to new information about the individual’s traits or behaviors. In contrast, the initial impression may survive to a greater extent when the service provider made his/her first impression based on the applicant’s ethnicity (e.g., Asian) but the new information is individuating.

Hypothesis 3: When people change prior judgments that are highly accessible, new counter information that matches the level of the first information set will increase the likelihood of change. Thus, stereotype-based judgments will change more after exposure to new categorical information, and individualized judgments will change more in response to new individuating information.

The activation/comparison model in light of Brewer’s, Fiske and Neuberg’s, and Kunda and Thagard’s models. Prior models of stereotyping have assumed that stereotypes act as anchors for people's judgment's about a target. Brewer’s (1988) and

Fiske and Neuberg's (1990) models assume that categorical information works as a supporting frame for forming an impression of another person. They, along with Kunda and Thagard (1996), recognize that, as time goes by, perceivers may become more involved with the target person or encounter inconsistencies between the categories and the individuating information. Therefore, individuating information should also contribute to later impressions taking precedence over the categorical information as suggested by serial models or coexisting with it as implied by the parallel-constraint-satisfaction model.

In contrast to Brewer's (1988), Fiske and Neuberg's (1990), and Kunda and Thagard's (1996) conceptualizations, the activation-comparison model incorporates an explicit distinction between attitude formation and change: Change in judgments cannot be predicted without taking into account the dynamics of the prior judgment at the time a present judgment is made. If the new, judgment-related information is evaluatively inconsistent with the prior attitude, people will maintain their prior judgment when they activate it and do not engage in comparison processes. In contrast, people will change their prior judgments if they compare the prior attitude and the new information, and also if they form a new judgment online without activating the prior one. Therefore, given an accessible prior judgment that people spontaneously activate, anything that facilitates comparison, including the similarity of the information available at different times, will trigger change.

The Present Research

The present research had the objective of testing the aforementioned hypotheses about impression formation and change. For this purpose, a group of participants were

asked to judge a fictitious target person as a potential roommate. Some participants were presented with both categorical and individuating information in the form of an application for a roommate-matching service. The application revealed that the male applicant belonged to organizations that strongly implied either African- or European-American ethnicity. The application also contained a brief description of the candidate's expectations, and behaviors that were either desirable (the candidate will cooperate with cleaning) or undesirable (the candidate expects the roommate to drive him to campus). Because the participants evaluated roommates for other people, we expected the task to be low in self-involvement, giving stereotypes more potential significance. This condition served to verify whether, when forming impressions, uninvolved participants weighed categorical information more heavily than they did individualized descriptions of the target's expectations and behaviors (Hypothesis 1).

Participants initially received either categorical or individuating information. The presentation of either categorical or individuating information served to generate conditions in which first-time judgments were based exclusively on one or the other form of information. Later, participants received new information about the target person, which countered the valence of the first set of information at either the same or a different level (categorical or individuating). Moreover, the new information was presented after a brief delay, ensuring that the initial attitude was still accessible (see Hypothesis 3). Recipients given *matching conditions* received new information of the same type they did before (either categorical or individuating). Recipients given *mismatched* conditions received new information of a different type (categorical for individuating and vice versa). These conditions allowed us to analyze the relative effect of the comparability of

the information on the attitude toward the target person when people received the information simultaneous with forming an impression, as opposed to situations in which the information was presented at different times and two subsequent judgments were reported (Hypothesis 1 and 3). In addition, these conditions permitted an examination of whether individuating information had a greater weight as time went by (Hypothesis 2).

METHOD

Overview

In the proposed experiment, participants were informed that we were interested in how people select roommates. In the first part of the session, we told them to imagine that they work for a roommate matching service and to examine an applicant's profile. Then, participants reviewed one of six sets of information about a target person.¹ Four of the sets contained both categorical and individuating information at Time 1 (simultaneous presentation), whereas the other two sets contained only positive categorical or positive individuating information at Time 1 (longitudinal presentation). We then measured participants' impressions of the target person. After a short delay, participants in longitudinal presentation conditions were told that they would receive more information about the same target person. The longitudinal participants were presented with negative information, which countered the first positive information set. Half of these participants received counter-information at the same level: if they had previously received positive categorical information at the first time, they got negative categorical information and if they had received positive individuating information, they were given negative

¹ We conducted a pilot study in which all the possible eight information conditions – 2 (positive vs. negative information) x 2 (categorical vs. individuating information) x 2 (control vs. experimental condition) – were manipulated to participants. Because we found a general negativity bias but did not find a significant difference of the order effects on impression changes in the experimental conditions, however, we manipulated a set of positive-first and negative-second information condition only in the presented experiment for the sake of simplicity.

individuating information. Accordingly, the other half got negative information at a differing level: if they initially received positive individuating information, they received negative categorical information and vice versa as well. After reading the second set of information about the target person, participants reported their person impressions one more time.

Participants and Design

One hundred and five undergraduate students taking psychology courses participated in the study in exchange for course credits. Each student was randomly assigned to one of eight conditions (four simultaneous presentation controls and four longitudinal presentation experimental conditions) with approximately 10 participants each. The control design was one time 2 (Direction of the categorical information set: positive vs. negative) \times 2 (Direction of the individuating information set: positive vs. negative) factorial. The experimental design was 2 (Time: first vs. second measure) \times 2 (Types of information at Time 1: categorical vs. individuating) \times 2 (Level of information at Time 2: same vs. different) factorial.

Procedures

Control Group Procedures

Participants were told to imagine that they are employees at “Roommate Matchers,” the company that offers roommate-matching services. Under this pretense, they read the ostensible application of someone who was previously matched using standard techniques and were asked to make judgments about the applicant on a number of dimensions. The four control groups received categorical and individuating information simultaneously. According to the experimental design, in which control

groups serve as a baseline for impression formation, there were four different forms that contained (a) positive categorical information with positive individuating information, (b) positive categorical information with negative individuating information, (c) positive individuating information with negative categorical information, or (d) negative individuating information with negative categorical information. The order in which the information was presented was counterbalanced.

Experimental Group Procedures

Using the same pretense as in control conditions, experimental participants were randomly assigned to one of two types of initial information: (a) positive categorical information and (b) positive individuating information. After reading the first information, participants rated the target person. Following the first rating, participants completed various individual difference scales that had the purpose of introducing temporal distance between the first and second sets of information. Then, they reviewed a second application form about the same candidate containing new information that could be either categorical or individuating. This information always countered the evaluative implications of the first set, being negative because the prior information was positive. Participants then rated the applicant again, performed a lexical decision task, and also filled out a scale to measure prejudice.

Stimuli

All information about the target was presented as part of an application form. As can be seen from Appendix B, the application form contained four sections. The first section described the person's characteristics and included the categorical information of relevance to our manipulation. The first four sections covered the applicant's gender and

age along with other filler information. Half of the stimuli forms indicated that the candidate belongs to the Black College Student Club; the other half noted that the candidate belongs to a predominantly Caucasian fraternity on campus (i.e., Phi Delta Theta). For positive-individuating information conditions, the applicant was quoted as ostensibly writing: “I am willing to do most of the cleaning as well as some laundry for my roommate”. In negative-individuating materials, the target person was quoted as writing: “I prefer a roommate who can drive me to school as well as grocery shopping.” These two comments should favor a positive and a negative evaluation of the candidate respectively. The second (and third) section of the application form described the applicant’s roommate preferences that, in all conditions, implied no gender or ethnic preferences.

Dependent Measures

We measured impressions of the applicant as well as the accessibility of these impressions. We also measured stereotype activation as well as various individual differences related to cognitive processing and stereotyping. Impressions were measured twice in experimental conditions, and once in control conditions.

Impressions

Participants rated the roommate applicant along scales ranging from 1 to 10 (*not at all likable vs. very likable; a bad choice for a roommate vs. a good choice for a roommate; not at all pleasant vs. very pleasant; a bad match for a roommate vs. a good match for a roommate*). Four scale items were averaged and used as a summary index of impressions ($\alpha = 0.91$ at Time 1 and $\alpha = 0.96$ at Time 2).²

² Participants will also report their impression confidence by answering three

Impression Accessibility

To measure impression accessibility, the computer registered the time participants took to report their impression of the applicant. The time they spent responding to the four attitude scales was measured in milliseconds and averaged as an overall accessibility index. This measure was used to exclude participants whose initial attitudes are low in accessibility (see Hypothesis 3).

Individual Differences to Create the Time Interval

The questionnaire used between the first and second judgments in experimental conditions included personality measures that have been found to correlate with the processing of social information. These measures were also included in control conditions at the end of the study. Specifically, we measured the need for cognition, the need to evaluate, the need for closure, and defensive confidence. The *need for cognition scale* (Cacioppo, Petty, Kao, & Rodriguez, 1986) measured chronic motivation to analyze information in an effortful fashion. Agreement with items like “I would prefer complex to simple problems” resulted in higher need-for-cognition scores. Agreement with statements like “Thinking is not my idea of fun” yielded low need-for-cognition scores.

The *need-to-evaluate scale* (Jarvis & Petty, 1996) measured the degree to which a person was inclined to form evaluative judgments. Jarvis and Petty (1996) used the scale to predict attitude strength, measured by the number of non-neutral responses to attitude questions. Agreement with items like “I would rather have a strong opinion than

items. They will first judge the extent to which they are certain about their attitudes about the candidate using a scale from 1 (*not at all*) to 10 (*very*). They will also report whether they have an attitude about the target person using the same scale. We will reverse-score the third item, and average the three items to create a single index of attitude confidence for each participant. This measure will be used to verify that impressions are equally

no opinion at all” yielded a high total score. Agreement with statements like “I am pretty much indifferent to many important issues” resulted in a low need-to-evaluate score.

We used the *defensive-confidence scale* (Albarracín & Mitchell, 2003) to assess participants’ beliefs in their ability to self-defend their attitudes. The scale included items such as “I am unable to defend my own opinions successfully” or “When I pay attention to the arguments proposed by people who disagree with me, I feel confused and cannot think.”

In these first three measures, participants responded to the items by providing their judgment on a scale from 1 (*not at all characteristic of me*) to 5 (*extremely characteristic of me*). We obtained a summary measure for each scale by reversing relevant items.

The *need-for-closure scale* (Webster & Kruglanski, 1994) was used to measure intolerance for uncertainty and desire for structure. The scale included 42 items such as “I think that having clear rules and order at work is essential for success” or “I don't like situations that are uncertain.” Participants were asked to report agreement with these items on a scale from 1 (*strongly disagree*) to 6 (*strongly agree*), and we also obtained a summary measure after reversing relevant items.

Individual Differences in Prejudice

At the end of the study, we administered Lepore and Brown's (1997) *prejudice scale* consisting of 15 items, such as “I consider our society to be unfair to Black people,” and “If people move to another country, they should be allowed to maintain their own traditions.” Participants responded to these items on a scale from 1 (*strongly disagree*) to

confident across experimental conditions.

7 (*strongly agree*). We obtained the sum of responses to these items as an overall index of prejudice after reverse-scoring relevant items. This scale was used to exclude participants who were low in prejudice, because retaining those participants might introduced prejudice correction and could thus obscured the effectiveness of the manipulation of categorical information (see Cobb, 2002; Devine, 1989, Lepore & Brown, 1997; Rosenthal & Rosnow, 1991).

Manipulation Checks

We measured *recall of the information contained in the application*. Participants were asked to report the age, gender, and the ethnic group of the applicant. We used this information to verify that the stimuli induced the ethnic group perceptions as we expected. To decide whether the individuating information was perceived as intended, we asked participants to report the personal expectations of the applicant stated in the application. These open-ended responses were coded to indicate the effectiveness of our manipulation of the direction of the individuating information.

In addition, *stereotype activation* was measured using a lexical-decision task in which participants indicated whether a given letter string is a word or a non-word (e.g., athletic, crime, huews, etc.). The average time to respond “yes” to words reflecting African-American stereotypes (e.g., athletic) compared to the time to identify words that were unrelated to the stereotype was used as an index of stereotype activation.

Data Analysis

Several types of analysis are used to evaluate each hypothesis with the data from the control groups and experimental groups. Following is a brief explanation of the manipulation checks and these analyses.

Manipulation Checks

General influence of positive and negative information on attitudes

In general, we expected that participants would have more positive attitudes when they received positive rather than negative information. This pattern would be verified with Time 1 attitudes by means of simple effects comparing the influence of categorical and individuating information.

Recall of application information

In order to test the effectiveness of the experimental manipulation, we analyzed the recalled information about the candidate as a function of information type and direction. We expected more categorical information to be reported when participants received categorical information, and more of individuating information to be reported when participants received individuating information. In addition, the positivity or negativity of the recalled information should be a function of whether we presented positive or negative information.

Stereotype activation

We analyzed the data to verify whether the categorical information had the expected influence on spontaneous activation of stereotypes. Specifically, we performed a 2-way analysis of variance in which the type of information (categorical vs. individuating) and type of stimulus strings (stereotypic vs. non-stereotypic) were two independent variables, mean reaction time to correctly identify words was the dependent variable. If the categorical information (i.e., target person as African American) evoked stereotypic beliefs about the target applicant, words associated with the African-American stereotype would have shorter response times than words without such associations.

Analyses of Experimental Hypotheses

Hypothesis 1

When people form judgments about a target person for the first time, they rely on categorical information more than on individuating information. To assess the impact of categorical over individuating information, we conducted a 2×2 ANOVA, in which the type of information (categorical vs. individuating) and direction of information (positive vs. negative) were independent variables and impression was the dependent variable. The ANOVA analysis was performed with the control groups. For the control groups, if Hypothesis 1 were plausible, we expected that the data patterns would resemble the fictitious data in Table 2, which are depicted in shaded cells. That is, we should observe a type of information × direction interaction, implying that the difference between positive and negative information was greater when the information was categorical than when it was individuating.

Table 2. Predicted Impressions Attitudes in Control Conditions (Time 1 Only)

	Categorical		
Individuating	Positive	Negative	Difference
Positive	7	4	3
Negative	6	3	3
Difference	1	1	

For the experimental groups at Time 1, in which either positive categorical or positive individuating information was given, we performed an independent t-test. For the experimental groups, because of the dominant role of categorical information and extremity of its influence, we expected the positive categorical information condition to

have higher impressions than positive individuating information condition shown as shaded cells in Table 2 as well.

Hypothesis 2

When people change their prior judgments about a target person, individuating information has similar significance to categorical information. To determine whether the influence of individuating information increased over time, we compared the effects of categorical and individuating information across control and experimental conditions. The ideal design is depicted in Table 3.

Table 3. Predicted Impressions as a Function of Information Type, Information Direction, and Condition/Time of Measurement

Formation (Time 1 or control conditions)			
	Categorical		
Individuating	Positive	Negative	Difference
Positive	7	4	3
Negative	6	3	3
Difference	1	1	
Change (Time 2 in experimental conditions)			
Positive	7	4	3
Negative	4	1	3
Difference	3	3	

However, our design only included conditions in which the directions of the categorical and individuating information conflict (shaded cells in Table 3). If

individuating information has greater influence on impression change than formation situations, the difference between positive and negative individuating information should be greater in experimental than control conditions.

To test the predictions in Table 3, we analyzed impressions at Time 1 in control conditions and impressions at Time 2 in experimental conditions. These measures were assessed as a function of the type of information (categorical vs. individuating) and conditions (formation or control vs. change or experimental conditions) by means of an analysis of variance. The expected pattern would be reflected in a significant interaction between the type of the information and the conditions. That is, we expected that there would be a greater difference between individuating and categorical information at Time 1 in control conditions than at Time 2 in experimental conditions. Further, this pattern should not be a function of the order of presentation of the information in control conditions, a factor not depicted in Table 3 for the sake of simplicity.³

Hypothesis 3

When people change their prior judgments, new counter information that matches the first information increases the change. To assess the impact of the matching manipulation on impression change while controlling for pre-manipulation judgments, we computed change scores by subtracting the first judgments following the presentation of the first information set from judgments following the presentation of the second information set in experimental conditions (Wallace & Albarracín, 2003). These change scores were analyzed as a function of the type of information at Time 1 (categorical vs.

³ Supplementary analyses comparing Time 1 and Time 2 attitudes within experimental conditions will also be conducted. However, these analyses are less informative because they confound time with the amount of information available.

individuating information) and the level of information at Time 2 (same vs. different) using a 2×2 ANOVA. The predicted effect is illustrated in Table 4, and corresponds to a significant 2-way interaction. We expected this two-way interaction in turn would reflect greater change in matching than mismatched conditions, with the direction of the change following the direction of the information received at Time 2.⁴

⁴ There is a general bias, based on both innate predispositions and experience, to give greater weight to negative than positive information (Ito, Larsen, Smith, & Cacioppo, 1998; Lupfer, Weeks, & Dupuis, 2000; Rozin & Royzman, 2001). That is, when positive and negative information are both available, people evaluate an object or a person more negatively even though two pieces of information are equally extreme. As a result, change should be greater when the second set of information is negative than when the second set of information is positive. For simplicity, this supplementary prediction is not displayed in Table 4. Nevertheless, this bias does not compromise our predictions.

Table 4. Predicted Change in Impressions as a Function of Information Type and Direction at Each Point in Time

Information Type and Direction at Time 1	Information Type at Time 2		
	Categorical	Individuating	Difference
Categorical at Time 1			
Positive	-3	-1	-2
Negative	3	1	2
Difference	-6	-2	
Individuating at Time 1			
Positive	-1	-3	2
Negative	1	3	-2
Difference	-2	-6	

RESULTS

Participants

One hundred and five undergraduate students participated in the experiment in exchange for credit. Participants were randomly assigned to each of four control and four experimental conditions. The mean age of participants was 18.82 years ($SD = 1.20$), and the average length of university enrollment was one and half years ($SD = 0.88$).

Manipulation Checks

General influence of positive and negative information on attitudes in the experimental condition

The present study tested the hypothesis that people who receive counter information about a person they have previously judged change their first impressions more when the counter information is at the same level as the initial information they received (i.e., categorical followed by categorical and individuating followed by individuating) than they do when the information is at a different level (i.e., categorical followed by individuating or individuating followed by categorical). This prediction assumes that the positive and negative information that we manipulated as so induces impressions about the target applicant that are positive and negative respectively.

In order to test whether the positive and negative information elicited different impressions about the applicant, we analyzed the impressions reported in response to positive (Time 1) and negative information (Time 2) in experimental conditions. In

general, we expected that participants would have more positive attitudes when they received positive rather than negative information. The overall ratings of positive and negative information are shown in Table 5. Consistent with our expectations, participants reported a more positive impression at Time 1, when they received positive information (Time 1; $M = 6.90$, $SD = 1.44$) than at Time 2, when they received negative information (Time 2; $M = 5.92$, $SD = 1.89$), $F(1, 48) = 23.16$, $p < .001$. Moreover, the lack of difference across categorical and individuating information at Time 1 suggests that both types of information elicited similarly positive impressions about the target applicant among participants ($M = 6.74$, $SD = 1.49$ vs. $M = 7.05$, $SD = 1.39$, for categorical information and individuating information at Time 1, respectively); $F(1, 48) < 1$, *ns*. Time 2 impressions of the negative targets, however, were more positive when the information was categorical than when it was individuating ($M = 6.45$, $SD = 1.31$ vs. $M = 5.39$, $SD = 2.27$, for categorical information and individuating information, respectively); $F(1, 48) = 9.64$, $p = .003$. Although compared to the 5.5 mid point of the scale, 5.39 appeared to be only neutral, $t(51) = 1.41$, $p = .17$, this difference suggests that the individuating information was more effective than the categorical descriptions of the targets.¹

¹ As another way of checking the effectiveness of our manipulation of information direction, we compared impressions in experimental conditions with impressions in control conditions in which *two* pieces of categorical and individuating information were presented simultaneously. We assumed that receiving two pieces of counter-information (control conditions) would lead to more neutral impressions than receiving a single piece of information that is positive (experimental conditions). Moreover, receiving two pieces of information of the same valence or direction would lead to a more extreme impression. An analysis of impressions in control conditions (see Appendix A) revealed that, across all control groups, participants rated the applicant as relatively positive ($M = 6.81$; $SD = 1.51$). This rating, however, did not differ from that of experimental participants who received only positive information at Time 1 ($M = 6.81$, $SD = 1.51$ vs. $M = 6.89$, $SD =$

Table 5. Mean Impression Ratings of Applicant as a Function of Direction and Type of Information (Hypothesis 1): Experimental Groups

Type of Information		Direction of Information (Time)	
		Positive (Time 1)	Negative (Time 2)
Categorical Information	<i>M</i>	6.74	6.45
	<i>SD</i>	1.49	1.31
	<i>N</i>	25	24
Individuating information	<i>M</i>	7.05	5.39
	<i>SD</i>	1.39	2.27
	<i>N</i>	27	28

Recall of application information

To further test the effectiveness of our information manipulation, we analyzed participants' recall of applicant information. Specifically, we asked participants to recall the applicant's (a) comments/requests, (b) gender, (c) race, and (d) club/fraternity activities that participants read on each form. These data appear in Table 6.

In experimental conditions, most participants (51 out of 52 participants) correctly recalled the applicant's gender, which was explicitly indicated on the application. With respect to race, which was not mentioned in the application, only 17% of the participants

1.44, for control group conditions and Time 1 in experimental group conditions, respectively.); $F(1, 103) < 1$, *ns*. Although this finding casts doubt of the effectiveness of the negative information about the applicant, the mean impression in control conditions was significantly different from that of experimental participants who received negative information at Time 2 ($M = 6.81$, $SD = 1.51$ vs. $M = 5.92$, $SD = 1.89$, for control group conditions and Time 2 in experimental group conditions, respectively.); $F(1, 103) = 6.86$, $p = 0.01$. Thus, the data suggest that when participants received two pieces of counter-information simultaneously, their impression was as positive that based on a single piece of positive information.

(9 out of 52) correctly recalled that the applicant's race was not identified on the application, and 44% did not remember. Interestingly, however, 20 participants incorrectly reported that the applicant's race was identified: Twelve participants reported that the applicant was European American, and eight of them reported that the applicant was African American.

Table 6. Summary of Participants' Recall of the Applicant's Information

	Participants (%)	
	Control Groups (<i>N</i> = 53)	Experimental Groups (<i>N</i> = 52)
Gender		
Male	98	98
Female	2	2
Race		
European American	25	23
African American	21	15
Not Identified	19	17
Do Not Remember	36	44
Comments/Requests		
Free Ride	16	8
Laundry & Cleaning	4	16
Do Not Remember	4	16
Others (e.g., Non-smoking, Rent, etc.)	60	24
No Response	16	36

Participants in control conditions, showed the same pattern as in experimental conditions. About 19% of the participants (10 out of 53) recalled correctly that the applicant's race was not identified on the application, and 36% of the participants (19 out of 53) could not remember. Like in experimental conditions, however, a nontrivial

number of control conditions recalled the applicant's race based on the information they received even when race was never reported in the application form. Among twenty-four participants who made recall errors, thirteen participants reported that the applicant was European American, and eleven that he was African American.

An analysis of the intrusion errors in control conditions, which appear in Tables 7 and 8, indicated that all incorrect reports of European-American ethnicity occurred when the application mentioned involvement in the traditionally White fraternity (conditions of positive categorical information), reported that the applicant was European American in all cases. In contrast, participants who received inconsistent categorical information (experimental conditions) were equally likely to misreport European or African American ethnicity. A statistical analysis of these data across all conditions confirmed these patterns; $\chi^2(1) = 15.04, p = .001$.

Table 7. Number of Participants Who Recalled the Applicant As European American

Individuating Information		Categorical Information	
		Positive	Negative
Control Groups			
Positive	<i>N</i>	7	0
Negative	<i>N</i>	5	1
	Total	12	1
Type of Negative Information at Time 2			
Type of (Positive) Information at Time 1	Categorical		Individuating
Experimental Groups			
Categorical	<i>N</i>	1	4
Individuating	<i>N</i>	3	4
	Total	4	8

Table 8. Number of Participants Who Recalled the Applicant as African American

Individuating Information		Categorical Information	
		Positive	Negative
Control Groups			
Positive	<i>N</i>	0	3
Negative	<i>N</i>	0	8
	Total	0	11
		Type of Negative Information at Time 2	
Type of (Positive) Information at Time 1		Categorical	Individuating
Experimental Groups			
Categorical	<i>N</i>	1	1
Individuating	<i>N</i>	1	5
	Total	2	6

Stereotype activation

To further test the effectiveness of our experimental manipulations, we analyzed the mean time participants took to respond to word or nonword strings in the lexical decision task. We expected that negative categorical information could activate African American stereotypes and, hence, negative impressions of the target. If the negative categorical information had produced these effects, participants who received negative categorical information should have responded “yes” to African American stereotypical word strings (e.g., “athletic”, “crime”, “violent”, etc.) more quickly than participants who received positive categorical information. To examine this hypothesis, the mean response time for nonstereotypical word strings was subtracted from the mean response time for stereotypical word strings. Thus, smaller numbers imply greater activation of the African-American stereotype. The results for each condition appear in Table 9. Contrary to our

expectations, in the control conditions, the difference score of participants who received negative categorical information was not significantly different from that of participants who received positive categorical information ($M = 336.85$ millisecond., $SD = 625.54$ millisecond., vs. $M = 290.54$ millisecond., $SD = 428.03$ millisecond., for positive categorical information and negative categorical information, respectively); $F(1, 49) < 1$, *ns.* (see first section of Table 9). Similarly, the difference score of participants in experimental conditions who received negative categorical information at Time 2 was not significantly different from that of participants who received positive categorical information at Time 1 ($M = 351.56$ millisecond., $SD = 408.58$ millisecond., vs. $M = 378.76$ millisecond., $SD = 453.59$ millisecond., for positive categorical information at Time 1 and negative categorical information at Time 2, respectively); $F(1, 47) < 1$, *ns.* (see the average of the first row vs. the average of the first column in the second section of Table 9).

An examination of the data in the top section of Table 9, however, suggests a possible interactive effect by which the activation of the African American stereotype might have been greater when the application contained any negative information, even of individuating nature. Therefore, we analyzed the difference in response times as a function of type of information and direction. This analysis revealed a nonsignificant interaction; $F(1, 49) < 1$, *ns.*

Another analysis that we conducted had the objective of determining if differences in reaction times reflected the race participants imagined the applicant to be, which could be done analyzing the data of participants who reported the race of the applicant. Among the twenty participants who recalled the applicant as either European or African American in experimental conditions, there was no difference in our measure

of stereotype activation. That is, participants who reported that the applicant was African American took the same amount of time to respond to the stereotypical word strings as participants who reported that the applicant was European American ($M_{diff} = 211.38$ millisecond., $SD_{diff} = 241.99$ millisecond. vs. $M_{diff} = 276.78$ millisecond., $SD_{diff} = 384.98$ millisecond., for recall of European American and recall of African American, respectively.); $t(17) < 1$, *ns*. Similarly, among the twenty-four participants who recalled that the applicant was either European or African American in control conditions, no significant difference emerged.

Table 9. Stereotype Activation as a Function of Direction and Type of Information

Individuating Information		Categorical Information	
		Positive	Negative
Control Groups			
Positive	<i>M</i>	386.13	380.72
	<i>SD</i>	722.73	514.62
	<i>N</i>	15	12
Negative	<i>M</i>	287.57	200.35
	<i>SD</i>	515.17	326.71
	<i>N</i>	13	13
Type of Negative Information at Time 2			
Type of (Positive) Information at Time 1	Categorical		Individuating
	Experimental Groups		
Categorical	<i>M</i>	399.7942	303.3296
	<i>SD</i>	470.4355	361.8292
	<i>N</i>	11	13
Individuating	<i>M</i>	357.7163	260.9747
	<i>SD</i>	457.2167	296.0264
	<i>N</i>	13	14

Control participants who reported that the applicant was African American took the same amount of time to respond to the stereotypical word strings as participants who believed the applicant was European American ($M_{diff} = 180.51$ millisecond., $SD_{diff} = 314.45$ millisecond. vs. $M_{diff} = 178.61$ millisecond., $SD_{diff} = 259.34$ millisecond., for European American and African American, respectively.); $t(22) < 1$, *ns*. In sum, although the pattern of false recall suggested a possible activation of stereotypes as a result of the group assignments of the applicants (fraternity versus Black College Fellowship), the measure of activation yielded much less promising results.

Testing of Theoretical Hypotheses

Hypothesis 1

When people form judgments about a target person for the first time, they rely on categorical information more than on individuating information. To assess the dominant impact of categorical over individuating information in control conditions, we performed a 2×2 ANOVA, in which the type (categorical vs. individuating) and the direction of the information (positive vs. negative) were the independent variables and impression was the dependent variable. We expected to observe a type \times direction interaction along with a pattern of means suggesting a greater difference between positive and negative information when categorical rather than individuating information was presented at Time 1. The relevant means are shown in Table 10.

The ANOVA results revealed a significant main effect of individuating information; $F(1, 49) = 5.17$, $p < .03$. Positive individuating information induced significantly more positive impressions than negative individuating information.

Furthermore, there was a two-way interaction effect between type and direction of information; $F(1, 49) = 3.96, p = .052$. This interaction reflected a greater impact of individuating information when the categorical information about the applicant implied African-American ethnicity rather than European-American ethnicity (see Table 10).

Table 10. Mean Impression Ratings of an Applicant as a Function of Direction and Type of Information: Control Conditions (Time 1)

Individuating Information	Categorical Information			Difference
		Positive	Negative	
Positive	<i>M</i>	6.73	7.83	-1.10
	<i>SD</i>	1.60	1.30	
	<i>N</i>	15	12	
Negative	<i>M</i>	6.61	6.06	0.55
	<i>SD</i>	1.46	1.62	
	<i>N</i>	13	13	
Difference		0.12	1.77	

That is, when participants received positive categorical information, the difference between positive and negative individuating information was nonsignificant ($M_{diff} = 0.12$); $F(1, 26) < 1, ns$. The difference between positive and negative individuating information, however, was significant when the categorical information implied African-American ethnicity ($M_{diff} = 1.77$); $F(1, 23) = 8.99, p = .006$.

Furthermore, the difference between positive categorical and negative categorical information is only marginally significant when positive individuating information was presented at the same time ($M_{diff} = -1.10$); $F(1, 25) = 3.69, p = .07$. Although intriguing, these findings implied that the conditions to test our predictions were not met.

Hypothesis 2

When people change their prior judgments about a target person, individuating information has similar impact to categorical information. To determine whether the influence of individuating information increases over time, we compared the effects of negative categorical and negative individuating information across control (Time 1) and experimental conditions (Time 2). The analyses were restricted to the control conditions in which the directions of the categorical and individuating information were conflicting because only conflicting information was presented in experimental conditions. If individuating information had a greater influence on impression change than on formation situations, the difference between negative individuating and negative categorical information should be greater in experimental (Time 2) than control (Time 1) conditions.

The mean impressions for experimental conditions (Time 2) and control conditions (Time 1) are shown in Table 11. A two-way ANOVA, in which type of information (categorical vs. individuating) and condition (control or Time 1 vs. experimental or Time 2) were the independent variables and impression was the dependent variable, revealed significant main effects of condition ($M = 5.92$, $SD = 1.94$ vs. $M = 7.22$, $SD = 1.49$, for experimental condition and control condition, respectively); $F(1, 73) = 9.38$, $p = .003$; and of type of negative information ($M = 7.14$, $SD = 1.45$ vs. $M = 6.00$, $SD = 2.11$, for negative categorical information and negative individuating information, respectively); $F(1, 73) = 7.13$, $p = .009$. However, contrary to our prediction, the difference between presenting negative categorical and negative individuating information was similar across control and experimental conditions ($M_{diff} =$

1.22 vs. $M_{diff} = 1.06$, for control condition and experimental condition, respectively).

This absence of difference was confirmed by a nonsignificant interaction between condition and type of information; $F(1, 73) < 1, ns$.

Table 11. Mean Impression Ratings of an Applicant as a Function of Type and Direction of Information at Time 1 (Control Conditions) and Time 2 (Experimental Conditions) (Hypothesis 2)

Individuating Information		Categorical Information	
		Positive	Negative
Control Conditions (Time 1)			
Positive	<i>M</i>		7.83
	<i>SD</i>	N/A	1.30
	<i>N</i>		12
Negative	<i>M</i>	6.61	
	<i>SD</i>	1.46	N/A
	<i>N</i>	13	
Experimental Conditions (Time 2)			
Positive	<i>M</i>		6.45
	<i>SD</i>	N/A	1.31
	<i>N</i>		24
Negative	<i>M</i>	5.39	
	<i>SD</i>	2.26	N/A
	<i>N</i>	28	

Hypothesis 3

When people change their prior judgments, new counter information of a level that matches the first information increases change. To assess the impact of the matching manipulation on impression change while controlling for pre-manipulation judgments, we computed change scores by subtracting the first impressions after the presentation of the

first information set from impressions after the presentation of the second information set in experimental conditions. The overall change in impressions was -0.98 ($SD = 1.55$), which revealed that, as might be expected from presenting negative information at Time 2, participants rated the applicant less favorably after reading the second form (which included negative information) than after reading the first form (which included only positive information). The change scores were analyzed as a function of the type of information at Time 1 (categorical vs. individuating information) and the match of the level of information at Time 2 (same vs. different level) using ANOVA. We expected a significant two-way interaction, accompanied by means that reflect greater change in matching than mismatched conditions at Time 2. The means corresponding to this analysis appear in Table 12.

Table 12. Mean Impression Change as a Function of Type and Level of Information in Experimental Groups (Hypothesis 3)

Type of Information		Level of Information	
		Same	Different
Categorical	<i>M</i>	0.00	-1.80
	<i>SD</i>	0.77	1.69
	<i>N</i>	11	14
Individuating	<i>M</i>	-1.36	-0.75
	<i>SD</i>	1.82	1.01
	<i>N</i>	14	13

Findings indicated that the main effects of the type and the match in the level of information were nonsignificant; $F(1, 48) < 1$, *ns*, for the type of information at Time 1; $F(1, 48) = 2.51$, *ns*, for the level of information at Time 2.

However, we found a significant two-way interaction between the type of information at Time 1 and the match in the level of information at Time 2 on impression change, $F(1, 48) = 9.64, p = .003$. As shown in Table 12 and summarized in Figure 4, this interaction did not conform to predictions. That is, recipients of categorical information at Time 1 changed their first impression about the target applicant upon individuating (different level) rather than categorical (same level) information. Further, recipients of individuating information at Time 1 changed their impressions of the target applicant more when they received individuating (same level) rather than categorical (different level) information. These unexpected findings are likely to reflect the effectiveness of the individuating information as well as the ineffectiveness of the manipulation of categorical information.

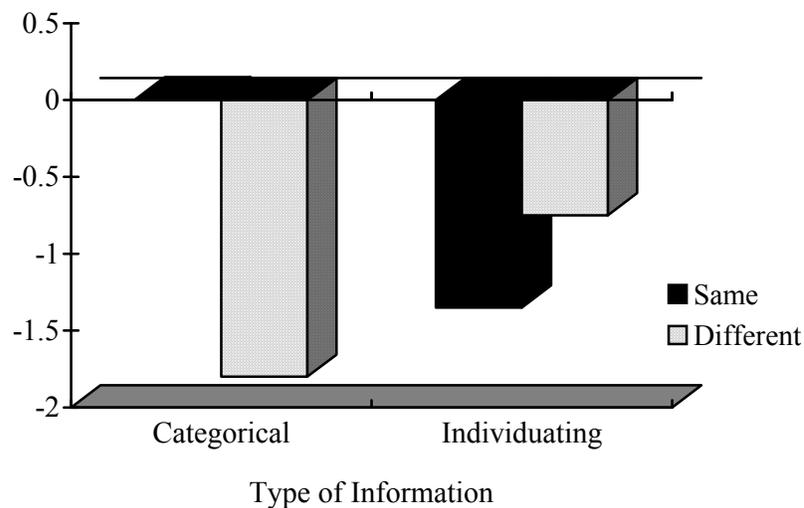


Figure 4. Mean Impression Change Based on Level and Type of Information.

Supplementary Analyses of Attitude Confidence

Attitude confidence is a useful measure of change because, like other attitude strength measures, these measures are less sensitive to social desirability concerns such as

attempts not to be influenced by category membership. Therefore, we analyzed attitude confidence for control conditions and experimental conditions at Time 1 and at Time 2.

For control conditions (Time 1), the mean attitude confidence was 5.49 ($SD = 1.65$) on a scale from 1 (*not at all confident*) through 10 (*very confident*), suggesting that participants had moderate confidence in their first impressions about the target applicant. In addition, a 2×2 ANOVA revealed a significant interaction between type and direction of information; $F(1, 49) = 4.23, p < .05$. That is, when presented with both positive categorical and positive individuating information, participants showed the least confidence ($M = 4.91, SD = 1.67$). In contrast, when positive individuating information was presented with negative categorical information, greater confidence was reported ($M = 6.30, SD = 1.80$).

For experimental conditions, a 2×2 ANOVA in which Time (within) and type of information at Time 1 were independent variables and mean confidence was a dependent variable was conducted. In general, there was no significant difference between mean confidence at Time 1 and mean confidence at Time 2 ($M = 5.99, SD = 1.47$ vs. $M = 5.90, SD = 1.47$, for Time 1 and Time 2, respectively.); $F(1, 50) < 1, ns$. Again, the mean attitude confidence at Time 1 and Time 2 suggests that participants were moderately confident of their impression about the target. Further, we did not find any significant main effect of type of information, either alone, $F(1, 50) < 1, ns$, or in combination with Time, $F(1, 50) < 1, ns$.²

² Of note, there was no difference between confidence of control groups and confidence of experimental groups at Time 1 ($M = 5.49, SD = 1.65$ vs. $M = 6.06, SD = 1.38$, for control and experimental conditions at Time 1, respectively.); $F(1, 103) = 2.71, ns$.

Finally, we tested our third hypothesis that new information that matches the level of the information on which impressions are based should promote more change than mismatched information levels. The results appear in Table 13. An analysis of change in confidence (confidence at Time 2 minus confidence at Time 1) as a function of type of information at Time 2 and level of information (same vs. different) in experimental conditions, however, found no support for this possibility. No main effect, $F(1, 48) < 1$, *ns* and $F(1, 48) = 2.21$, *ns*, for Type of Information and Level of Information, respectively, or interactions, $F(1, 48) < 1$, *ns*, was significant.³

Table 13. Mean Confidence Change as a Function of Type and Level of Information in Experimental Groups

Type of Information		Level of Information	
		Same	Different
Categorical	<i>M</i>	0.30	-0.55
	<i>SD</i>	1.60	1.47
	<i>N</i>	11	14
Individuating	<i>M</i>	0.00	-0.10
	<i>SD</i>	1.03	0.68
	<i>N</i>	14	13

³ Surprisingly, an analysis of participants' confidence at Time 2 in experimental conditions revealed a marginal main effect of level of information, $F(1, 48) = 3.156$, $p = .082$. Participants who received same level of information at Time 2 showed more confidence regardless of the type of information they received ($M = 6.28$, $SD = 1.68$ vs. $M = 5.55$, $SD = 1.18$, for the same level of information and different level of information, respectively). However, in light of lack of similar effects of change in confidence, these differences are attributable to coincidental differences in the baseline level of confidence.

DISCUSSION

The present study tested earlier claims of a relative dominance of categorical information and individuating information when people form and change person impressions. We expected categorical information to have greater effect earlier on, when people form an impression about a person than later on, when they change this impression. Furthermore, we expected the individuating information to increase its effect as time elapses, with stronger effects being apparent when people change impressions than when they first form them. We used a roommate-matching service scenario, in which participants received information about the target applicant at two different times and were asked to rate the person in terms of how suitable the applicant would be as a roommate. Because the information could be categorical (the applicant appears to be European- or African-American) or individuating (the applicant has either desirable or undesirable expectations about the roommate situation), we were able to observe the effects of each type of information on the impressions participants reported at the two points in time. Contrary to expectations, findings indicated that the categorical information, although it elicited category-consistent misrecall of the race of the applicants in the experiment, did not bias impressions at either Time 1 or Time 2. The lack of effectiveness of the categorical information precludes reaching firm conclusions about either Hypothesis 1 or 3.

The novel tests presented in this thesis corresponded to predictions from the model of activation/comparison (Albarracin & Wallace, 2003). Specifically, this study aimed to test whether receiving “matching” information regardless of its level (individuating or categorical) leads to more change in prior impressions of others than receiving “mismatched” information. We performed various analyses to test the matching effect and found partial evidence in support of our predictions. First, participants who received individuating information at Time 1 changed these impressions more when the information at Time 2 was also individuating. However, we failed to find the matching effect with categorical information, which is not surprising given that the categorical information had no effect whatsoever on actual impressions of the target applicant at either point of time.

Importantly, we speculated about possible reasons that categorical information did not influence impression change whereas individuating information did. One possibility is that the usefulness of information for achieving one's goals might lead one to take more consideration of individuating information than categorical information. After all, participants who seek a future roommate must focus on the target applicant's capability of being a good roommate. Living with a clean and diligent roommate is surely desirable regardless of their ethnicity. Thus, in terms of the goal to be achieved in the study (i.e., matching a good roommate for another person), individuating information (i.e., the applicant will clean the room or the applicant needs a ride) may be more useful than categorical information (i.e., African American or European American). Taking this possibility into account, the present study needs to be extended to situations in which matching effects may be more likely. Friendship building or job interview settings, for

example, might be good situations in which both categorical and individuating information may play distinct but similarly useful roles.

Another plausible reason for not finding a matching effect with the categorical information might be that the application form itself consisted of various pieces of information that could be interpreted as categorical. The form, which is shown in Appendix I, has various sections that classify information about the applicant. For example, the amount of expected rent or preference for a particular gender could be important categorical information for the participants rather than the applicant's ethnicity or club activity. This constant categorical information, which was intrinsic to the application form, could have obscured the distinctive character of the ethnic-suggestive information and even made the individuating information more salient.

Finally, it is possible that the manipulation of the categorical information used in this thesis could have simply been inadequate. This possibility is particularly plausible in light of the failure of the categorical information to produce the expected effects on the measures of stereotype activation. However, the lack of stereotype activation may also be due to the conscious suppression of the stereotype (see Gilbert & Hixon, 1991). In fact, the manipulation-consistent errors of false reports of the targets' race render credibility to this suspicion. If suppression were the case, the use of a subliminal procedure to induce the activation of stereotypes may resolve this deficiency in future studies of the fascinating nature of these processes.

APPENDIX EXPERIMENTAL QUESTIONNAIRES

Instructions: You are an employee at Roommate Matchers, a company that offers roommate-matching services. Generally, when companies offer such services, they utilize various means for determining whether a person would be a high-quality potential roommate, such as questionnaires, personality inventories, etc..

We are interested in assessing whether the questionnaires typically used by roommate-matching services lead to more satisfaction in roommate selection than other methods of roommate matching. The typical procedure is to have evaluators form a general impression of the applicant based on the information in the application. Because many impressions about a person are likely to be shared by many, the evaluator can often generate impressions of an applicant that are similar to the impressions a potential roommate might form of this applicant. For instance, the evaluator prediction that the applicant might be “friendly” may match a similar judgment by a person looking for a roommate. As part of this study, we will compare your assessment of an individual based on reading the application with the real ratings of the roommate with whom the applicant is matched.

In this study, you will read the application of someone who was previously matched using typical roommate matching techniques. As you read it, feel free to jot down some notes as you would if you were to share information about the applicant with a coworker. Once you read the file, we will give you a questionnaire to measure your reactions to this information and to find out your impression of the candidate.

Application form for a control group of negative categorical and positive individuating information

OFFICE USE ONLY	Rep:	DATE/TIME:	Amt. Paid:	<input type="checkbox"/> CASH <input type="checkbox"/> Check # _____	Client#: 55448
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WELCOME TO ROOMMATE MATCHERS

Please fill out following items.

DESCRIPTION OF MYSELF

Gender: Male Female Age: 20 Marital Status: Single
 Student Type: Non-student Freshman Sophomore Junior Senior Grad student
 Club Activities (only for students): *BCSF (Black College Student Fellowship) in UF.*
 Interests/Hobbies: *I am willing to do most of the cleaning as well as some laundry for my roommates.*
 Smoking: Yes No Pets: Yes No Own Car: Yes No

ACCEPTABLE ROOMMATE

Gender: Male Female Either Age: over 18 Marital Status: Single
 Ethnicity: European American (White) African American Asian American
 Latino American (Hispanic) No preference
 Student Type: Non-student Freshman Sophomore Junior
 Senior Grad student No preference
 Smoking: Yes No No pref Pets: Yes No No pref

SITUATION DESIRED

Roommate for my residence Rent Per Person : \$350
 Roommate with a residence OR
 Roommate to look together to get a place Rent Range N/A
 Which Section of Town? No preference NW SW SE NE Within 1 Mile of UF

Please fill out following items so we can contact you.

Name: N/A (Confidential) Date: August 6, 2001
 Address: 1802 SW 69th Ave City: Gainesville State: FL Zip: 32611
 Phone: (352) 331-7889 Call Hrs: any Other Phone: none Call Hrs: N/A
 E-Mail: jwilliams@ufl.edu Fax: none
 Desired Move-in/out Date: immediately Occupation/Major: Undeclared

How did you find out about Roommate Finders? (optional)

Flyer Housing Office Apartment Community Alligator Yellow Pages Website
 Friend Gainesville Sun Chamber of Commerce Drive By Alligator Other _____

Application form for a control group of positive categorical and negative individuating information

OFFICE USE ONLY	Rep:	DATE/TIME:	Amt. Paid:	<input type="checkbox"/> CASH <input type="checkbox"/> Check # _____	Client#: 55448
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WELCOME TO ROOMMATE MATCHERS

Please fill out following items.

DESCRIPTION OF MYSELF

Gender: Male Female Age: 20 Marital Status: Single
 Student Type: Non-student Freshman Sophomore Junior Senior Grad student

Fraternity/Sorority experience (if any): **Phi Alpha Delta Fraternity in UF.**

Comments: **I prefer a roommate who can drive me to school as well as grocery shopping**

Smoking: Yes No Pets: Yes No Own Car: Yes No

ACCEPTABLE ROOMMATE

Gender: Male Female Either Age: over 18 Marital Status: Single

Ethnicity: European American (White) African American Asian American
 Latino American (Hispanic) No preference

Student Type: Non-student Freshman Sophomore Junior
 Senior Grad student No preference

Smoking: Yes No No pref Pets: Yes No No pref

SITUATION DESIRED

Roommate for my residence Rent Per Person : \$350
 Roommate with a residence OR
 Roommate to look together to get a place Rent Range N/A

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How did you find out about Roommate Finders? (optional)

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 Friend Gainesville Sun Chamber of Commerce Drive By Alligator Other _____

Application form for a control group of positive categorical and positive individuating information

OFFICE USE ONLY	Rep:	DATE/TIME:	Amt. Paid:	<u> </u> CASH <u> </u> Check # <u> </u>	Client#: 55448
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WELCOME TO ROOMMATE MATCHERS

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Student Type: Non-student Freshman Sophomore Junior Senior Grad student

Fraternity/Sorority experience (if any): *Phi Alpha Delta Fraternity in UF.*

Interests/Hobbies: *I am willing to do most of the cleaning as well as some laundry for my roommates.*

Smoking: Yes No Pets: Yes No Own Car: Yes No

ACCEPTABLE ROOMMATE

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Ethnicity: European American (White) African American Asian American
 Latino American (Hispanic) No preference

Student Type: Non-student Freshman Sophomore Junior
 Senior Grad student No preference

Smoking: Yes No No pref Pets: Yes No No pref

SITUATION DESIRED

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Roommate with a residence OR

Roommate to look together to get a place Rent Range N/A

Which Section of Town? No preference NW SW SE NE Within 1 Mile of UF

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E-Mail: jwilliams@ufl.edu Fax: none

Desired Move-in/out Date: immediately Occupation/Major: Undeclared

How did you find out about Roommate Finders? (optional)

Flyer Housing Office Apartment Community Alligator Yellow Pages Website
 Friend Gainesville Sun Chamber of Commerce Drive By Alligator Other

Application form for a control group of negative categorical and negative individuating information

OFFICE USE ONLY	Rep:	DATE/TIME:	Amt. Paid:	<input type="checkbox"/> CASH <input type="checkbox"/> Check # _____	Client#: 55448
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Please fill out following items.

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 Student Type: Non-student Freshman Sophomore Junior Senior Grad student

Club Activities (only for students): **BCSF (Black College Student Fellowship).**

Comments: **I prefer a roommate who can drive me to school as well as grocery shopping**

Smoking: Yes No Pets: Yes No Own Car: Yes No

ACCEPTABLE ROOMMATE

Gender: Male Female Either Age: over 18 Marital Status: Single

Ethnicity: European American (White) African American Asian American
 Latino American (Hispanic) No preference

Student Type: Non-student Freshman Sophomore Junior
 Senior Grad student No preference

Smoking: Yes No No pref Pets: Yes No No pref

SITUATION DESIRED

Roommate for my residence Rent Per Person : \$350
 Roommate with a residence OR
 Roommate to look together to get a place Rent Range N/A

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 E-Mail: jwilliams@ufl.edu Fax: none
 Desired Move-in/out Date: immediately Occupation/Major: Undeclared

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 Friend Gainesville Sun Chamber of Commerce Drive By Alligator Other _____

Application form for an experimental group of negative categorical information

OFFICE USE ONLY	Rep:	DATE/TIME:	Amt. Paid:	<input type="checkbox"/> CASH <input type="checkbox"/> Check # _____	Client#: 55448
-----------------	------	------------	------------	---	----------------

WELCOME TO ROOMMATE MATCHERS

Please fill out following items.

DESCRIPTION OF MYSELF

Gender: Male Female **Age:** 20 **Marital Status:** Single

Student Type: Non-student Freshman Sophomore Junior Senior Grad student

Club Activities (only for students): BCSF (Black College Student Fellowship) in UF.

Smoking: Yes No **Pets:** Yes No **Own Car:** Yes No

ACCEPTABLE ROOMMATE

Gender: Male Female Either **Age:** over 18 **Marital Status:** Single

Ethnicity: European American (White) African American Asian American
 Latino American (Hispanic) No preference

Student Type: Non-student Freshman Sophomore Junior
 Senior Grad student No preference

Smoking: Yes No No pref **Pets:** Yes No No pref

SITUATION DESIRED

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 Roommate to look together to get a place Rent Range N/A

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E-Mail: jwilliams@ufl.edu **Fax:** none

Desired Move-in/out Date: immediately **Occupation/Major:** Undeclared

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 Friend Gainesville Sun Chamber of Commerce Drive By Alligator Other _____

Application form for an experimental group of positive categorical information

OFFICE USE ONLY	Rep:	DATE/TIME:	Amt. Paid:	<input type="checkbox"/> CASH <input type="checkbox"/> Check # _____	Client#: 55448
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DESCRIPTION OF MYSELF

Gender: Male Female **Age:** 20 **Marital Status:** Single

Student Type: Non-student Freshman Sophomore Junior Senior Grad student

Fraternity/Sorority experience (if any): Phi Alpha Delta Fraternity in UF.

Smoking: Yes No **Pets:** Yes No **Own Car:** Yes No

ACCEPTABLE ROOMMATE

Gender: Male Female Either **Age:** over 18 **Marital Status:** Single

Ethnicity: European American (White) African American Asian American
 Latino American (Hispanic) No preference

Student Type: Non-student Freshman Sophomore Junior
 Senior Grad student No preference

Smoking: Yes No No pref **Pets:** Yes No No pref

SITUATION DESIRED

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 Roommate with a residence OR
 Roommate to look together to get a place Rent Range N/A

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E-Mail: jwilliams@ufl.edu **Fax:** none

Desired Move-in/out Date: immediately **Occupation/Major:** Undeclared

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 Friend Gainesville Sun Chamber of Commerce Drive By Alligator Other _____

Application form for an experimental group of negative individuating information

OFFICE USE ONLY	Rep:	DATE/TIME:	Amt. Paid:	<input type="checkbox"/> CASH <input type="checkbox"/> Check # _____	Client#: 55448
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WELCOME TO ROOMMATE MATCHERS

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DESCRIPTION OF MYSELF

Gender: Male Female **Age:** 20 **Marital Status:** Single

Student Type: Non-student Freshman Sophomore Junior Senior Grad student

Comments: I prefer a roommate who can drive me to school as well as grocery shopping

Smoking: Yes No **Pets:** Yes No **Own Car:** Yes No

ACCEPTABLE ROOMMATE

Gender: Male Female Either **Age:** over 18 **Marital Status:** Single

Ethnicity: European American (White) African American Asian American
 Latino American (Hispanic) No preference

Student Type: Non-student Freshman Sophomore Junior
 Senior Grad student No preference

Smoking: Yes No No pref **Pets:** Yes No No pref

SITUATION DESIRED

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 Roommate with a residence OR
 Roommate to look together to get a place Rent Range N/A

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Address: 1802 SW 69th Ave **City:** Gainesville **State:** FL **Zip:** 32611

Phone: (352) 331-7889 **Call Hrs:** any **Other Phone:** none **Call Hrs:** N/A

E-Mail: jwilliams@ufl.edu **Fax:** none

Desired Move-in/out Date: immediately **Occupation/Major:** Undeclared

How did you find out about Roommate Finders? (optional)

Flyer Housing Office Apartment Community Alligator Yellow Pages Website
 Friend Gainesville Sun Chamber of Commerce Drive By Alligator Other _____

Application form for an experimental group of positive individuating information

OFFICE USE ONLY	Rep:	DATE/TIME:	Amt. Paid:	<input type="checkbox"/> CASH <input type="checkbox"/> Check # _____	Client#: 55448
-----------------	------	------------	------------	---	----------------

WELCOME TO ROOMMATE MATCHERS

Please fill out following items.

DESCRIPTION OF MYSELF

Gender: Male Female **Age:** 20 **Marital Status:** Single

Student Type: Non-student Freshman Sophomore Junior Senior Grad student

Interests/Hobbies: **I am willing to do most of the cleaning as well as some laundry for my roommates.**

Smoking: Yes No **Pets:** Yes No **Own Car:** Yes No

ACCEPTABLE ROOMMATE

Gender: Male Female Either **Age:** over 18 **Marital Status:** Single

Ethnicity: European American (White) African American Asian American
 Latino American (Hispanic) No preference

Student Type: Non-student Freshman Sophomore Junior
 Senior Grad student No preference

Smoking: Yes No No pref **Pets:** Yes No No pref

SITUATION DESIRED

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E-Mail: jwilliams@ufl.edu **Fax:** none

Desired Move-in/out Date: immediately **Occupation/Major:** Undeclared

How did you find out about Roommate Finders? (optional)

Flyer Housing Office Apartment Community Alligator Yellow Pages Website
 Friend Gainesville Sun Chamber of Commerce Drive By Alligator Other _____

Activation Instruction

So, after reading the first information, you were asked how much you liked the person. On a scale of 1 to 10 (1 = dislike; 10 = like), you rated the person to be a (*showing the participant's previous rating*). You will now see another form filled by the applicant the second time he used the service.

Manipulation Checks

Now we have several questions about the applicant you made impressions.

1. Did he include comments or requests? If so, please write down what you recall from each:

Comment on the first form _____

Comment on the second form _____

2. What was the gender of the applicant?
3. What was the race of the applicant?

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