

## **UC Merced**

# **Proceedings of the Annual Meeting of the Cognitive Science Society**

### **Title**

Implicit Familiarity Regulates Person Perception

### **Permalink**

<https://escholarship.org/uc/item/8242m5nm>

### **Journal**

Proceedings of the Annual Meeting of the Cognitive Science Society, 28(28)

### **ISSN**

1069-7977

### **Authors**

Garcia-Marques, Teresa  
Mackie, Diane

### **Publication Date**

2006

Peer reviewed

# Implicit Familiarity Regulates Person Perception

**Teresa Garcia-Marques (gmarques@ispa.pt)**

Instituto Superior de Psicologia Aplicada, Rua Jardim do Tabaco, 34,  
1149-041, Lisboa, Portugal.

**Diane Mackie (mackie@psych.ucsb.edu)**

Department of Psychology University of California, Santa Barbara  
Santa Barbara, CA 93106-9660

## Abstract

This paper reports research showing the impact of implicit familiarity on information processing. We predicted that implicit familiarity would reduce analytic processing. As our studies involved person perception, we predicted that familiarity would reduce attention to individuated information and increase the impact of category labels on judgments about a target person. In two studies participants read either incriminating or exculpatory information about a defendant in a criminal case and made judgments of guilt. In Experiment 1, participants were subliminally exposed to the defendant's photo, to another matched photo, or saw no photo before reading the evidence. Those familiar with the defendant's photo used the individuated (evidentiary) information less. In Experiment 2, participants were subtly made familiar or not with the incriminating and exculpatory information itself, and the defendant was described either as a priest or as a skinhead. Familiarity with the information reduced attention to its content, increasing reliance on category information.

## Introduction

On the basis of research in both cognitive and social psychology, we have suggested that a subjective feeling of familiarity regulate information processing, specifically by making analytic processing less likely (Garcia-Marques & Mackie, 2001). We thus subscribe to a general dual process view that human information processing involves two distinct computation modes (see Sloman, 1996): *non-analytic* processing, (characterized by the production of global or generic response to a focal stimulus) and *analytic* processing (where the particulars of a situation are carefully and systematically analyzed). A match between a stimulus and a memory representations, as occurs when a stimulus is re-encountered, results in an "ease" or "fluency" of processing accompanied by an (implicit) feeling of "similarity," "recognition," or "familiarity" (Eich, 1982; Gillund & Shiffrin, 1984; Hintzman, 1988; Jacoby & Dallas, 1981; Murdock, 1982). This feeling of familiarity, we argue, turns down analytic processing, so that limited analytic processing resources can be husbanded for novel situations rather than wasted in situations that have already been dealt with (Johnston & Hawley, 1994).

These arguments are based on finding in a range of areas. Research on problem solving, for example, has demonstrated that a "feeling of knowing" regulates the process underlying problem solving (Reder & Ritter, 1992; Schunn, et al., 1997). When individuals "felt" that

particular problems or problem types are familiar, they were more likely to believe they could be answered by mere retrieval, rather than by resource intensive computation. Familiar problems made participants "feel" that they "knew" the answer, and thus promoted less effortful, top-down, processing strategies. Unfamiliar problems, in contrast, triggered more effortful bottom-up computational strategies. In this domain, then, processors switched between non-analytic and analytic processing modes on the basis of their perceived familiarity with the situation.

In a parallel way, previous exposure to a persuasive appeal decreases the likelihood of its analytic processing (Garcia-Marques & Mackie, 2001; Claypool, et al. 2004). In typical dual processing persuasion paradigms, adequately motivated participants systematically process the content of persuasive appeals: such analytic processing is indexed by the fact that message recipients are differentially persuaded by strong and compelling as opposed to weak and specious arguments. In contrast, however, when we subtly exposed people to messages multiple times, they processed the previously encountered messages much more superficially, eliminating the differential acceptance of strong and weak arguments, even though they were more familiar with them.

In another context, we (Smith, et al., 2005) also demonstrated the counterintuitive effect that familiarity (manipulated via prior exposure) increases stereotyping. In two experiments, participants saw photos of multiple targets accompanied by an occupational label and some mildly counter-stereotypic information. Participants were asked to judge each target and were given the opportunity to do so using both stereotypic and stereotype-irrelevant traits. Some of these targets had been seen in an earlier part of the experiment and some of them were novel. Compared to judgments about novel targets, judgments made about targets seen before were significantly more stereotypic. Once again then, target familiarity appeared to induce less analytic processing (use of the counter-stereotypic information) and greater non-analytic processing (reliance on stereotype labels). When in the second experiment participants were reminded of the possibility that they might have seen some of the targets before, this effect disappeared, once again implicating familiarity as the crucial mediator.

On the basis of these findings, we extended our claim in this research to the impression or person perception literature. According to dual process models of person impression, judgments of a target can be based either on analytic individuation, the piecemeal processing and combination of the target's individual characteristics, or on

non-analytic categorical processing, an inference of target characteristics based on category membership (Brewer, 1988; Neberg & Fiske, 1987). Several kinds of evidence verify that piecemeal individuation is more analytic (effortful and systematic) than category-based processing. First, participants who engage in piecemeal processing of a target's attributes spend more time looking at and take longer to read and rate the information (Fiske, et al, 1987; Neberg & Fiske, 1987) than do other participants. Second, piecemeal individuation of target relevant information is undermined by cognitive capacity constraints whereas category-based judgment is not (Bodenhausen, 1990).

We conducted two impression formation experiments to test the idea that judgments made under conditions of familiarity reflect individuating information presented about the target less than judgments made under novel conditions. The experiments used manipulations of previous exposure to different aspects of the processing situation to show that it was the general and diffuse feeling of familiarity triggered by re-encountering a stimulus, rather than any particular kind of re-exposure, that regulated use of analytic and non-analytic information processing modes.

## Experiment I

In the first experiment we used prior subliminal exposure to the photo of a crime suspect to promote a feeling of familiarity during later presentation of individuating information relevant to the defendant's guilt or innocence. Although mere, and especially unconscious, exposure typically increases liking for the familiar target (Zajonc, 1968), our claim was different. Compared to conditions in which such a feeling is not activated, we expected the familiarity induced by prior exposure to reduce the impact of individuating information on judgments of guilt.

## Method

### Participants and Design

Participants were 144 undergraduates (72% females) at the ISPA (Portugal), randomly distributed to the six cells of a between-subjects factorial design 3 (no prior exposure vs. prior exposure vs. irrelevant prior exposure) x 2 (incriminating vs. exculpatory evidence) x 2 (stimulus replication: target face A or B).

### Procedure

Participants seated at computers were first asked to complete a "visual perception" study which served to manipulate prior exposure to the target face.

*Manipulation of prior exposure.* Participants focused on a fixation point (+) centered in the screen and pressed the space bar to activate presentation of a sequence of five different pictures (e.g. a tree, a car, a house, a rabbit, a cat). Each image was presented for variable times ranging from 30 to 70 msec. Between the third and fourth pictures participants were exposed for 18msec to a blank screen, the target photo, or a matched photo. To replicate across stimulus materials, two photos (A or B) were used as both the target and a matched control across conditions.

Participants then made several judgments. They first estimated how many objects, how many color images, and how many images of living things had been presented. They then named the image presented for the briefest time and the picture presented for the longest time. These questions allowed us to assess whether participants were conscious of the subliminal presentation of the face or not (if they were, the answer to the frequency estimate about living things would increase from 3 to 4, for example). Three sequences of five objects were presented allowing 3 subliminal repetitions of the target.

Participants then completed a "second study," in which they identified the name of 10 European countries as quickly as possible (a filler task).

*Person impression task:* Participants were told that the "third" study investigated people's ability to serve on a jury hearing a criminal case. The instructions stressed the need for concentration and that all the information about the case should be read carefully. Following Bodenhausen and Lichtenstein (1987), we told participants they would be receiving information about a case ("*Criminal Proceedings N° 190-23271*") described as an assault occurring at a certain time and place and committed by an unidentified individual who ran from the scene leaving the victim unconscious. Participants then viewed a photo of the alleged perpetrator (half saw Photo A and half saw Photo B) accompanied by a description of the suspect as a 25-year-old single male residing in Lisbon. The information states that the accused denied the charges and was free on bail.

*Presentation of individuating information.* A majority of either extenuating or incriminating individuating information was then presented on the following screen in the guise of a brief summary of the investigation. Seven pieces of information about the crime were presented. In the exculpatory condition, participants saw 4 exculpatory (*e*), 2 incriminating (*i*) and 1 neutral (*n*) item (in the following order: *eiieen*). In the incriminating condition, 4 incriminating, 2 exculpatory and one neutral item were presented (in the following order: *ieeiin*). An example of an exculpatory item (in translation) was "No physical evidence either at the crime scene or on the suspect link him to the crime." An incriminating item was "The suspect was seen leaving a coffee shop near the scene of the crime about 10 minutes before the crime was committed." Participants took "all the time they felt necessary" to read this information.

*Dependent variables.* Participants were then asked to make several judgments, all on 9-point scales. Four scales comprised a measure of the suspect's perceived guilt. These items were: the defendant's guilt ("*not at all likely to be the one who did it*" to "*extremely likely to be the one who did it*"), a proposed verdict ("*Sure he's not-guilty*" to "*Sure he's guilty*"), a recommended severity of sentence ("*No time in jail*" to "*Several years in jail*") and a recommendation about whether the defendant should be detained in jail prior to trial ("*I am sure that he does not need to be detained*" to "*I am sure that it is better to detain him*").

## Results and Discussion

The responses of 11 participants suggested that they had seen the supposedly subliminal stimuli: their data were

excluded from further analysis. Since preliminary analysis showed no significant effect of the stimulus replication of target faces, this factor was excluded from the analyses.

**Judgments of guilt.** Responses to the four items used to assess guilt (indices  $\alpha = .70$ ) were averaged, so that higher numbers reflecting higher guilt. This measure was then subjected to a 3 (no prior exposure vs. prior exposure vs. irrelevant prior exposure) x 2 (incriminating vs exculpatory evidence) between subjects analysis of variance.

The nature of the evidentiary information presented about the case had a significant impact on judgments of guilt ( $F(1,128)=18.70, p<.000; Mse=1.72$ ). Not surprisingly, a preponderance of incriminating evidence produced higher judgments of guilt ( $M=5.42$ ) compared to a preponderance of exculpatory information ( $M=4.42$ ). This difference also indicates that the manipulation of information was effective as intended.

Consistent with our hypothesis, this main effect was qualified by prior exposure,  $F(2,128)=2.94, p<.056$ . Previous subliminal exposure to the target photo reduced the impact of the individuating information so that there were no differences between judgments of guilt rendered in the presence of either incriminating or exculpatory evidence ( $M_{inc}= 4.90, M_{exc}= 4.62; t(128)=1.399, p<.164$ ). In contrast, the impact of the individuating information was highly significant both when either a matched photo ( $M_{inc}= 5.75, M_{exc}= 4.09; t(128)=2.42, p<.017$ ) or no photo had been previously presented ( $M_{inc}= 5.62, M_{exc}= 4.56; t(128)=2.76, p<.006$ ). Consistent with our expectations, familiarity with the target person, operationalized as prior subliminal exposure to his photo, decreased the impact of individuating information on judgments.

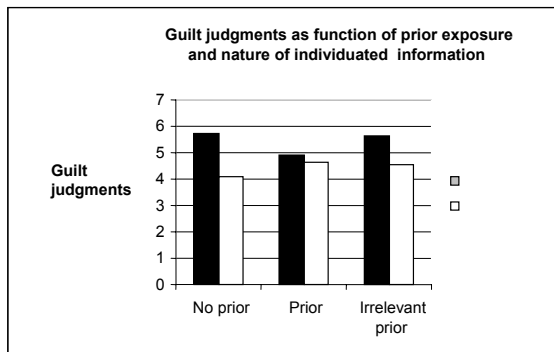


Figure 1: Guilt judgments as function of prior exposure and nature of individuated information, Experiment 1.

There was no evidence of the operation of the mere exposure effect (the main effect of repetition was  $F<1$ ) ; repeated exposure to the stimulus did not induce more positive judgments overall. Compared to those who saw a novel target, participants in the prior exposure condition did weighted incriminating information less heavily in their guilt judgments ( $t(128)= 1.94, p<.027$ ; consistent with mere exposure). However participants in the prior exposure condition also judged the target with exculpatory information less positively ( $t(128)= 1.45, p<.074$ ; inconsistent with the effect).

These results indicated that prior exposure to a target’s face, designed to make the target “familiar,” reduced the impact of individuating information on judgments about that target. This is consistent with our expectation that prior exposure activates an implicit feeling of familiarity which reduces analytic processing. These findings also extend previous findings. In this case, reduction in analytic processing was demonstrated after familiarity was induced via subliminal exposure; in this case participants were not consciously aware of any repetition. This constituted a methodological improvement over our previous work, in which repetition of the stimulus was always supraliminal, opening the consequent reduction in processing up to other alternative explanations or interpretations such as boredom with the repeated stimulus or suspicion that made everyone careful (or less extreme) with their judgments. Our findings indicated that judgments made about the target by participants in the prior exposure condition were less influenced by the nature of individuating information in the same way that under conditions of familiarity, attitude judgments are less influenced by the strong and weak nature of arguments (Garcia-Marques & Mackie, 2001; Claypool et al., 2004).

It is important to recognize that this familiarity-triggered reduction of analytic processing was obtained even under conditions that neither restricted participants’ capacity nor undermined their motivation. Participants were allowed to take as much time as necessary to process the information. If anything, the context of and instructions given in the experimental setting might be expected to increase participants’ motivation to carefully process individuating information, a factor that can under certain circumstances disrupt the impact of familiarity on processing (see Claypool et al., 2004). In this experiment, when participants were unaware of the prior exposure, the feeling of familiarity induced by that exposure nevertheless reduced analytic processing even when processing motivation and capacity was high.

These results were strongly consistent with our hypothesis that prior exposure induces a feeling of familiarity when a stimulus is re-encountered, and that familiarity reduces processing. Nevertheless we wanted to be able to strengthen the conclusions we could draw about these processes by providing some further evidence about the nature of these mechanisms. Our general claim is that familiarity reduces analytic processing, not that familiarity has this effect only when operationalized in this particular way (by re-exposure to the target’s image, for example). We are not claiming that a target with a “familiar face” is perceived differently or that a familiar face induces different processing demands (see e.g. Bruce & Young’s, 1986, model of face processing), but that the feeling aroused by perceiving a stimulus as familiar in any way impacts how information is going to be processed. In our persuasion studies (Garcia-Marques & Mackie, 2001) participants were made familiar not with the message source, but with the persuasive arguments themselves. We argued that it was the feeling of familiarity associated with being exposed to them again that engaged non-analytic processing. Generalizing this reasoning to the current context, we set out to show

that making participants familiar with the criminal evidence itself would reduce analytic processing of it. This produces a counterintuitive prediction and conservative test of our hypothesis: that repetition of information will reduce rather than enhance its impact on judgments, even though the repetition of content makes that content salient. Inducing familiarity by repeating the evidentiary base also helps eliminate a possible alternative explanation of the results of Experiment 1. If repetition made participants focus on the photo itself as the source of relevant information for the judgment, they might well have disregarded the content of the presented information. We expected to eliminate this possibility in Experiment 2.

## Experiment II

In Experiment 2 we induced a general feeling of familiarity that was focused not on the target but on the individuating information itself. This was achieved by repeating the gist of some of the provided evidence in different parts of the experimental session. Given that both priming and information integration considerations would predict that repeated information would have greater impact on judgments, our prediction that such repetition would reduce the impact of the repeated information was a strong test of the hypothesis.

In order to provide a better foundation for the claim that the reduction in impact of individuating information was the result of non-analytic processing, we also provided in this experiment some social category information about the target. If familiarity reduces analytic processing, it was expected to both reduce the impact of individuated information on judgments as well as heighten the impact of categorical information in judgments, compared to when people process information about a novel target.

## Method

**Participants and Design.** 73 undergraduates (including 55 females) at ISPA, were randomly distributed to the cells of a 2 (no previous exposure vs. previous exposure to information) x 2 (exculpatory vs. incriminating evidence) x 2 (skinhead vs. priest social category information about the target) between subjects factorial design. Participants were run in groups of 5 to 15, with random assignment to conditions within each session.

**Procedure.** Participants were once again told that the study investigated people's abilities to serve as a member of a jury considering a criminal case, and as in Experiment 1 were told that they should read all the instructions and information presented carefully. All the relevant information was presented in a booklet, which was designed to reproduce as realistically as possible first, the summary of an interview with a detective inspector, and second, actual information about a specific case. The topic of the interview was the way in which criminal proceedings are usually conducted, and we used this to provide the opportunity to repeat the gist of some pieces of evidence in the interview and in the actual case.

*Manipulation of repetition of information.* During the interview, the detective first made some general statements about for example the desirability of getting as much information as possible about the suspect. He then went on to give some examples of the kinds of information he thought it was important to gather (activities, life history, alibi, etc.) during an investigation. In the previous exposure conditions, the inspector then went on to give examples that were closely similar in wording to the items of information later provided regarding the specific case. Thus, the inspector said (among other things): "For example, it is important to know if a suspect is seen leaving the scene of the crime some minutes before the crime took place" and "It's relevant whether or not someone was able to identify the assailant." These statements were phrased neutrally (e.g., saying "whether or not" someone could identify the aggressor), but were similar to a neutral item, 2 exculpatory and 2 incriminating items of evidence provided later about the specific crime for all participants (e.g., one incriminating item stated that "someone was able to identify the aggressor"). In the no previous exposure condition the inspector gave examples that were unrelated to the evidentiary items later provided (e.g. "it's important to locate all the people who might have witnessed the crime")

*Presentation of category and individuating information.* Participants received the same information about the crime, suspect, and evidence as described in Experiment 1 with the addition that the brief description of the suspect included information that he was either a skinhead or a priest. Since familiarity was manipulated via repetition of the evidence, no photos of the suspect was presented.

Dependent variables were the same as used in Experiment 1, although all items were rated on more sensitive 11 point scales. As part of a later general questionnaire, participants were asked to recall the occupation of the suspect. Participant motivation was assessed by asking them how interesting they found participation in this Experiment.

## Results and Discussion

Three statistical outliers with regard to guilt judgments were excluded from further analyses (which also made the data conform to ANOVA assumptions). Some participants failed to answer all questions, resulting in different N for some analyses.

**Manipulation Checks.** Corroborating the pre-testing, the suspect was perceived as more likely to be violent when described as a skinhead ( $M = 7.04$ ) than as a priest ( $M = 5.37$ ),  $F(1,60) = 15.22$ ,  $p < .001$ . The suspect was also seen as more violent when incriminating ( $M = 6.91$ ) rather than exculpatory ( $M = 5.51$ ) evidence was presented,  $F(1,60) = 10.64$ ,  $p < .002$ , but that did not qualify the category information effect.

Participants recalled the occupation of the suspect equally well when he was a priest (90%) and when he was a skinhead (85%;  $p < .569$ ). None of the other variables affected correct identification of the category information.

The criminal trial context and instructions had a positive impact on participants' motivation to process information. Responses to the question of how interesting participants

found the study revealed mean motivation to be well above the midpoint of the scale ( $M = 7.24$ ,  $S.d. = 1.85$ ).

**Judgments of guilt.** Responses to the four items used to assess guilt (Cronbach alpha = .77) were averaged, (with higher numbers reflecting higher guilt) and submitted to a 2 (no previous exposure vs. previous exposure of evidence) x 2 (skinhead vs. priest) x 2 (incriminating vs. exculpatory information) ANOVA.

We tested two related hypotheses. First, we expected the impact of the individuating evidence to be moderated when the information was familiar compared to when it was not. The manipulation of information valence had the expected impact on judgments,  $F(1,62)=9.47$ ,  $p<.003$ , with incriminating information leading to higher guilt judgments overall ( $M=6.07$ ) than exculpatory information ( $M=4.81$ ). As expected, however, this pattern of effects was different depending on prior exposure as revealed by a priori contrasts. When there was no prior exposure, participants judged the defendant guiltier in the incriminating evidence condition ( $M=6.21$ ) than in the exculpatory evidence condition, ( $M=4.35$ ),  $F(1,62)=10.24$ ,  $p<.002$ . This effect of information was eliminated in the prior exposure condition ( $M_{inc}=5.93$ ,  $M_{exc}=5.78$ ;  $F(1,62)=1.29$ ,  $p<.260$ ). This finding was once again consistent with the idea that prior exposure reduced analytic processing. Second, we expected the impact of category membership on judgments to be enhanced by familiarity, indicating an increase in non-analytic processing. In the no prior exposure condition, the skinhead ( $M=4.99$ ) and priest ( $M=5.57$ ) suspects were seen as equally guilty,  $F < 1$ . In contrast, and consistent with our hypothesis, those previously exposed to some of the information judged the stereotypically aggressive skinhead to be more guilty ( $M=6.11$ ) than the stereotypically less aggressive priest ( $M= 5.09$ ),  $F(1,62)=3.09$ ,  $p<.08$ .

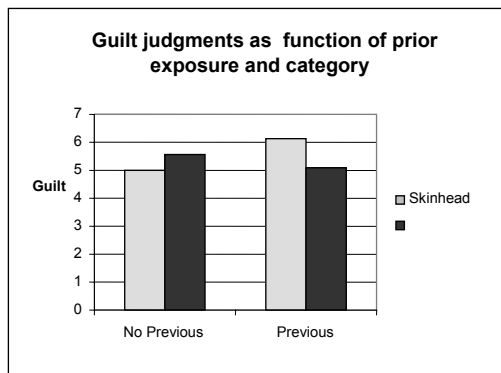


Figure 2. Guilt judgments as function of prior exposure and category label, Experiment 2.

This pattern of results suggests that inducing a feeling of familiarity by previously exposure to some aspects of the evidence reduced the impact of the repeated information itself on judgments, and at the same time tended to increase the impact of categorical processing on judgments.

In sum, our central claim was replicated in this Experiment when feelings of familiarity were induced about the individuated information itself. As our results make

clear, even when it was the information itself that was repeated to induce familiarity, this rendered that highly relevant individuated information less, rather than more, influential in judgments about a target person. This reduced sensitivity to individuated information was coupled with a slight increase in the reliance on category based judgments.

## General Discussion

We hypothesized that the feeling of familiarity impacts information processing by decreasing analytic processing. In two studies, we induced a general diffuse feeling of familiarity either by subliminally presenting a photo of the target (Experiment 1) or repeating the relevant individuating information about the target (Experiment 2). Consistent with our claim, participants' judgments in both studies reflected the quality of the presented information less, regardless of how familiarity was induced. Further corroborating our idea, the results of Experiment 2 showed that participants' judgments tended to also be more sensitive to category information whenever they felt the situation to be familiar.

Prior exposure is known to increase preference and liking, but this effect was not seen in either Experiment. No main effect was associated with repetition. Although prior exposure decreased perceived guilt in the presence of incriminatory information (perhaps reflecting benevolent, positive, or liking judgments), it increased perceived guilt in the presence of exculpatory information in both studies.

The majority of studies emanating from the field of person perception have focused on the impact of category activation and use in different social judgments and how this strategy economizes aspects of information processing, such as item encoding, resource allocation, and response generation (e.g. Bodenhausen & Lichtenstein, 1987). One set of studies (Pendry & Macrae, 1994) has focused on the roles that motivation and capacity play in perceivers' tendency to think about others in either an individuated or category-based manner. Our results, together with those of Smith et al. (2005), show that although motivation and capacity are two highly relevant moderators of how information about a target person is processed, they do not fully explain the regulation of such dual processing. Our studies call attention to the importance of a "match" between received information and stored structures (Fiske & Neuberg (1990), for processing mode. Our findings go further, however, by showing that this "match" need not be limited to just a match of category information. The fact that such matches induce familiarity and reduce analytic processing might help explain the impact that feature typicality has on categorization and stereotyping. For example, exposure to typical and therefore familiar Afrocentric facial features has been found to activate stereotypic inferences (Blair, Judd, & Fallman, 2004). These effects appear to constitute another example of the typicality of those features activating familiarity, which in turn decreases reliance on bottom up processing and increases reliance on category based processing.

Several aspects of this research warrant further investigation. Manipulations of familiarity have an influence on behavior because such artificially induced

familiarity interferes with the “natural” role of familiarity in information processing. However every instance of person perception involves multiple occurrences of the activation of familiarity associated with expectancies, which can then interact with the nature of any information given. For example, activation of the priest category label might make information about the kind of crime like the one we used more surprising than activation of the skinhead label. Equivalent exculpatory information is perhaps less surprising when a priest is the suspect than when a skinhead is a suspect (Skowronski, 2002). Thus the experimental induction of familiarity might privilege categorical information (as it reduces analytic and increase non analytic processing), but the very activation of that information might activate several other processes that undermine the feeling of familiarity. Note that the results of our second Experiment, involving category activation, were not as strong as the results of the first Experiment, suggesting that this might be the case. Understanding these effects requires a more systematic study of how violations of expectancies undermine experimentally manipulated familiarity.

Research in several fields (problem solving, memory, text comprehension, attention, perception, and so on) has repeatedly generated evidence that familiar and unfamiliar stimuli are processed differently. If that is the case, we should consider our cognitive system as capable of taking into account the level of familiarity of either the environment as a whole or of a stimulus in particular, and of tuning processing to this diagnostic characteristic. Our claim is that our cognitive system uses the feeling of familiarity to turn down bottom up processing and consequently rely more on top-down processing. When things feel familiar, non analytic processing appropriately conserves resources. But any disruption of this feeling of familiarity (such as would occur if incongruent or unexpected information were encountered) would again affect processing mode, as repeatedly demonstrated in the literature (see Johnston & Hawley, 1994; Stangor & McMillan, 1992).

### Acknowledgments

Supported by a Fundação para a Ciência e Tecnologia Plurianual ID332 to Teresa Garcia-Marques and by National Science Foundation Grant #BCS-9975204 to Diane Mackie.

### References

Blair, I. V., Judd, C. M., & Fallman, J. L. (2004). The automaticity of race and Afrocentric facial features in social judgments. *Journal of Personality and Social Psychology*, 87, 763 - 778

Bodenhausen, G. V. & Lichtenstein, M. (1987). Social stereotypes and information-processing strategies. *Journal of Pers. and Social Psychology*, 52, 871-880.

Bodenhausen, G.V. (1990). Stereotypes as judgmental heuristics. *Psychological Science*, 1, 319-322.

Brewer, M. B. (1988). A dual process model of impression formation. In R. Wyer, & T. Srull (Eds.), *Advances in social cognition*. Mahwah, NJ: Erlbaum.

Bruce, V. & Young, A. (1986). Understanding face recognition. *British Journal of Psyc.*, 77, 305-327.

Claypool, H. M., Mackie, D. M., Garcia-Marques, T., McIntosh, A., & Udall, A. (2004). The effects of personal relevance and repetition on persuasive processing. *Social Cognition*, 22 (3) 310-335.

Eich, J. M. (1982). A composite holographic associative recall model. *Psychological Review*, 89, 627-661.

Fiske, S., Neuberg, S., Beattie, A., & Milberg, S. (1987). Category-based and attribute-based reactions to others. *Journal of Experimental Social Psychology*, 23, 399-427

Garcia-Marques, T. Mackie, D. M, Claypool, H.M, & Garcia-Marques, L. (2004). Positivity can cue familiarity. *Personality and Social Psychology Bulletin*, 30, 1-9.

Garcia-Marques, T., & Mackie, D. M. (2001). The feeling of familiarity as a regulator of persuasive processing. *Social Cognition*, 19, 9-34.

Gillund, G., & Shiffrin, R. (1984). A retrieval model for both recognition and recall. *Psychological Review*, 91, 1-67.

Hintzman, D. (1988). Judgments of frequency and recognition memory in a multiple-trace memory model. *Psychological Review*, 95, 528-551.

Jacoby, L. & Dallas, M. (1981). On the relation between autobiographical memory and perceptual learning. *Journal of Exp. Psychology: General*, 3, 306-340.

Johnston, W. & Hawley K. (1994). Perceptual inhibition of expected inputs: The key that opens closed minds. *Psychonomic Bulletin and Review*, 1, 56-72.

Murdock, B. B. Jr. (1982). A theory for the storage of and retrieval of item and associative information. *Psychological Review*, 89, 609-662

Neuberg, S. & Fiske, S. (1987). Motivational influences on impression formation: Outcome dependency, accuracy-driven attention, and individuating processes. *Journal of Personality and Social Psychology* 53(3), 431-444.

Reder, L. M., & Ritter, F. E. (1992). What determines initial feelings of knowing? Familiarity with question terms not with the answer. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 18, 435-451.

Schunn, C., Reder, L., Nhouyvanisvong, A., Richards, D., & Stroffolino (1997). To calculate or not to calculate: A source activation confusion model of problem familiarity's role in strategy selection. *Journal of Exp. Psych.: Learning, Memory, and Cognition*, 23, 3-29.

Skowronski, J. J (2002). The effects of entity-related behavior diagnosticity and implicit theories. *Social Cognition*, 20, 136-169.

Sloman, S. A. (1996). The empirical case for two systems of reasoning. *Psychological Bulletin*, 119, 3-22.

Smith E., Miller D., Maitner A., Crump S., Garcia-Marques T., & Mackie D. (2005). Familiarity Can Increase Stereotyping. *Journal of Exp. Social Psychology*, 42,

Stangor, C., & McMillan, D. (1992). Memory for expectancy-congruent and expectancy-incongruent information: A review of the social and developmental literatures. *Psychological Bulletin*, 111, 42-61.

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology Monographs*, 9, 1-27.