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# Effects of stereotyping on mood

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EFFECTS OF STEREOTYPING ON MOOD

A Thesis

Presented in

Partial Fulfillment of the

Requirements for the Degree of

Master of Arts

BY

OVIDIU DOBRIA

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## VITA

The author was born in Arad, Romania, on August 23, 1962. He graduated from High School No. 4, Timisoara, Romania, received his Bachelor and Masters of Science in Mechanical Engineering from the Polytechnic University of Timisoara in 1987, and his Master of Divinity degree from Trinity International University, Deerfield, Illinois, in 2001.

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## CHAPTER I

### INTRODUCTION

#### Effects of Stereotyping on Mood

The rich interplay between cognition and affect has been investigated by researchers and continues to be an intriguing and expanding field of enquiry. A particularly interesting line of research in this domain is the mutual influence of mood on information processing strategy in the area of social judgments. The purpose of the present study is to investigate the influence of stereotyping, as a specific approach to information processing, on mood.

A considerable amount of research has been dedicated to the study of the effects of mood on information processing (for reviews, see Clore, Schwarz, & Conway, 1994; Fiedler, 2000; Forgas, 1995; Martin, 2000, Rusting, 1998). One of the most reliable findings in this area has been that individuals in a happy mood rely more on heuristic processing, whereas people in sad mood will be more likely to engage in more systematic processing. For example, in the area of persuasion it has been shown that participants in a happy mood were persuaded by peripheral cues, but participants in a sad mood were not (Mackie & Worth, 1989). Also, when encoding a sequence of events, happy individuals relied on pre-existing scripts more than sad individuals did (Bless et al. 1996). Another example is the finding that individuals in a happy mood rely more on stereotypes compared with individuals in a sad mood, when forming an impression about a person (Bodenhausen, Kramer, & Susser, 1994), and when evaluating the validity of allegations of guilt (Bodenhausen, 1993). It seems therefore safe to conclude that mood influences the choice of information processing strategy. A positive mood will promote reliance on heuristics, and a negative mood will lead to more systematic processing.



Various explanations have been offered regarding the mechanisms by which these effects come about. One explanation states that positive moods limit the cognitive resources available for information processing (Mackie & Worth, 1989). Another explanation focuses on individuals' motivation to achieve and maintain positive emotional states, and to avoid negative states (Wegener & Petty, 1994). The "affect as information" model suggests that individuals look to their emotional states for information about their situation (Schwarz & Clore, 1983). A positive mood indicates that all is well, and that no corrective action needs to be taken. Consequently, there is no need to expend cognitive resources in order to process information in depth. A depressed mood, on the other hand, signals that the situation is problematic, and that intervention is needed. Effective action requires adequate understanding of the situation, hence the need for careful, thoughtful, systematic information processing. Forgas (1995) has proposed a more comprehensive model of the influence of mood on judgment, the Affect Infusion Model (AIM). This model states that the choice of information processing strategy is influenced by three types of variables: characteristics of the target (such as typicality and complexity), the judge (such as motivation, affect, and cognitive capacity), and the situation in which the judgment takes place (such as demand for accuracy, and social desirability). Particular combinations of these variables will promote one of four processing strategies. The *direct access strategy* is based on retrieval of pre-existing stored information, and is employed when the target is familiar and has prototypical features, the personal involvement of the judge is low, and there are no contextual demands for an elaborate processing. A judge who is motivated to arrive at a particular outcome will engage in *motivated processing strategy*, which is characterized by a highly selective search for information that will support the desired objective. When the target is highly typical, the judge is in a positive mood, has limited cognitive capacity, and is not

personally involved, and the situation does not require great accuracy, the *heuristic processing strategy* is likely to be used. In this case the judge will consider a limited amount of information and will use shortcuts.

There is reason to believe that the information processing strategy we employ in a particular situation affects our mood. In our every-day events we intuitively assume that there is a causal link from our circumstances, whether good or bad, or more precisely from the way we evaluate our circumstances, to the type of affect we experience. This assumption is confirmed practically countless times in our every-day experiences: we are happy when we land a job, get a pay raise, go on vacation, and our latest medical tests come out all right. On the other hand, when we get fired, cannot balance the family budget, must opt for a “stay-cation,” or are informed by the doctor that more tests are needed, we are down, blue, depressed, and anxious. If the situation seems to be good, and things are under control, then positive affect will result, but if we see ourselves stuck in a difficult situation our mood will become negative. Our intuitive understanding of the relation between pleasant and unpleasant events and correspondingly valenced mood has also been validated scientifically. For example, the amount of positive feedback received in a laboratory task influenced the subsequent mood of the participants (Wener & Rehm, 1975). In this experiment, the participants listened to a list of words, presented one word at a time, and were required to provide the word most closely associated with the presented word. A correct choice was signaled by a light. In reality, the participants had been randomly assigned to receive either a 20% or an 80% rate of positive feedback, irrespective of their answers. The results indicated that the participants who received more positive feedback reported less depressive affect than those who received less. Thus, a positive, pleasant experience—receiving positive feedback—resulted in an improved mood. In another study, the

participants kept a log of the pleasant and unpleasant events in their lives, as well as a record of self-reported mood, for 14 days. A sample of positive events included a good meal, a high grade on a test, reading the Sunday paper, and receiving a compliment; under negative events were recorded such things as a dentist appointment, a dull class, doing the laundry, and getting a parking ticket. The nature of the events correlated significantly with the mood experienced by the participants (Rehm, 1978). These facts suggest that the type of activity in which we engage has an effect on our affect. Specifically, an information processing strategy that will improve a situation will likely also result in an improved mood; when such a choice is not available, a corresponding deterioration of affect will occur. As a particular information processing strategy then, stereotyping can have a causal role in how we feel. Based on previous research, there are at least two ways in which stereotyping affects our mood: by playing a role in uncertainty reduction and by influencing the amount of effort required to perform a task.

These effects are likely to happen when the activated stereotypes are fairly innocuous. As Cottrell and Neuberg (2005) have shown, stereotypes that signal a threat are likely to elicit strong negative emotions such as disgust, fear, and anger. These emotions would certainly overwhelm any positive affect caused by using stereotypes to perform a social judgment task.

In the next section I will present some general information about stereotype formation, content, and use, and specifically look at the ways in which stereotyping is likely to influence affect: by reducing uncertainty, and by making tasks less effortful, respectively.

### Stereotypes and Stereotyping

The concept of a *stereotype* has been introduced in the scientific literature by Walter Lippmann, who defined stereotypes as simplified “pictures in our heads” of people and events in the world (Lippmann, 1922, p. 3). He argued that we use stereotypes because our environment is

too big and too complex for us, and we need to simplify the way we perceive it in order to function effectively. A more recent definition, broader and more explicit, is that a stereotype is a cognitive structure containing the perceiver's knowledge, beliefs, and expectancies about a social group (Hamilton & Troler, 1986).

Stereotype formation is closely linked with the process of categorization, which is so fundamental to our cognition that we could not function without this ability to categorize, and indeed, we cannot avoid thinking in categorical terms (Allport, 1954; Hinton, 2000). Because we are limited in our mental processing capacity the enormous amount of information coming in from the environment will be overwhelming. To prevent cognitive overload we resort to categorizing, or classifying objects and people. Simplification is not the only thing we achieve through categorization. It also has a meaning-giving function: it is through categorization that we identify things, understand what they are, and structure our environment. In this way we make sense of our environment, and gain an understanding of who we are and what our place in society is (Oakes, 2004).

More than one model has been proposed as to how stereotypes are represented and stored in memory. Some researchers suggested that we form prototypes of categories, objects and people (Mervis & Rosch, 1981). A prototype is an abstraction representing the average, or the most typical member of a category. A prototypical exemplar does not have to exist in reality, but can be an aggregate of characteristics that we construct mentally. Another proposal is that stereotypes are schemas for categories of people (Fiske & Taylor, 1991). A schema includes abstracted features of a category, as well as relationships among these features. Finally, exemplar models are based on mental representations of actual members of a category, rather than on abstractions. According to these models, we compare target individuals with the exemplar, and if

we believe that a match exists, we attribute characteristics of the exemplar to the target (Zarate & Smith 1990). For example, we might think of a newly encountered person as highly intelligent because of his or her physical similarity to one of our college professors.

Although stereotypes and categories are closely related, they also differ. Categories are the result of basic cognitive processes through which objects, and even ideas and concepts, are grouped together based on similarities, leading to a simplified picture of a structured world. Stereotypes are generalized beliefs about social groups that serve to rationalize behavior toward the group and its members. In pointing out the difference, Operario and Fiske (2004, p. 130) note that stereotypes are “specific consequences of the more general categorization process.” In the early period of stereotypes research, the dominant view regarding stereotype content was that it was largely incorrect (Lippmann, 1922). Katz and Braly (1933) conducted a simple, and now famous, experiment at Princeton University to assess the content of ethnic stereotypes. One hundred students were given a list of adjectives (such as industrious, intelligent, conservative, ambitious, passionate) and were asked to choose the adjectives that best described ten ethnic groups represented in the United States, such as Italian, German, English, Jews, and Blacks. They found a high degree of consensus in the views the students had of the ethnic groups, and interpreted it as an unexamined acceptance of the group opinion about other groups, and as such, a failure of thought. Although he viewed stereotypes as by-products of normal cognitive processes, Allport also considered them faulty and inflexible generalizations that cause prejudice (Allport, 1954). Brigham (1971) defined a stereotype as an overgeneralization of a trait to a group, without regard to the actual prevalence of that characteristic in the group. Others have countered that stereotypes contain a “kernel of truth” and are relatively accurate (Brown, 1965; Lee, Jussim, & McCauley, 1995).

Operario and Fiske (2004) suggest that it is practically impossible to establish the truth content of a stereotype because: 1) the absence of generally accepted, objective criteria for evaluation; 2) the stereotype-confirming behavior elicited from stereotyped individuals by individuals who hold the stereotype (self-fulfilling prophecy); and 3) the stereotype-confirming behavior elicited by simple awareness of the stereotype (stereotype threat). It is more appropriate then, as Hamilton (1979) proposed, to approach the study of stereotypes as being the result of neither “faulty” nor “correct” thinking, but rather arising from “ordinary” human cognitive processes—the very idea initially advanced by Lippmann (1922).

Even if stereotypes are not highly accurate, and do not provide the best answer in a social encounter, we still use them because they can increase the efficiency of our interactions. For the most part we do not want to expend a lot of time and effort to arrive at a correct solution; we are content with a quick answer that is good enough to help us get by. However, at other times we consider it necessary to form the most accurate impression of a person. Fiske and Taylor (1991) argue that our impression formation strategies can be described as a continuum from categorical thinking to piecemeal integration of the information available about a person. In any particular instance the position of the adopted strategy on the continuum depends on our motivation, and on the type and amount of information available.

Research shows that when we encounter another individual, a stereotype is automatically activated, based on a variety of cues that include race, gender, age, and body size (Banaji & Hardin, 1996; Devine, 1989). This initial process is, like all automatic processes, very fast, effortless, and operates largely outside conscious awareness. Depending on our motivation, we can stop at this stage, or exert more effort, and seek and use more information. For example, *outcome dependency* has been shown to motivate people to make use of additional information

(Erber & Fiske, 1984; Neuberg & Fiske, 1987). Relative to the activated stereotype the additional information can be consistent with the stereotype, inconsistent, or irrelevant. The kind of available information also influences the type of information processing strategy we employ when forming an impression. We engage in categorical thinking when we are provided only with a category label, or a category label and information that is consistent with it, or a category label and information that is irrelevant to the category. However, when we encounter a category label that is accompanied by inconsistent information, we tend to engage in more analytic, effortful, piece-meal impression formation (Fiske & Neuberg, 1990). In conclusion, whether we rely on stereotyping or not when forming an impression of a person depends on our motivation and on the type of information that is available.

#### Stereotyping, Certainty, and Affect

Because stereotypes reduce subjective uncertainty, they will affect our mood. Uncertainty is generally considered an undesirable motivational state, for which we have developed an adaptive sense of aversion. Wariness of strange people, objects, and situations may have enabled our ancestors to better detect and evade danger, thus increasing their inclusive fitness (Hamilton, 1964). This wariness of strange people and objects is observable from a very early age (Bronson 1972). The infants in Bronson's study were observed repeatedly between the ages of three and nine months, as they were presented with novel stimuli, such as a strange male person, and unfamiliar objects, including a mobile, a parasol, and a bamboo wind chime. Wariness responses—crying, frowning, unhappy vocalizations, crawling away—were observable from the fourth month of life, and increased dramatically after the age of six months.

A preference for the familiar extends to adults also, as evidenced by the “mere exposure effect” (Zajonc, 1968). In a series of experiments Zajonc showed that the participants who had

been exposed to some stimuli (such as nonsense “words,” Chinese ideographs, and pictures of men) reported greater liking for the stimuli to which they had been exposed compared with new stimuli; the participants also assigned more positive meaning to them. Zajonc proposed an evolutionary explanation for the observed effect: a new stimulus could signal danger, and is therefore likely to evoke fear, uncertainty, or conflict. The familiarity resulting from repeated exposure will likely signify that the stimulus is harmless, and will result in a more positive attitude toward it. In the fourth experiment in the study, Zajonc investigated the relationship between repeated exposures to a stimulus and participants’ galvanic skin response (GSR) to that stimulus. He found indeed that the GSR decreased significantly with the presentation frequency of a stimulus, suggesting that exposure to a novel stimulus produces a negative arousal such as uncertainty and fear.

The familiarity explanation for the mere exposure effect initially proposed by Zajonc (1968) has been complemented by boredom as a second variable that influences liking of a stimulus following repeated exposure to that stimulus. According to the *modified two-factor model* (Bornstein, 1989a), the increased liking for a previously presented stimuli is due to a reduction of subjective uncertainty, and that this reduction of uncertainty is experienced as affectively positive. According to this model, liking for a stimulus is the result of the interaction of two factors: positive habituation, and tedium. Encountering an unfamiliar situation or a novel stimulus is thought to be unpleasant. Repeated exposure reduces the conflict and uncertainty, resulting in an increase in liking. At the same time, repeated exposure produces an increase in tedium, which leads to a decrease in liking. The resulting relation between exposure and liking can thus be described by an inverted U-shaped curve. Initially the novelty of the stimulus produces negative affect; with repeated exposures comes increased liking that peaks at the point



where the stimulus is familiar, but not boring. Once tedium sets in there is a decrease in liking. The model allows for uncertainty reduction to happen either through deliberate, conscious learning, or through subliminal presentation of stimuli resulting in subconscious information processing. The theoretical model proposed by Bornstein has been supported empirically. For example, Lee (2001) asked the participants to rate their preference for some computer-generated abstract patterns; some patterns had been previously presented, and others were new. Participants indicated whether or not they thought they had seen the pattern before, as well as how confident they were about the answer. All three measures—prior exposure, subjective familiarity, and confidence—were considered operationalizations of uncertainty reduction, and all three were found to have a significant effect on liking. Participants liked better the old patterns than the new ones. They also showed a preference for patterns they thought they had seen previously (even when they had not), and judged more favorably the stimuli they could judge more confidently.

For the present study, the research reviewed above suggests a link between uncertainty and affect. Uncertainty is unpleasant and leads to negative affect, whereas uncertainty reduction results in positive affect. Further, we will see how stereotyping is related to uncertainty and uncertainty reduction. Recall that one of the main purposes of engaging in categorical thinking, and in stereotyping in particular, is to put order in our world, to make it predictable, to gain understanding an understanding of who we are, who other people are, to identify our relative places in the society, as well as the relationships that govern our interactions (Oakes, 2004). In other words, we stereotype to reduce our subjective uncertainty about ourselves, society, and the rules that govern it. The strength of this tendency is revealed by the *minimal group effect* (Tajfel, 1970). In the minimal group paradigm participants are assigned to different groups according to an arbitrary criterion. People identify with this minimal categorization and use it to define

themselves and the other participants in the context of the experiment. When they are asked to allocate points (representing scarce resources) to pairs of recipients from the two groups, participants will favor their own group (in-group favoritism) and discriminate against the other group (out-group discrimination). How do otherwise intelligent people come to think of themselves as “reds” and of others as “blues” (or any other minimal identifier), and act based on it? *Social identity theory* (Tajfel & Turner, 1979) proposed an answer in terms of our striving for subjective certainty. When we ascribe a label to a group, and an identity to individuals (including ourselves) via a group label, diversity is replaced by stereotypicality. This reduces uncertainty about who we are, who they are, and what the appropriate course of action is. This answer has been supported empirically by showing that when the high uncertainty present in the minimal group paradigm is reduced by other means, such as familiarity with the point-allocation procedure, the minimal group effect disappears (Grieve & Hogg, 1999).

In view of the research reviewed up to this point it is reasonable to conclude that stereotyping, by reducing subjective uncertainty, will likely cause a positive mood. Further, I will present research showing that we experience negative affect when we are not able to reduce subjective uncertainty.

Being confronted with a stereotype-violating other increases subjective uncertainty and leads to negative affect. Working within the framework of the *challenge and threat model* (Blascovich & Tomaka, 1996), some researchers showed that interacting with expectancy-violating partners causes negative affect (Mendes, Blascovich, Hunter, Lickel, & Jost, 2007). According to this model, people evaluate tasks in terms of demands and resources. If demands are greater than the resources, people feel threatened. If the resources meet, or exceed the demands, they feel challenged. Mendes et al. (2007) paired participants for a social interaction

with confederates who were presented as either conforming to an ethnic stereotype or being counter-stereotypical (such as an Asian speaking with a Southern accent). The researchers hypothesized that engaging in a social interaction with a person who violates a stereotype will increase both the uncertainty of the participants and the effort necessary to support an effective interaction, and will therefore result in a threat response. They measured the participants' physiological responses (left ventricular contractility, cardiac output, and total peripheral resistance), and found that the participants who interacted with stereotype-violating partners had relatively less ventricular contractility, low cardiac output, and increased total peripheral resistance compared with participants who interacted with stereotypical partners. These results indicate that participants who interacted with stereotype-violating partners experienced negative affect associated with feeling threatened.

#### Stereotyping, Ease of Processing, and Affect

Because stereotypes are generalized beliefs about groups they are used to make judgments about individuals based on their group or category membership. From an information-processing point of view, stereotyping is a heuristic strategy, and a stereotype is a particular form of the *representativeness heuristic* (Tversky & Kahneman, 1974). People use the representativeness heuristic to judge the probability of process B generating event A “by the degree to which A is representative of B, that is, by the degree to which A resembles B” (p. 1124). For example, when hearing that someone was shot on the job we are inclined to think that the person in cause was a police officer. Tversky and Kahneman (1974) supplied evidence for this idea through an experiment in which participants were presented with brief descriptions of several individuals, and were asked to indicate the probability that the individual described was either a lawyer or an engineer. They were told that the individuals described were randomly

chosen from a sample of 100 hundred professionals. In one condition the group supposedly consisted of 70 engineers and 30 lawyers; in the other condition the ratio was 30 engineers to 70 lawyers. Statistically, the probability that an individual randomly chosen from the group in the first condition will be an engineer is greater than the probability that he will be a lawyer. Conversely, an individual randomly chosen from the second sample has a greater probability of being a lawyer than an engineer. Results showed that participants disregarded the prior probabilities and evaluated the likelihood that a description belonged to an engineer or a lawyer based solely on the degree to which the description fit the respective stereotypes. Moreover, when people rate the likelihood that a person belongs to a category, and also rate the similarity between that person and a stereotypical member of that category, there is a strong positive correlation between the two ratings (Tversky & Kahneman, 1982).

To the degree to which our cognitive processing capacity is limited we need to employ processing strategies that will allow us to conserve mental capacity, and to use it with maximum efficiency. A number of studies have shown that when people lack the motivation or the resources to think in depth about another person, they will rely on stereotypes (Bodenhausen & Lichtenstein, 1987; Macrae, Hewstone, & Griffiths, 1993; Pratto & Bargh, 1991; Stangor & Duan, 1991). Macrae, Milne, and Bodenhausen (1994) demonstrated that stereotyping frees cognitive resources that can then be utilized to complete other tasks. Participants were required to perform two tasks simultaneously: they had to monitor some basic information about Indonesia's geography and economy played on a tape-recorder, while forming an impression of a person from information presented on a computer screen. For half the participants, along with the name of the person, a stereotype label was also provided in the impression-formation task. Subsequently, participants' performance on both tasks was assessed. For the impression-

formation part the participants were provided with a list of the names previously seen on the computer screen, and were asked to recall as many of the traits associated with each name as they could. To measure performance on the prose-monitoring task participants had to complete a multiple-choice test about the subject. Presence of the stereotype labels improved the participants' performance on both tasks. Participants who were provided with a stereotype label recalled more traits, and they also answered correctly a significantly higher number of questions on the multiple-choice test. Moreover, Macrae et al. (1994) obtained the effect when the stereotype labels were presented both supra-, and subliminally, providing evidence for the automaticity of the stereotyping activation. Consistent with previous research (e.g. Bodenhausen & Lichenstein, 1987), they attributed the results of this study to stereotypes providing a mental framework around which stereotype-consistent information can be organized, thus facilitating the encoding of such information in memory. Retrieval from memory becomes easier too. The activation a stereotype permits quick and easy access to the stereotype-consistent information, thereby reducing the demands on cognitive resources, so that these resources can be used to perform other tasks.

Another way in which stereotypes provide cognitive economy is by creating expectancies through which we filter experience. Once we place a person in a category, we can attribute to that person characteristics and types of behaviors that are consistent with the stereotype of that category. Consequently, we tend to allocate attention to stereotype-confirming information, and neglect information that is irrelevant or disconfirming (Fiske, Neuberg, Beatie, & Milberg, 1987; Stangor, & McMillan, 1992).

We have seen so far that stereotyping reduces the effort necessary for information processing. In turn, the ease with which information is processed, or the *processing fluency*,

influences the subsequent affect experienced by the person performing the task. Two explanations have been offered regarding the specific mechanism that links processing fluency with affect. First, the *Perceptual Fluency/Misattribution Model* proposes a cognitive perspective, according to which people make inferences based upon their fluency experience, and will misattribute it to their liking the stimulus (Bornstein, & D'Agostino, 1992). In this explanation the processing fluency itself is affectively neutral. By contrast, the *Hedonic Fluency Model* (Winkielman, & Cacioppo, 2001) argues that the fluency experience generates positive affect, which in turn is used to infer liking for the stimulus, in a manner similar to the “affect as information” model (Schwarz & Clore, 1983). Note that the Hedonic Fluency Model (HMF) posits a causal influence of the ease of processing on mood. The task in Winkielman and Cacioppo's study was to recognize images of various neutral objects imbedded in a random pattern of small dots. A prime consisting of a line contour was presented subliminally before each picture; the prime either matched the picture, thus facilitating recognition, or did not match it. After viewing the picture the participants had to rate it as to how much they liked it. The affective responses induced by the processing facilitation were recorded using facial electromyography (EMG). The same results were obtained when ease of processing was manipulated by varying the presentation time of the stimuli. The results of both studies showed that when information processing was facilitated, it produced an increased activity in the facial area related to positive affect. Thus, the results provide experimental support for the idea that ease of processing leads to positive affect.

The research reviewed so far indicates that stereotyping facilitates the processing of information that is consistent with the stereotype, thus easing the demand on the perceiver's cognitive resources. The net result of the processing fluency produced by the use of the

stereotype is an improvement in affect. By the same token, not being able to apply a stereotype should make a task more effortful, leading to a negative affect (Mendes et al., 2007).

### Rationale

There is evidence to suggest that the information processing strategy adopted in a situation has an influence on mood. The purpose of the present study is to investigate the influence of stereotyping as a heuristic approach to information processing on mood. We have reason to believe not only that such an influence exists, but also that it is mediated by two intervening variables: uncertainty, and effortfulness. To this end we have created an experiment in which the participants will engage in a social judgment task. More specifically, they will be required to predict the behavior and academic trajectory of a fictitious college applicant by answering a 13-item questionnaire regarding the applicant's likelihood of succeeding academically and socially, and of engaging in specific behaviors. Manipulating the information about the applicant creates four conditions that permit the use of an ethnic stereotype to different degrees: one is stereotypical, one counter-stereotypical, and the remaining two conditions neither conform to an ethnic stereotype, nor do they violate one. The specific stereotype used in the study is that ethnic Asian students are good in math, competitive, cold, and socially awkward. I will collect data about participants' mood, as well the level of certainty with which they make predictions about the target, and perceived effort involved in performing the task.

### Statement of Hypotheses

Hypothesis I. There will be a main effect of stereotyping on mood, so that the participants in the stereotypical conditions will experience positive affect, those in the counter-stereotypical condition will experience negative affect, while the remaining participants will score in between.

Hypothesis II. The effect of stereotyping on mood will be mediated, completely or partially, by the intervening variables of certainty, and effortfulness.



## CHAPTER II

### METHOD

#### Research Participants

Participants in the experiment were 9 male and 61 female undergraduates between the ages of 17 and 34, who were enrolled in psychology courses. The study was posted on the Psychology Department website, under Research Participation, and the students were able to sign up on-line as participants. In exchange for participation, the students received extra credit for the respective psychology courses in which they were enrolled.

#### Procedure

The experiment was conducted under the pretext of a study, supposedly commissioned by the administration of the University, about the efficacy of the admission process. On arriving at the laboratory the participants received the following information about the study, both in print and presented verbally by the investigator:

The purpose of the college admission process is to enable the Administration of a university to select the candidates who will most likely be successful as students of the respective school. Universities want their students to excel academically, to be well integrated socially in the life of the school community, and to succeed as professionals after they finish college. A variety of tools are used to assess the candidates and to predict their future success: high school transcripts, SAT scores, letters of recommendation, statements of purpose, and standardized application forms. The Administration of this University is interested in evaluating the predictive power of each of these tools individually, and the proportion in

which they contribute to the total picture of a candidate. In order to improve these tools, and therefore the admission process, we need to evaluate their effectiveness.

Further, the participants were informed that the method used to achieve the stated goal of the admission study is to use the information contained in the application package of a former student to make predictions about the student's academic trajectory. By comparing their predictions with what we already know about this student, we would be able to determine the predicting power of the information used.

Participants received two pieces of information: a printed application form for undergraduate admission, and a short essay that lists relevant interests, accomplishments, and extracurricular activities of the applicant. Half of the participants received an application containing the name of an ethnic Chinese applicant, Deng Min Choy, along with matching personal information (stereotypical target); for the other half, the applicant was a Caucasian named David Michael Carson (non-stereotypical target). For both conditions, each participant received an essay that contained either information consistent with the stereotype (stereotypical essay; see Appendix A), or inconsistent with it (counter-stereotypical essay; see Appendix B). Participants were randomly assigned to one of the four conditions resulting from the combination of two targets and two essays. After reading the information about the applicant, participants completed a questionnaire regarding the applicant's future success in school (Appendix C). The questions addressed the applicant's academic performance ("How likely is the applicant to excel in Math?"), social involvement ("How likely is the applicant to make a network of lasting friends?"), and competitive spirit ("How likely is the applicant to cooperate with other students

on course projects?”). The responses were recorded on a seven-point scale, where 1 is “Not at all likely” and 7 is “Extremely likely.”

### Dependent Measures

Two items from the questionnaire used to predict the applicant’s future behavior served as manipulation checks. Specifically, I considered the scores for item 1 (“The applicant will excel in Math”) and item 6 (“The applicant will cooperate with colleagues on course projects”) as a measure of the degree to which participants relied on stereotyping when judging the applicants.

After making their predictions, participants recorded their present *mood* by using a seven-point scale ranging from 1 (Not at all) to 7 (Extremely) to indicate to what degree it is characterized by eight adjectives: good, sad, happy, calm, inspired, blue, gloomy, and apprehensive (Erber & Tesser, 1992) (Appendix D). The *certainty* with which the participants made the predictions, as well as the perceived level of *effort* required by the task were measured through the questions: “How sure are you of your predictions about the applicant?” and “How hard did you find the task of making predictions about the applicant?” respectively. The answers to these questions were recorded on seven-point rating scale ranging from 1 (Not at all) to 7 (Extremely) (Appendix E).

Finally, the investigator thanked the participants, and debriefed them verbally. He also presented each participant with printed informational feedback (Appendix F).

## CHAPTER III

### RESULTS

#### Manipulation Check

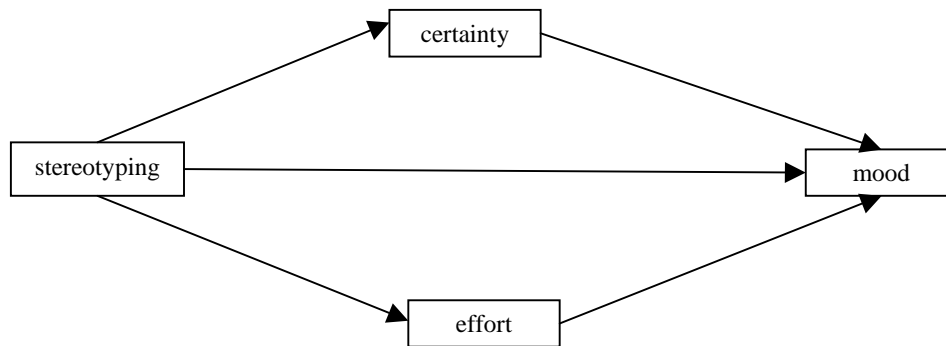
To verify that the manipulation of the independent variable was effective, and therefore that participants engaged to different degrees in stereotyping, I used item 1 (“The applicant will excel in Math”) and item 6 (“The applicant will cooperate with colleagues on course projects”) as manipulation checks. I conducted two *t*-tests to compare the mean of the responses to these items between the two targets. Both analyses yielded statistically significant results. Specifically, for item 1 participants predicted a significantly greater math ability for the stereotypical target ( $M = 6.00, SD = .612$ ) than for the non-stereotypical target ( $M = 5.352, SD = 1.057$ ),  $t(32) = 2.184, p = .036$ . For item 6, participants predicted a significantly greater degree of cooperation between the stereotypical target and his colleagues ( $M = 6.40, SD = .976$ ) than between the non-stereotypical target and colleagues ( $M = 5.771, SD = 1.114$ ),  $t(68) = 2.511, p = .014$ . These results indicated that participants did engage in stereotyping differentially when judging the targets.

#### Main Analysis

To obtain an index of participants’ positive *mood* I reverse-scored the negative mood adjectives (i.e., sad, blue, gloomy, and apprehensive) and averaged the responses across the eight items. Participants’ responses to the questions about how sure they are about their predictions, and how difficult they found the task constituted their *certainty* and *effortfulness* indexes, respectively. For the purpose of detecting the effect of stereotyping on mood, I analyzed the data provided by the mood questionnaire using a 2 (stereotypical target vs. non-stereotypical target) × 2 (stereotypical essay vs. counter-stereotypical essay) ANOVA. The results showed no

significant main effect of the target on mood,  $F(3, 66) = .209, p = .649$ . The effect of essay on mood was not statistically significant either,  $F(3, 66) = .044, p = .835$ . Also, the interaction between target and essay was not statistically significant  $F(3, 66) = .177, p = .675$ .

Since no statistically significant effect of stereotyping on mood was present, the planned path analysis (Baron & Kenny, 1986) needed not be conducted. Had the results of the ANOVA been statistically significant, the path analysis would have established the role of certainty and effort as mediating variables, as indicated by the following figure:



### Additional Analyses

The hypothesis that the relationship between stereotyping and mood is mediated by certainty and effort implies that there should be an influence of stereotyping on these mediating variables as well. To investigate this idea, I conducted two additional 2 (stereotypical target vs. non-stereotypical target)  $\times$  2 (stereotypical essay vs. counter-stereotypical essay) ANOVAs, one for each mediating variable. The results indicated that there was no significant main effect of the target on certainty,  $F(3, 66) = .088, p = .767$ , no significant main effect of essay on certainty,  $F(3, 66) = .294, p = .589$ , and no statistically significant interaction between target and essay,  $F(3, 66) = .088, p = .767$ . Similarly, there was no significant main effect of the target on effort,

$F(3, 66) = .040, p = .841$ , no significant main effect of essay on effort,  $F(3, 66) = .533, p = .468$ , and no statistically significant interaction between target and essay,  $F(3, 66) = .040, p = .841$ .

Next, I considered the possibility that these statistically non-significant results might be related to the mood scale. To investigate this option, I conducted a reliability analysis of the scale. The value of the internal consistency estimate of reliability computed as Cronbach's alpha was .8175, which indicated that the scale was reliable. Nevertheless, I redefined the scale by eliminating the two items that had the lowest intercorrelation, *inspired* and *apprehensive* ( $r = .0158$ ); the new scale resulted in a slightly higher Cronbach's alpha coefficient of .8608. Using the redefined scale, I conducted again the 2 (stereotypical target vs. non-stereotypical target)  $\times$  2 (stereotypical essay vs. counter-stereotypical essay) ANOVA, however without any improvement in the findings. The results of the analysis indicated that there was no significant main effect of the target on mood,  $F(3, 66) = .023, p = .904$ , no significant main effect of essay on mood,  $F(3, 66) = .485, p = .613$ , and no statistically significant interaction between target and essay  $F(3, 66) = .781, p = .380$ .

Further, I considered the scores on the two manipulation check items (item 1 and item 6) as measures of stereotyping, and I conducted within-subjects correlational analyses between each of the two items and mood in all conditions. The purpose of these analyses was to detect a relation between stereotyping and mood. The resulting correlations were not statistically significant. Specifically, for item 1 (math ability) in condition 1 (stereotypical target, stereotypical essay) the correlation coefficient was  $r = .1355, p = .540$ ; in condition 2 (stereotypical target, counter-stereotypical essay)  $r = .254, p = .325$ ; in condition 3 (non-stereotypical target, stereotypical essay)  $r = .055, p = .828$ ; in condition 4 (non-stereotypical target, counter-stereotypical essay)  $r = -.023, p = .931$ .

For item 6 (cooperation) in condition 1 the correlation coefficient was  $r = .137, p = .588$ ; in condition 2,  $r = -.199, p = .444$ ; in condition 3,  $r = -.331, p = .179$ ; in condition 4,  $r = .320, p = .211$ . The results indicated that stereotyping measures and mood did not correlate significantly.

To detect possible interactions between condition and stereotyping I conducted two hierarchical regressions in which mood was the outcome variable, and condition, stereotyping and their respective interaction variables were predictors. For the first regression I dummy-coded condition into three variables: X1, X2, and X3, I centered the continuous variable (math ability), and I created interaction variables  $\text{math} * \text{X1}$ ,  $\text{math} * \text{X2}$ , and  $\text{math} * \text{X3}$ . The model was not statistically significant  $F(7, 62) = .199, p = .985$ . Similarly, for the second regression I centered the continuous variable (cooperation), and using the dummy variables X1, X2, and X3, I created the interaction variables  $\text{coop} * \text{X1}$ ,  $\text{coop} * \text{X2}$ , and  $\text{coop} * \text{X3}$ . The regression model was not statistically significant  $F(7, 62) = .798, p = .592$ . These results indicated that condition, stereotyping, and the interaction between condition and stereotyping were not significant predictors of mood.

## CHAPTER IV

### DISCUSSION

In this study I attempted to put in evidence a causal relation between stereotyping and mood, and show that this relation was mediated by effortfulness and certainty. Unfortunately, the results failed to support the hypothesis that there exists an effect of stereotyping on mood. Manipulation checks revealed that participants engaged in stereotyping, but that stereotyping did not predict mood. In spite of this disconfirmation, I believe that such a link does exist, and that the results obtained in this study reflect possible technical problems, rather than conceptual issues. More specifically, it is possible that the instrument used to evaluate mood, while having been used successfully in a number of previous studies, was not the most adequate one for this type of investigation. Previous research has shown that sometimes, affective responses that are not detectable by more traditional ways, such as changes in facial expressions, or self-reports, can be recorded using physiological measures (Cacioppo, Bush, & Tassinari, 1992). This could be the main reason that all the studies I cited earlier that measured affective responses have employed physiological measures to detect changes in mood. As far back as four decades ago, Zajonc (1968) recorded participants' galvanic skin response (GSR) to evidence their affective response to novel stimuli. In order to support their contention that processing fluency causes positive affect, Winkielman and Cacioppo (2001) used facial electromyography to record activity of muscles involved in smiling and frowning. Finally, Mendes and colleagues (Mendes et al., 2007) operationalized threat response as a number of physiological measures: left ventricular contractility, cardiac output, and total peripheral resistance. In light of these facts, it is possible that a future study that will investigate the causal relation between stereotyping and mood by employing physiological measures to record mood might yield different results.



However, since such measures involve rather sophisticated apparatus, their use might be impractical or too expensive. A more affordable alternative would be a less reactive measure of mood, based on the observation that enhanced mood is likely to result in more positive evaluation of target stimuli (Schwarz & Clore, 1983; Reber, Winkielman, & Schwarz, 1988; Lee 2001). In such a scenario, instead of reporting their mood, the participants will evaluate a series of stimuli, and their evaluations will provide an indirect, and therefore less biased, measure of their mood.

Another possible factor behind the disconfirmation of the hypotheses of this study might be the fact that the sample of participants was not representative of the general population. The participants were college students, over 91% of the age of 21 or younger, 87% female, almost half (48%) White. The fact that they attend the courses of DePaul University might also be related to their attitude toward ethnicity, since DePaul boasts one of the most diverse student populations as ranked by the Princeton Review. It is possible that, having internalized DePaul's ethos, the participants hold liberal views on ethnicity, and use of ethnic stereotypes in a social judgment task makes them uncomfortable. As a confirmation of this possibility, during debriefing a few participants admitted that during the experiment the "Asian student" stereotype did come to mind, but they did not consider it appropriate to use the stereotype. The direction of the differences between means in the four conditions further corroborates this supposition. In the first condition, which consists of the stereotypical target plus the stereotypical essay, the mean index of positive mood was expected to be the highest, but is instead the lowest. Although not statistically significant, this result is telling. Presumably, the participants used the stereotype as a basis for social judgment, but the uncomfortable feeling they experienced as a result cancelled any improvement in mood caused by familiarity and processing fluency.

In sum, the hypotheses that stereotyping has a causal influence on mood, and that this influence is mediated by certainty and effort have been disconfirmed. However, I consider the theoretical basis of these hypotheses to be sound. Further investigations using a more objective way of measuring mood, as well as a more representative sample might yield results that will confirm the hypotheses.

## CHAPTER V

### SUMMARY

The present study investigated the influence of stereotyping on affect. Stereotypes are generalized beliefs about social groups that help us simplify, organize, and define our social environment, and ultimately allow us to deal with reality in an effective and adequate manner. Research also indicates that stereotyping affects our moods by influencing our subjective certainty as well as the effort we need to expend to perform particular tasks. According to social identity theory (Tajfel & Turner, 1979), we meet our need for subjective certainty by engaging in categorical thinking. Being able to reduce the uncertainty results in a positive mood, as evidenced by the mere exposure effect (Zajonc, 1968). Situations high in uncertainty, such as interacting with an expectancy-violating partner have been shown to create a negative affect (Mendes, Blascovich, Hunter, Lickel, & Jost, 2007). Such a situation is likely to produce negative affect also because it makes additional demands on our cognitive resources, and therefore requires a greater mental effort. Since our cognitive resources are limited, we tend to economize them, stereotyping being one of the principal ways in which we do so. Increasing the ease with which we process information has been shown to elevate our mood (Bornstein, 1989a).

The hypothesis that stereotyping influences mood, and that this influence is mediated by two intervening variables—effortfulness, and certainty—was tested in this study by asking the participants to perform a social judgment task. Participants were randomly assigned to four conditions that allowed, to different degrees, the use of an ethnic stereotype for the performance of the task. On completion of the task the participants' mood, subjective certainty, and perceived effort were measured. The data were analyzed using a  $2 \times 2$  factorial ANOVA.

The results were not statistically significant, thus failing to support the hypotheses. The study discussed possible causes of these unexpected results, and proposed changes that would allow a future study to detect a causal relationship between stereotyping and mood.

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## Appendix A

Dear Sir or Madam:

My favorite subject, even in junior high, was mathematics, so during my first semester at the Resurrection High School I became a member of the Young Pythagoras Math Club. As a member of the club I was able to study math more widely and more in depth. I also prepared for math competitions by solving difficult problems, learning alternative methods of approaching a problem, and integrating knowledge from different sub-fields of mathematics. As a result I was able not only to obtain excellent grades in Math classes, but I also developed a good understanding of mathematical theory. My involvement in the Math Club did not detract from the time and energy I put into studying for other subjects. Quite the contrary, I studied hard for all my classes, and I got good results.

I have also taken two college level math courses at Wright College: college Algebra, and Calculus I. I intend to finish the Calculus sequence before my freshman year, so that I can take more advanced courses once I start college.

One accomplishment I am really proud of is winning the second place, junior level, at the Mathematics Olympiad of the Midwest Regional Conference of Catholic Schools. From this accomplishment I learned that working hard and sharpening my competing edge will lead me to success.

My decision to apply to DePaul University was motivated by my understanding that DePaul offers great conditions for high achievement. I found out about the high output of research studies, which places DePaul University at the very top of the schools in its category in terms of scientific research; I intend to take full advantage of the opportunity of becoming involved in research. The small ratio of students to faculty members, especially in the College of Liberal Arts and Sciences, means that I will have to compete with fewer colleagues to have access to faculty and to other educational resources. In sum, I believe that at DePaul I can receive a great education, which will enable me to pursue a successful career.

I believe that my dedication to hard work in achieving the best possible education will also be an asset to DePaul University. Thank you for considering me.

Deng Min Choy

## Appendix B

Dear Sir or Madam:

During my first year at Resurrection High School, I became a member of the “Young Thespians” Theater Club. The purpose of the Club is to bring together students and teachers who love theater, to help us express ourselves through play, and to develop an appreciation for art. In addition, it helped me interact with other people, and make many friends.

I have also participated in the Team Learning Project, in which students formed study teams of three or four members. The team studies together, and the members are encouraged to cooperate in solving problems and doing projects. Cooperation between teams is also encouraged. This way we can all benefit from one another strengths, learn how to work together as a team, cultivate a spirit of caring for others, and promote cooperation rather than competition.

I am proud of my participation to the Team Learning Project, and I consider it one of my greatest accomplishments to contribute to the success of my whole class. I have also become more sensitive to other people’s needs. A great lesson that I learned from my participation in the project is that everybody is better off when we work together than when we compete with one another.

My decision to apply at DePaul University was motivated to a high degree by its great tradition of social activism, involvement in the community, and helping the disadvantaged. I would very much like to become part of that tradition. At the same time, I appreciate greatly the high quality of education that DePaul offers to its students.

I believe that my dedication to excellence in learning and in serving others will also be an asset to DePaul University. Thank you for considering me.

Deng Min Choy

## Appendix C

Please read carefully the attached application. Imagine that you are the university administrator in charge of admissions. Based on the information provided by the application do your best to answer the following questions:

Please indicate how likely you think that:

1. The applicant will excel in Math

1	2	3	4	5	6	7
Not at All Likely						Extremely Likely

2. The applicant will excel in English

1	2	3	4	5	6	7
Not at All Likely						Extremely Likely

3. The applicant will excel in science courses

1	2	3	4	5	6	7
Not at All Likely						Extremely Likely

4. The applicant will excel in social studies

1	2	3	4	5	6	7
Not at All Likely						Extremely Likely

5. The applicant will win a student scholarship award

1	2	3	4	5	6	7
Not at All Likely						Extremely Likely

6. The applicant will cooperate with colleagues on course projects

1	2	3	4	5	6	7
Not at All Likely						Extremely Likely

7. The applicant will compete against colleagues to get at the top of the class

1	2	3	4	5	6	7
Not at All						Extremely
Likely						Likely

8. The applicant will become involved in student government

1	2	3	4	5	6	7
Not at All						Extremely
Likely						Likely

9. The applicant will party frequently

1	2	3	4	5	6	7
Not at All						Extremely
Likely						Likely

10. The applicant will develop a network of lasting friendships

1	2	3	4	5	6	7
Not at All						Extremely
Likely						Likely

11. The applicant will join a fraternity/sorority

1	2	3	4	5	6	7
Not at All						Extremely
Likely						Likely

12. The applicant will remain relatively isolated socially

1	2	3	4	5	6	7
Not at All						Extremely
Likely						Likely

13. The applicant will go on to graduate school

1	2	3	4	5	6	7
Not at All						Extremely
Likely						Likely

## Appendix D

Please indicate how you feel presently by answering the following questions:

- |                        |   |   |   |   |   |           |  |
|------------------------|---|---|---|---|---|-----------|--|
| 1. I feel good         |   |   |   |   |   |           |  |
| 1                      | 2 | 3 | 4 | 5 | 6 | 7         |  |
| Not at all             |   |   |   |   |   | Extremely |  |
|                        |   |   |   |   |   |           |  |
| 2. I feel sad          |   |   |   |   |   |           |  |
| 1                      | 2 | 3 | 4 | 5 | 6 | 7         |  |
| Not at all             |   |   |   |   |   | Extremely |  |
|                        |   |   |   |   |   |           |  |
| 3. I feel happy        |   |   |   |   |   |           |  |
| 1                      | 2 | 3 | 4 | 5 | 6 | 7         |  |
| Not at all             |   |   |   |   |   | Extremely |  |
|                        |   |   |   |   |   |           |  |
| 4. I feel calm         |   |   |   |   |   |           |  |
| 1                      | 2 | 3 | 4 | 5 | 6 | 7         |  |
| Not at all             |   |   |   |   |   | Extremely |  |
|                        |   |   |   |   |   |           |  |
| 5. I feel inspired     |   |   |   |   |   |           |  |
| 1                      | 2 | 3 | 4 | 5 | 6 | 7         |  |
| Not at all             |   |   |   |   |   | Extremely |  |
|                        |   |   |   |   |   |           |  |
| 6. I feel blue         |   |   |   |   |   |           |  |
| 1                      | 2 | 3 | 4 | 5 | 6 | 7         |  |
| Not at all             |   |   |   |   |   | Extremely |  |
|                        |   |   |   |   |   |           |  |
| 7. I feel gloomy       |   |   |   |   |   |           |  |
| 1                      | 2 | 3 | 4 | 5 | 6 | 7         |  |
| Not at all             |   |   |   |   |   | Extremely |  |
|                        |   |   |   |   |   |           |  |
| 8. I feel apprehensive |   |   |   |   |   |           |  |
| 1                      | 2 | 3 | 4 | 5 | 6 | 7         |  |
| Not at all             |   |   |   |   |   | Extremely |  |





## Appendix F

Thank you for participating in our research. You have just participated in a study about stereotyping and mood. We are investigating whether relying on a stereotype when making a judgment influences mood. Previous research shows that moods can influence stereotyping, such that a positive mood leads to more stereotyping than a negative mood. We have reason to believe that relying on a stereotype when making a judgment may influence mood. We also believe that this influence is due to the fact that stereotyping affects our subjective certainty, as well as the level of effort required for the task.

Our hypotheses are that being able to use a stereotype leads to a more positive mood, whereas not using a stereotype will lead to a more negative mood, and that the effect of stereotyping on mood is mediated by certainty and by effortfulness. In order to test our hypothesis we asked our participants to predict the behavior and performance of a fictitious college applicant, based on the information provided in the application form and its accompanying essay. For half of these participants we primed a stereotype that could be used to make the judgment. By pairing the printed application form with either a stereotypical or counter-stereotypical essay we created different levels of usefulness of the stereotype in solving the task. Next, we used a self-report measure to assess participants' mood. We are predicting that using the stereotype will be related to the mood of the participants, such that the more useful the stereotype, the more elevated the mood. We also measured the certainty with which you made the judgment, as well as how difficult you considered making it, so that we could assess the role of these intervening variables in the effect of stereotyping on mood.

Thank you again for your participation. If you have any questions or comments about this study you may contact Ovidiu Dobria at [odobria@depaul.edu](mailto:odobria@depaul.edu). You may also want to consult the following research articles:

Mendes, W. B., Blascovich, J., Hunter, S. B., Lickel, B., & Jost, J. T. (2007). Threatened by the unexpected: Physiological responses during social interactions with expectancy-violating partners. *Journal of Personality and Social Psychology*, *92*(4), 698-716.

Erber, R., & Tesser, A. (1992) Task effort and the regulation of mood: The absorption hypothesis. *Journal of Experimental Social Psychology*, *28*(4), 339-359.