A Dual-Process Model of Reactions to Perceived Stigma

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The authors propose a theoretical model of individual psychological reactions to perceived stigma. This model suggests that 2 psychological systems may be involved in reactions to stigma across a variety of social contexts. One system is primarily reflexive, or associative, whereas the other is rule based, or reflective. This model assumes a temporal pattern of reactions to the stigmatized, such that initial reactions are governed by the reflexive system, whereas subsequent reactions or “adjustments” are governed by the rule-based system. Support for this model was found in 2 studies. Both studies examined participants’ moment-by-moment approach-avoidance reactions to the stigmatized. The 1st involved participants’ reactions to persons with HIV/AIDS, and the 2nd, participants’ reactions to 15 different stigmatizing conditions.

By definition, of course, we believe that a person with a stigma is not quite human. (Goffman, 1963, p. 5)

The painted bird circled from one end of the flock to the other, vainly trying to convince its kin that it was one of them. But, dazzled by its brilliant colors, they flew around it unconvinced. The painted bird would be forced farther and farther away as it zealously tried to enter the ranks of the flock.

—Jerzy Kosinski, The Painted Bird

What is stigma? According to J. Crocker, Major, and Steele (1998) “a person who is stigmatized is a person whose social identity, or membership in some social category, calls into question his or her full humanity—the person is devalued, spoiled or flawed in the eyes of others” (p. 504). The term stigma comes from the ancient Greek practice of physically marking with scars or brands individuals deemed undesirable and to be avoided (Goffman, 1963). In modern usage of the term, a defining immediate reaction to stigma seems to be avoidance. People act as if physical contact or even proximity to the stigmatized can result in some form of contamination. For example, Wheeler, Farina, and Stern (cited in Jones et al., 1984) found that people often feel a need to wash their hands after coming into physical contact with someone who has the stigma of mental illness. Also, people choose to stand or sit at greater distances from the stigmatized (e.g., the physically disabled, people with HIV, etc.) than the nonstigmatized (Kleck, 1969; Mooney, Cohn, & Swift, 1992; Snyder, Kleck, Strenta, & Mentzer, 1979) and are more likely to cut short their interactions with the stigmatized (Kleck, Ono, & Hastorf, 1966). People even react to inanimate objects somehow associated with stigmatized persons as if the objects have become contaminated (e.g., a sweater once owned, though not even worn, by a person with HIV is devalued; Rozin, Markwith, & McCauley, 1994; Rozin, Markwith, & Nemeroff, 1992).

Dual Processes in Reaction to Stigma

Despite the findings described above, reactions to the stigmatized are not uniformly negative. In fact, some studies have even found that under some conditions people may react more positively to a stigmatized than a nonstigmatized person (Carver, Glass, & Katz, 1978). Katz (1977) suggested that people often manifest ambivalence, a mixture of positive and negative emotions, across a wide range of stigmas. In addition to a sense of revulsion at a stigma, Katz suggested that people also commonly respond with sympathy and kindness to someone who is stigmatized. Some research has shown that people may have concurrent positive and negative reactions to people with physical disabilities (Kleck, 1969; Kleck et al., 1966). When asked to teach origami (paper folding) to someone in a wheelchair, able-bodied individuals displayed two distinct patterns of behavior: Verbal reports of their impressions of the physically disabled person were very positive, whereas nonverbal behaviors indicated anxiety and avoidance. Hebl and Kleck (2000) suggested that the verbal reports were the products of controlled processes and reflected people’s conscious efforts to conform to a norm of being kind to disabled people. Nonverbal behaviors, on the other hand, may have been more automatic and may have reflected “an underlying negative affective disposition toward physically disabled individuals” (p. 423).

Social psychologists have formulated “dual-process” models of the psychological processes involved in a vast array of social—cognitive phenomena (Chaiken & Trope, 1999). For example, dual processes have been found to be important in understanding racial attitudes (Devine, 1989; Devine, Monteith, Zuwerink, & Elliot, 1991; Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002; Dunton & Fazio, 1997; Fazio, Jackson, Dunton, & Williams, 1995; Plant & Devine, 1998). Fazio et al. (1995) suggested that individual differences in racial prejudice among European Americans are the products of both automatic and controlled factors. Fazio et al. have found that some individuals have automatic negative reactions to photographs of African Americans. In essence, exposures...
to these photographs prime negative affect. Independent of this automatic reaction, Dunton and Fazio (1997) found that people also vary in their motivation to control their prejudicial reactions. A similar analysis has been proposed by Devine and her colleagues (Devine, 1989; Devine et al., 1991). Both Fazio et al. and Devine and colleagues developed self-report questionnaires to measure individual differences in the motivation to control prejudicial responses. Plant and Devine (1998) additionally suggested that people may want to control prejudicial reactions for internal reasons (e.g., they think it is wrong) or external reasons (e.g., they do not want to appear prejudiced). Devine et al. (2002) found that people who have both a strong internal motivation to control prejudice and a weak external motivation (i.e., they are unconcerned about whether or not others think they are prejudiced) actually demonstrate less race bias on implicit measures such as the Implicit Association Test (see also Amodio, Harmon-Jones, & Devine, 2003). Apparently, people who are strongly motivated to avoid prejudice-like behaviors can successfully control behaviors that others have difficulty controlling.

With regard to racial bias, Gordon Allport (1954) suggested that many people who consciously reject prejudiced beliefs may still on occasion act unintentionally in an intolerant or prejudiced way. Allport thought that when this happens, people experience a negative emotional consequence, self-proach. Consistent with Allport’s theoretical ideas, research has found that people whose personal standards endorse nonprejudiced behavior often experience compunction (i.e., guilt, self-criticism) when they exhibit prejudice-like behaviors (Devine et al., 1991; Monteith, 1993). In addition, the experience of guilt following performance of a prejudice-like behavior can serve as an emotional cue for controlling future behaviors. For example, Monteith, Ashburn-Nardo, Voils, and Czopp (2002) found that participants who experienced guilt following an administration of the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998) were subsequently more likely to say that they liked stereotypic Black names (e.g., Tyrone). Thus, a desire to avoid guilt may be a motivating force in controlling prejudice-like behaviors.

Pryor, Reeder, and Landau (1999) proposed a dual-process model of reactions to HIV-related stigma. This model suggests that people can have automatic (immediate or impulsive) and controlled (thoughtful or deliberative) reactions to an individual perceived to have HIV-related stigma. The current research elaborates this model and in Study 2 expands it to encompass a broad range of stigmatizing conditions. In the current formulation, one process is described as primarily reflexive and the other as rule based, or deliberative. These distinctions are similar to those found in several other dual-process models (Devine, 1989; Lieberman, Gaunt, Gilbert, & Trope, 2002; Sloman, 1996; Smith & DeCoster, 2000; Strack & Deutsch, in press). We have opted to use the term reflexive instead of automatic because some research has shown that even reactions thought to be relatively automatic can sometimes be controlled (see Devine et al., 2002).

In the current model, the reflexive system concerns either instinctive reactions or spontaneous reactions that have developed through learning. Thus, a stigma may evoke impulsive emotional reactions that have evolved in human beings (Kurzban & Leary, 2001). For example, people may have instinctive avoidance reactions to individuals perceived to be diseased. A stigma label, like a stereotype label, may also evoke conditioned emotional reactions (Pavlov, 1927) developed through learning (Biernat & Dovidio, 2000). People learn consensual, culturally held associations to a label or mark. For example, in Western cultures people associate HIV with homosexual behavior (Pryor & Reeder, 1993). Even heterosexuals with HIV, such as Ervin “Magic” Johnson (the basketball star), are viewed more negatively by people who have antagonistic attitudes (Reeder & Pryor, 2000). Thus, automatic associations evoked by a label may drive responses to stigma in the reflexive system. We intend this term, reflexive process, to encompass both the evolved psychological processes described in Kurzban and Leary (2001) and the associative processes described in Sloman (1996) and Smith and DeCoster (2000).

Other theorists have elaborated on properties of the reflexive system that are generally consistent with our theoretical formulation. For example, Lieberman et al. (2002) described the reflexive system as behaving in accordance with connectionist models (Kunda & Thagard, 1996; Read, Vanman, & Miller, 1997; Smith, 1996) and theorize that it is related to a set of neural mechanisms. Strack and Deutsch (in press) suggested that the reflexive (their term is impulsive) system may be linked associatively to motor schemata that may elicit overt behavior. In the case of stigma, this motor behavior would most likely be some form of avoidance.

The rule-based system, on the other hand, involves reflective or thoughtful reactions (Sloman, 1996) and conscious deliberation of not only one’s overt behavior but also the products of the reflexive system. Thus, people may reflectively consider whether or not they should avoid a stigmatized person, and if the reflexive system has produced some immediate emotional reactions to the stigma, they may reflect on the appropriateness of their own emotions. This model of perceived stigma assumes that there is a temporal pattern of reactions to the stigmatized, such that immediate reactions are governed by the reflexive system, whereas subsequent reactions or “adjustments” are made as the rule-based system comes into play.

Perceived stigma involves the recognition of some distinguishing characteristic or “mark” that results in devaluation of a person (Dovidio, Major, & Crocker, 2000; Goffman, 1963). In the reflexive/rule-based model of stigma, this involves an immediate or reflexive, negative emotional response to the stigmatized. Rozin, Lowery, and Ebert (1994) suggested that disgust is a common emotion evoked by many stigmas. Rozin and his colleagues conceptualized disgust as a defensive emotion: It conveys a rejection from the self. Things that elicit disgust are perceived as having the potential to contaminate the self physically or socially. A sense of disgust may lead to an immediate desire to avoid the stigmatized.

Rule-based processes may also lead to emotional reactions to stigma. Weiner’s attribution–emotion model of stigmatization (Weiner, 1993, 1996; Weiner, Perry, & Magnusson, 1988) suggests that the emotional reactions of pity and anger may be derived from an attributional consideration of stigma. A pity reaction may be more likely when an individual is not considered to be responsible for the onset of the stigma, whereas anger or irritation reactions may be more likely when the individual is considered to be responsible for the stigma (Corrigan et al., 2003). Pryor et al. (1999) theorized that such attributional considerations—whether a stigma is perceived to have a controllable or uncontrollable onset—often take time to entertain. Reflections on the uncontrollable origins of a stigma may provide a rationale for positive adjustment. Thus, Pryor and his colleagues predicted that people would show more positive reactions to a person with an uncontrollable stigma.
when given time to consider their responses than when they were asked for immediate responses. Consistent with these predictions, the prospect of having lunch in the company of a little girl with AIDS (an uncontrollable stigma) was rated more positively by people who delayed their responses (by 15 s) than by people who responded immediately. For a controllable stigma (drug addiction), delay made no difference. Thus, an emotion such as pity may be derived from a rule-based process and may be slower to emerge than emotions related to reflexive processes such as disgust.

Rule-based reactions to the stigmatized are the products of thoughtful, deliberative processes and take time to emerge. Rule-based processes feel volitional, controllable, and effortful to the person who is engaged in them (Lieberman et al., 2002). Although reflexive processes feel spontaneously, uncontrollable, and automatic, rule-based processes may be turned on and off. Even in circumstances where perceivers have a negative reflexive reaction to the stigmatized, if perceivers have enough time, motivation, and cognitive resources, they may adjust their initial reactions. Devine, Fazio, and their colleagues (Dunton & Fazio, 1997; Plant & Devine, 1998) found that individual differences in European Americans’ motivations to control racial prejudice were related to more positive reactions to African Americans. Similarly, research by Pryor et al. (1999) found that individual differences in motivations to control stigma-related prejudice were linked to more positive reactions to persons with HIV stigma. What was somewhat surprising, but interesting, was the finding that an internal motivation to control prejudice concerning HIV-related stigma was correlated not only with more positive reactions to persons with HIV but also to more positive reactions to several other types of stigma as well, such as obesity and physical disability. So the beliefs that negative reactions to the stigmatized reflect a form of prejudice and that such prejudicial reactions should be controlled may constitute a basis for responding positively to a variety of stigmas.

The Time Course of Reactions to Stigma

The reflexive/rule-based model is summarized in Figure 1. Theoretically, reflexive reactions may be characterized as faster than rule-based reactions. However, the figure is not meant as a “stage” model where the reflexive reactions to a perceived stigma are necessarily subsumed or replaced by later rule-based reactions. These two systems are assumed to interact dynamically over time to produce not only subjective states in the perceiver (such as emotional experiences) but also overt behaviors. Figure 1 represents the time course of these processes during an initial encounter with a stigmatized person. We assume that reflexive processes may reemerge during subsequent encounters if the mark (i.e., stigmatizing attribute) is reexperienced or if one is reminded of the stigma (Kunda, Davies, Adams, & Spencer, 2002).

Although the emotional and behavioral responses to stigma may be very complex, a basic underlying dimension of both emotions and behaviors is one of approach and avoidance (Bargh, 1997; Cacioppo, Gardner, & Berntson, 1997; Cacioppo, Priester, & Berntson, 1993; Davidson, Ekman, Saron, Senulis, & Friesen, 1990; Hovland, Janis, & Kelley, 1953; Lang, Bradley, & Cuthbert, 1990; Neumann & Strack, 2000). An intimate psychological linkage exists between positive-negative feelings and approach-avoidance tendencies. For example, Chen and Bargh (1999) asked participants to evaluate words presented on a computer screen as either “good” or “bad” by pushing or pulling a lever. Participants were faster in pulling the lever toward them (an approach motor response) to signify a positive word than pulling the lever toward them to signify a negative word. The opposite pattern was found for pushing the lever away. In another study, Neumann and Strack (2000) found that the visual impression of a word as either coming toward or going away from a participant on a computer screen influenced how quickly the word was categorized as positive or negative. The Chen and Bargh study illustrates that the perception
of a stimulus as positive or negative primes or facilitates approach or avoidance motor behavior, respectively. The Neumann and Strack study illustrates that the perception of a stimulus as approaching or moving away primes or facilitates judgments of whether it is positive or negative. Collectively, these studies suggest a strong bidirectional association between positive feelings and approach and also between negative feelings and avoidance. These two studies also illustrate that it is possible to simulate crucial features of approach–avoidance behaviors using a computer interface.

Research on the dynamics of social judgment by Vallacher and his colleagues (Vallacher, Nowak, & Kaufman, 1994; Vallacher, Read, & Nowak, 2002) also used a computer simulation to measure changing approach–avoidance behavior over time. Vallacher and his colleagues devised a task in which participants were asked to move a computer cursor toward or away from a small circle representing a person on a computer monitor. In some cases the person was a liked person, whereas in other cases the person was a disliked person. In a third condition, the person was someone about whom the participant felt ambivalent. All participants demonstrated moment-by-moment variations in their approach–avoidance movements over a 2-min period. Over time, the amount of movement slowed, and the distance settled into a static state, for both the positive and negative persons, but the moment-by-moment variations in distance from the ambivalent person remained relatively high throughout the judgment period.

This task—assessing moment-by-moment distances of a computer cursor to a target—represents a direct analogue of approach–avoidance behavior and potentially allows the tracking of reflexive and rule-based processes over time. If, as the theoretical model suggests, people have initial avoidant reactions to a stigma based on stereotypic associations to negative affect or based on instinctive emotional responses, then measures of such factors should be correlated with early approach–avoidance. If, as the model suggests, people ultimately launch conscious deliberations about the nature of the stigma or their personal beliefs about responding without prejudice to the stigmatized, then measures of such factors should be correlated with later approach–avoidance. These hypotheses were tested in Studies 1 and 2. Although other dual-process models imply a time course in the onset of psychological processes (Chaiken & Trope, 1999), such an assumption has not been investigated directly. The current studies contribute to this body of research by (a) directly examining people’s moment-by-moment reactions to perceived stigma and (b) investigating the factors that influence ongoing approach–avoidance behavior at different points in time.

Study 1

In this study, participants were led to believe that they would be engaging in physical contact with another student. Specifically, they believed that they would have to don a blindfold and role-play having a visual disability while the other person led them around campus holding on to their arms (a “trust walk”). We chose to study a behavior involving physical contact because such behavior may be likely to elicit strong emotional reactions to a stigma (Rozin et al., 1992). The selection of the person to lead participants involved their indicating their reactions to a series of three people presumed to be other participants. These reactions were made using a computer program modeled after the one developed by Vallacher et al. (1994). On a computer screen, participants first typed in their own answers to a series of five personal information questions. Then they saw the answers to these same five questions from each “other participant.” Each answer was projected beneath a picture of the other participant along with his or her name. From a “start” position, participants were instructed to move the computer cursor closer to or farther from each picture of a person to indicate their feelings about the person. Closer indicated a more positive feeling toward participating in the trust walk with that person and farther away indicated a more negative feeling. Thus, the instructions emphasized to participants that their own approach–avoidance tendencies were to be reflected in the cursor movements. They were given 10 s to respond to each picture/answer. The distance of the cursor to the photograph was recorded at 500-ms intervals over the 10.0-s period. The relative distance of the cursor to the photograph operationally represented approach–avoidance behavior over time.

One of the three people with whom the participants might interact was depicted as having a very powerful stigma—he had contracted HIV from a blood transfusion. Thus, it was possible to discern immediate and delayed reactions to the stigmatized person and to correlate these reactions with measures theorized to be related to reflexive and rule-based processes. A measure of attitudes toward homosexuality was theorized to be related to reflexive processes. Because homosexuality is a strong associate of HIV, affect associated with homosexuality was hypothesized to influence people’s immediate responses to someone with HIV (even though the person was not described as gay). A measure of motivation to control prejudice was predicted to be connected to rule-based processes. As people had time to consider their responses to someone with HIV, such motivations were hypothesized to play a greater role in their approach–avoidance responses. For comparison purposes, one of the other potential people with whom the participants might interact also was described as having a different stigmatizing condition: The person was described as having a criminal past. The third potential interaction partner was described as an honors student. Our prediction was that participants would avoid the person with the criminal stigma as well as the person with HIV/AIDS. Unlike the person with HIV/AIDS, however, avoidance of the person with a criminal stigma should not be related to attitudes toward homosexuality or motivations to control prejudice regarding persons with HIV/AIDS. Participants were predicted to perform approach behavior toward the honors student (i.e., to move the cursor closer to his picture).

1 The selection of the trust walk as a cover story in which participants would have physical contact with another person took advantage of some convenient circumstances. In the university where this study was conducted, the Psychology Department is housed in the same building as the Special Education Department. Students in certain Special Education classes often engage in trust walks as sensitivity-training exercises in their classes. These exercises are conducted in or around the building where the Psychology Department labs are located. Participants are likely to have witnessed these exercises or to have heard about them. Thus, these circumstances lent credibility to the cover story of this study.
Method

Participants. Of the 101 undergraduates who participated in this study, 90 were women, and 11 were men. The data from 13 participants were unusable because of a computer malfunction. Participants received research credit in psychology courses in exchange for their participation.

Procedure. Following their completion of an informed consent document, participants were told that the study in which they were about to take part involved an examination of some of the factors that are important in people’s behavior during trust walks. A trust walk was described to them as a sensitivity training exercise used by students in special education courses, in which one student role-plays the behavior of a visually disabled person by donning a blindfold and another student leads the blindfolded student on a walk across campus, guiding the blindfolded person by holding on to the person’s arm. Participants were given a photograph of two students engaged in a trust walk and told that they would take part in a trust walk with another student to be selected by a process soon to be explained.

Participants were led to believe that three other students were simultaneously participating in the study session in different laboratory rooms of the Psychology Department. Actually, the participant was the sole person involved in each session. Participants were asked to complete a questionnaire on a computer. The participants were asked to fill in their first names and the following questions were asked: (a) “Where are you from and how long have you been at Illinois State University?”; (b) “Do you work or belong to any clubs or organizations on campus?”; (c) “What are your three favorite hobbies?”; (d) “What do you think makes you unique?”; and (e) “Where do you see yourself in five years?” After they had answered these questions, the experimenter took their picture (a head-and-shoulders shot) with a digital camera hardwired to the computer. The experimenter then asked the participant to click on a “send” button on the computer screen. The experimenter explained that each of the other participants was completing the same task and that each participant would get to see the picture and questionnaire information of the other three. After a brief pause in which the experimenter was ostensibly checking on the other participants, the experimenter explained to the participant that she or he would be making some ratings of the other three participants and that the one that she or he rated most positively would be the person to go on a trust walk with the participant. To further this cover story, the experimenter laid a blindfold on the table next to the computer.

The method that was used in rating the other three participants involved moving a computer cursor toward or away from a photograph of the person that appeared on the left-hand side of the computer screen. Below the photograph, the person’s name appeared along with one of the five questions previously answered by the participant and the person’s answer. The cursor reappeared in the same location, midway between the edge of the photograph and the right-hand edge of the computer screen, with each new question. Participants had 10 s to move the computer cursor. They were instructed to move rapidly, initially, in the direction of their feelings—closer for more positive and further away for more negative feelings—and then to “fine tune” the cursor position to approximate best how they felt. Five-second intervals of blank screen were interspersed between rating trials. Prior to their rating the other three participants in this way, they were given two practice trials using pictures and questions and answers from two celebrities.

The questions and answers for each stimulus person (ostensibly each other participant) were presented in the same order as posed to the participant, (a)–(e) above. The answer to the fourth question, “What do you think makes you unique?” was counterbalanced with three answers across the three stimulus persons. These answers were “After a car accident I had a blood transfusion. From that transfusion, I got HIV/AIDS”; “I received a partial scholarship for academics. I am an honor student”; and “I used to be bad. I haven’t been in trouble in a while, but I am finishing up a probation for burglary.” The order of the three stimulus persons was held constant. Thus, the participants learned that either the first, second, or third person had HIV/AIDS.

Following the last answer for the third stimulus person, participants were given a questionnaire for “an unrelated pilot study” while they awaited the results of their ratings of the other three “participants” and the trust walk. This questionnaire contained the Heterosexuals’ Attitudes Toward Homosexuality (HATH; Larsen, Reed, & Hoffman, 1980) and the Motivation to Control Prejudice scale (MTCP, Pryor et al., 1999) embedded in a series of filler self-report personality and attitude scales. Following this, participants were debriefed. A funnel debriefing technique was used in which participants were first asked generally about their impressions about the study and then progressively more specific questions about the procedures. All of the participants professed to have believed that they were indeed about to go on the planned trust walk during the phase in which they reacted to the other participants using the mouse and cursor procedure. None of the participants expressed suspicion at the procedures. None were able to articulate any connections between the mouse and cursor procedure and the subsequent “unrelated pilot study.”

Measuring responses to stigma. A Macintosh 7200 computer was used in the data collection. Participants’ cursor movements during the fifteen 10.0-s trials were tracked using a program developed with HyperCard (Winkler, Kamins, & DeVoto, 1994). At the beginning of each trial, the cursor was positioned at a common location, a photo and some information about the other participant appeared on the left, and then the participant began to move the cursor toward or away from the photo. This program recorded the distance between the cursor and each trial’s photograph on the computer monitor’s pixel matrix at intervals of 0.03 to 0.07 of a second. These records were condensed by computing means of pixel distance for 500-ms intervals. Thus, the pixel distance of the cursor to each picture was measured at twenty 0.5-s intervals on each trial. As described above, each participant received five question and answer trials concerning each of the three stimulus persons. The crucial information concerning HIV-related stigma was presented on the fourth trial of one of these stimulus persons. To simplify the data further, pixel distances at each time interval on Trials 1–3 were averaged, then the difference between the pixel distances on Trials 4 and 5, and these Trial 1–Trial 3 averages were computed at each interval. Thus, larger values on these change scores represent greater distances between the cursor position and the picture of the stimulus person relative to the distances on Trials 1–3, where relatively neutral information was presented. The use of these change scores achieves some precision in measurement by allowing each participant to serve as his or her own control: The avoidance of a stigmatized person is contrasted to each participant’s reactions to that person prior to learning about the stigma.

Results

The relative distance scores on Trials 4 and 5 were analyzed using a general linear model (GLM) where stigma condition (AIDS, criminal, or honors student), trials (question–answer Trial 4 vs. Trial 5), and time (twenty 0.5-s intervals) were within-participant factors, and HATH and MTCP (coefficient as = .94 and .81, respectively) were continuous between-participants pre-
dictors (analogous to covariates). Although numerous effects were statistically significant from this analysis, two specific effects were germane to the hypotheses. The first, the Stigma Condition × Trials × Time interaction, concerns the basic tendency of participants to avoid the stigmatized and approach the nonstigmatized as measured by the distance of the cursor from the photographs of the stimulus persons in the task used in this research. The second, the Stigma Condition × Trials × Time × HATH × MTCP interaction, concerns the relative influence of factors that predict this measure of stigma avoidance over time. Theoretically, factors connected to reflexive processes should be more strongly related to initial approach–avoidance reactions to stigma, whereas factors connected to rule-based processes should be more strongly related to approach–avoidance reactions as time passes. Each of these interactions will be discussed in turn.

**Avoiding the stigmatized.** One basic prediction was that participants would manifest avoidance reactions to the two persons with stigmas. In other words, they were predicted to keep the cursor at greater distance from the person with HIV/AIDS and the person described as a criminal than the honors student, particularly on fourth question–answer trials where they first learned of the stigmas. The Stigma Condition × Trials × Time interaction (shown in Figure 2) was significant, $F(38, 3192) = 15.00, p < .01$. At any specific point in time, larger positive values in Figure 2 represent more avoidance (i.e., greater distance between the cursor and the photograph) and larger negative values represent more approach relative to participants’ reactions on Trials 1–3 (i.e., the dependent variable is a difference score where the average distances on Trials 1–3 are subtracted from those on Trials 4 and 5). As can be seen, participants tended to avoid the stimulus person with HIV/AIDS and the one depicted as a criminal on Trial 4. On the other hand, participants tended to approach the honors student on Trial 4. The relative distance of the participants to the person with HIV/AIDS and the person depicted as a criminal compared with that of the honors student was consistently different beginning at the 2.5-s interval; $F(1, 87) = 4.67, p = .03$, and $F(1, 87) = 7.08, p < .01$, respectively. The most pronounced avoidance in Trial 4 was displayed in response to the person with a criminal record. The relative distance comparing the criminal with the person with HIV/AIDS began to be consistently different at the 5.0-s interval, $F(1, 87) = 5.53, p = .02$. Thus, although the stigma of HIV/AIDS and that of criminal behavior both produced avoidance reactions, participants’ reactions to the criminal stigma were more extreme. By Trial 5, however, avoidance reactions to both stigmas dissipated considerably relative to their reactions on the previous trial. On average, the reactions to the person with HIV/AIDS on Trial 5 became similar to reactions to the honors student, though participants continued to keep a greater distance from the person with a criminal stigma. In summary, avoidance reactions to both of the stigmatized persons were stronger on the fourth trials when participants first learned about these stigmas. Time to reflect about their reactions to the person with HIV/AIDS produced approach behavior by the end of the fifth trial that was equivalent to that of participants’ approach to the honors student. Even toward the end of the fifth trial, however, participants remained more avoidant to the person with a criminal stigma.

**Reflexive and rule-based reactions to stigma.** HATH and MTCP represent individual difference variables that were predicted to influence reactions to HIV/AIDS stigma at different points in time. Theoretically, the HATH scale measures affect that HIV/AIDS may evoke because of the strong association that people typically have between attitudes toward homosexuality and HIV status. As such, HATH should be most strongly connected to participants’ immediate, reflexive reactions to a person with HIV/AIDS. Those with stronger negative attitudes about homosexuality should show more immediate avoidance to someone with HIV/AIDS. Motivation to control prejudice, on the other hand, is...

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3 Preliminary analyses included a counterbalancing variable. Because this variable did not qualify any of the major effects, it was dropped from further consideration.
theorized to be important in participants’ reactions only after they have had time to consider their reactions to someone with HIV/AIDS. Thus, the connection between MTCP and approach–avoidance should build over time. Those with stronger motivations to control prejudice should display more approach to a person with HIV/AIDS over time.

Consistent with these predictions the Stigma Condition × Trials × Time × HATH × MTCP interaction was statistically significant, $F(38, 3192) = 1.43, p = .04$. The best way to depict this interaction graphically is to plot the percentage of variance in cursor distance related to HATH and MTCP over time and trials within the HIV/AIDS stigma condition. These relationships are depicted in Figure 3.4 The partial correlations between HATH and relative distance (where MTCP is statistically controlled) were statistically significant at the 1.0-, 1.5-, and 2.0-s intervals. At the 2.0-s interval, a negative correlation emerged, indicating that those with less positive attitudes toward homosexuality kept greater distance toward the person with HIV/AIDS. At the 1.0- and 1.5-s intervals, these correlations were actually positive. Although this might seem counterintuitive, the pattern seems to be explained by the participants with positive attitudes toward homosexuality grasping the mouse and causing the cursor to move slightly backward while in preparation for moving toward the target at the 2.0-s interval. (An early pilot of this study found the same behavioral pattern.) None of the partial correlations between HATH and relative distance were statistically significant after the 2.0-s mark on the fourth trial. A trend analysis of the percent of variance in distance related to HATH revealed a curvilinear pattern with a significant quintic component, $F(1, 14) = 5.07, p = .04$. The linear component of this trend was not significant, $F(1, 18) = 0.55, p = .47$. Thus, the relationship between HATH and relative distance (stigma avoidance) peaked early on and then dissipated as time passed.

The percent of variance related to MTCP on the fourth trial showed a very different pattern over time. After the 7.0-s interval on the fourth trial, all of the partial correlations between MTCP and relative distance were statistically significant ($ps < .05$). Consistent with the hypothesis, this pattern shows that concerns about responding without prejudice were only related to their reactions after participants had time to reflect on them. A trend analysis showed a significant linear trend in the percent of variance of distance related to MTCP over time, $F(1, 18) = 57.25, p < .01$.5

When we turn to the fifth trial, these same patterns seemed to be amplified. The photograph of the person with HIV/AIDS was reintroduced on the fifth trial with some new neutral information (an answer to the question “Where do you see yourself in 5 years?”). Significant partial correlations between HATH and rel-

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4 The squared partial correlations in Figure 3 represent the amounts of unique variance in distance associated with HATH or MTCP at each time interval within the HIV stigma condition. One reason for using partial correlations (where MTCP is controlled in the HATH/distance relationships and HATH in the MTCP/distance relationships) is that a partial correlation best captures the kind of relationship between these variables that was represented in the five-way interaction of GLM analysis. Another reason is that these two variables, HATH and MTCP, are slightly correlated ($r = .25, p < .05$). Analyses using simple correlations found the same patterns as portrayed here using partial correlations. In Study 2, squared partial correlations were also used to graphically represent the relationships over time. In that study, simple correlations also showed the same patterns as partial correlations.

5 Although quadratic and cubic components of this trend were also significant, it is important to note that the linear component was significant for the MTCP variable and not the HATH variable. Whereas the relationship between MTCP and distance rose steadily over time (i.e., people with stronger motivations to control prejudice moved the cursor closer to the person with HIV/AIDS as time passed), the relationship between HATH and distance rose early and then fell—it was curvilinear.
ative distance were present at the 0.5-, 1.0-, and 1.5-s intervals on the fifth trial. Once again, the first two of these were positive, reflecting preparation of those with positive attitudes toward homosexuality to move toward the photograph (a “wind-up”), and the third was negative, reflecting greater avoidance of the person with HIV/AIDS by those with negative attitudes toward homosexuality ($p < .05$). As in the previous trial, partial correlations between HATH and relative distance were not significant at subsequent time intervals on the fifth trial. Thus, the reexposure of the participants to the photograph of the person with HIV/AIDS on the fifth trial seemed to trigger new affective reactions related to reflexive processes (i.e., their attitudes toward homosexuality). We assume that the reintroduction of the photograph reminded participants of the stigma at the beginning of the fifth trial. As time passed on the fifth trial, MTCP became even more important in participants’ reactions to the person with HIV/AIDS than on the previous trial. Participants who were strongly motivated to control their prejudice were more likely to approach persons with HIV/AIDS toward the end of the fifth trial. At the 6.0-s interval and thereafter, the partial correlations between MTCP and relative distance were statistically significant ($p < .05$; see Figure 3 for squared partial correlations).

When we examined the analogous partial correlations between relative distance, HATH, and MTCP for the other two stimulus persons—the honors student and the person with a criminal stigma—none were statistically significant. Thus, consistent with our theoretical analysis, the relationships among these variables were confined to reactions made to a person with HIV/AIDS.

**Discussion of Study 1**

Supporting our predictions about reflexive processes, participants who held more negative attitudes toward homosexuality were more likely to keep their distance from persons with HIV/AIDS stigma. This relationship interacted with time showing that the strongest relationships between antigay attitudes and avoidance were within the first few seconds of their responding. Consistent with predictions about rule-based processes, participants’ motivations to respond without prejudice led them to move closer to persons with HIV/AIDS stigma. This relationship built more slowly over time. These findings demonstrate that psychological reactions to a person with HIV/AIDS stigma involve dual processes and that each of these processes has a predictable time course. Although previous studies have demonstrated the usefulness of a dual-process analysis in understanding other forms of prejudice, the measurement of the differential impact of these dual processes in real time represents a unique contribution to this research literature.

Participants’ immediate reactions to a person with HIV/AIDS were correlated with their attitudes toward homosexuality. We suggest that this was because people strongly associated HIV/AIDS with homosexuality (Pryor & Reeder, 1993; Reeder & Pryor, 2000). In a national survey Herek and Capitanio (1999) found that 53% of Americans said that when they think of “AIDS,” the first thing that comes to mind is “homosexuality.” Despite public health educational campaigns aimed at dissuading people of the notion that HIV is a “gay disease,” this is still a prevalent view in the United States. Across many studies, some with national samples, negative attitudes toward homosexuality have been found consistently to be significant predictors of negative reactions to persons with HIV/AIDS, even when other factors are statistically controlled (for a review, see Pryor et al., 1999). The target person in Study 1 contracted HIV/AIDS through a blood transfusion. Thus, the connection between the stimulus person and homosexuality was purely arbitrary—he had a disease associated with homosexuality. Similarly, Neuberg, Smith, Hoffman, and Russell (1994) found that heterosexuals who are socially associated with homosexuals are denigrated; apparently, they come to share some of the stigma. The power of a stigma to contaminate those who are merely associated with the stigma was recognized by Goffman (1963) and shown recently in studies of obesity stigma by Hebl and Mannix (2003).

The dynamic interplay between reflexive and rule-based processes is illustrated by the responses of participants to a person with HIV/AIDS across the fourth and fifth trials. When participants initially received information about the HIV status of this stimulus person at the beginning of the fourth trial, approach-avoidance reactions were related to their attitudes toward homosexuality. We conceive of this as a reflexive reaction. Slowly, motivation to control prejudice (rule-based processes) began to exert an influence over their approach–avoidance reactions. After 10.0 s of cursor movement, the screen went blank for 5.0 s. Then a new and neutral question-answer appeared along with the photograph of the stimulus person. It is interesting that initial reactions to the stimulus person on this fifth trial were also related to attitudes toward homosexuality. Our interpretation of these findings is that participants were reminded of the stigma by seeing the photograph that had just been paired with the HIV/AIDS information. As shown in Figure 2, rule-based processes (as indicated by the relationships between MTCP and cursor distance to the photograph) came into play even more strongly at the end of the fifth trial than at the end of the fourth trial. By this point, participants had experienced their own reflexive reactions to the stigmatized person twice. An enhanced awareness of their own responses may have served as a cue for those so inclined to control their prejudiced responses (Monteith et al., 2002).

Another perspective concerning the stimulus person with HIV/AIDS in this study is that the onset of his stigma may have been perceived as uncontrollable. Schwarz and Weiner (1991) reported that people who contracted HIV/AIDS through a blood transfusion were less likely to be blamed for their disease than people who contracted HIV/AIDS through a “promiscuous sex-life.” Weiner’s attribution-emotion model of stigma (Weiner, 1993, 1996; Weiner et al., 1988) suggests that people may have an initial negative emotional reaction to a stigma followed by a more cognitive consideration of its potential causes. When people encounter someone with a stigma, a pity reaction may follow when an individual is not considered to be responsible for the onset of the stigma, whereas anger or irritation reactions may follow when the individual is considered to be responsible for the stigma (Corrigan et al., 2002; Dijker & Koomen, 2003). Thus, participants in Study 1 may have reacted to the person with HIV more positively after considering that the onset of the disease was uncontrollable, which is consistent with the analysis of rule-based processes presented above. Study 2 investigated the issue of controllability more directly.

Clearly, motivations to respond without prejudice were also important in our participants’ ultimate reactions to the stigma of
HIV/AIDS. Those who scored high on this individual difference measure were more likely to exhibit approach responses to the person with HIV after having had time to consider their responses. Thus, in the later portions of Trial 4 and even more strongly in the later portions of Trial 5, the participants began to distribute their distances to the person with HIV/AIDS according to their scores on the MTCP measure. This motivation to respond without prejudice seemed to be HIV/AIDS specific in this study in that it was not related to participants’ reactions to someone whose stigma involved criminal activity.

**Study 2**

The purposes of Study 2 were to (a) extend the reflexive/rule-based model to a broader range of stigmatizing conditions, (b) examine the notion that people may have a general motivation to respond without prejudice that extends to many types of stigma, (c) explore more fully how attributional considerations come into play when responding to stigma, and (d) explore the initial emotions elicited by stigma.

The reflexive/rule-based model of reactions to perceived stigma may have relevance for understanding psychological reactions to a broad range of stigmas. Health care settings would seem to represent a social context in which people commonly encounter such a broad range of stigmatizing conditions, including mental illnesses, infectious and chronic diseases, and various types of disabilities. Thus, in Study 2 we examined participants’ reactions to encountering people with different types of stigmatizing conditions in a health care setting.

Pretesting was used in Study 2 to select 15 stigmas that varied widely in the degree to which participants perceived their onsets as controllable. Included in the 15 different stigmatizing conditions we selected were three alternative descriptions of 3 stigmas—AIDS, cancer, and obesity—adjusted so that each stigma might have a high, medium, and low onset controllability version. For example, AIDS was described as “AIDS from unprotected gay sex,” “AIDS,” and “AIDS from a blood transfusion.” Similar versions of the other stigmas, cancer and obesity, were developed. We also selected individual stigmas from high, medium, and low onset controllability ranges to supplement these. This procedure allowed a more comprehensive test of the hypothesis that adjustments made in reaction to stigmas perceived to be uncontrollable represent a rule-based, time-consuming process.

The MTCP scale developed by Pryor et al. (1999) focuses on motivations to control prejudice concerning persons with HIV/AIDS. This scale was modeled after a similar scale concerning racial prejudice developed by Plant and Devine (1998)—the Internal Motivation to Respond Without Prejudice Scale. In the Pryor et al. study, higher scores on the MTCP scale were correlated with more positive reactions not only toward persons with AIDS, but also toward several other stigmatized persons as well, such as persons with cancer, obesity, herpes, nonmainstream sexual orientations, and physical disabilities. So we had reason to believe that a more general construct involving a motivation to refrain from prejudice toward people with stigmas might be present. In order to better tap such a construct, we expanded the MTCP to include items relating to other stigmas. Thus in Study 2, this scale was expanded to include parallel items involving cancer and obesity. This new Motivation to Control Prejudice Against Persons With Stigma (MTCPS) scale was expected to have relevance to a wide range of stigmatizing conditions.

Study 1 found that people who hold negative attitudes about homosexuality tend to have an initial, parallel negative reaction to a nonhomosexual person with HIV/AIDS—a disease associated with homosexuality. Thus, Study 1 tested the notion that a stigma label can activate a learned chain of associations that leads to a negative or avoidant reaction. The reflexive/rule-based model depicted in Figure 1 also postulates that a stigma may evoke instinctual avoidant reactions. Recently, Kurzban and Leary (2001) proposed that aversions to the stigmatized may have evolved to serve the functions of (a) decreasing the probability of being cheated in a social exchange and avoiding interactions with partners who have little to offer in terms of social gain, (b) maintaining one’s group’s integrity and exploiting those in subordinate groups, and (c) decreasing the probability of parasitic infection” (p. 189; see also Neuberg, Smith, & Asher, 2000). In empirical studies of contemporary human beings, Rozin and his colleagues (Nemeroff & Rozin, 1994; Rozin et al., 1994) found that people typically respond to the prospect of social or physical contamination from stigma with a self-defensive emotion: disgust. Disgust has long been recognized as a basic human emotion (Darwin, 1872/1965; Ekman, 1989) and is thought to have evolutionary origins. Rozin and his colleagues suggest that what disgust elicits primarily convey is simply a rejection from the self. Though disgust may be an instinctual emotional response, there are individual differences in people’s sensitivity to disgust. Haidt, McCauley, and Rozin (1994) developed a reliable self-report scale that measures disgust sensitivity in eight domains: food, animals, body products, sex, body envelope violations (e.g., gore, surgery, etc.), death, hygiene, and magic. Rozin, Haidt, McCauley, Dunlop, and Ashmore (1999) reported that this scale is highly correlated with facial expressions and subjective reactions made in response to actual disgusting experiences.

In Study 2, individual differences in disgust sensitivity were measured using the scale described above. Our first hypothesis was that those who are highly sensitive to disgust should have a more negative immediate reaction—a reflexive negative reaction, in other words—to the prospect of coming in contact with a stigmatized person. Moreover, given the reflexive nature of this response, we expected it to dissipate over time. Our second hypothesis was that motivations to control prejudice would be increasingly related to reactions to the stigmatized over time (as in Study 1). In other words, those who felt a motivation to respond without prejudice would demonstrate more approach behavior after having had time to reflect on their reactions. Finally, we hypothesized that the perceived onset controllability of a stigma would have an impact on approach–avoidance behavior and that this impact also would increase over time. Ultimately, participants should approach someone with an uncontrollable stigma, avoid someone with a controllable stigma, and react less extremely to someone whose stigma is not as clearly perceived as uncontrollable or controllable. Because such attributional considerations represent rule-based processes, they should take time to unfold.

**Method**

**Participants.** Of the 93 undergraduates who participated in this study, 75 were women, and 18 were men. Participants received research credit in psychology courses in exchange for their participation.

**Procedure.** A Macintosh iMac computer was used in this study. A new program was developed using PsyScope 1.2.5 (Cohen, MacWhinney, Flatt,
& Provost, 1993). This program modeled many of the functions of the previous HyperCard program but was more easily altered for presenting different pictures and counterbalancing arrangements. Following their completion of an informed consent document, participants received the following instructions on the computer screen:

Imagine that you have a summer job working at a hospital. The title of your job is “TRANSPORTATION SPECIALIST.” The hospital is very large and has many different units. Units include an emergency room, critical care, drug/alcohol rehabilitation, oncology (cancer unit), cardiac unit, psychiatric unit, and counseling services. Your primary task is to transport patients from each unit to the discharge area. This task includes physically moving patients—helping them to get in and out of a wheelchair. Every patient is required to leave the hospital in a wheelchair regardless of whether the person is capable of walking. You are also expected to initiate conversation with the patients. In this experiment you will be introduced to a variety of different people. Imagine that these individuals are the patients you have to transport to the discharge area. Each patient will be represented by a photograph appearing at the left-hand part of the computer screen. Your task is to move the cursor using the computer mouse closer to a person if you have positive feelings about coming into contact with that person. The closer you move the cursor, the more positive your feelings. Move the cursor away from the picture to indicate negative feelings. The further away you move the cursor, the more negative your feelings about coming into contact with that patient. You should begin moving the cursor as soon as you can. You will have about 10 seconds to move the cursor. Move it in the direction you want and then try to “fine-tune” the location of the cursor to best indicate how you feel. When you are ready to start, move the cursor to the X that appears in the start box below and then click to begin. Press the space bar when you have finished reading these instructions, then the start box will appear below.

Unlike the previous HyperCard program, the intertrial intervals of PsyScope 1.2.5 were determined by the participant depending on when the participant pressed “start” to begin the next trial.

The participants used the mouse/cursor to react to 18 stimulus persons. The first 3 represented practice trials, included to familiarize the participants with the task. The next 15 involved stigmas that had been selected to represent three levels of stigma onset controllability: controllable, neutral, and uncontrollable. During a pretest, 111 undergraduates rated the degree to which they perceived people with 36 problems or illnesses as personally responsible for their conditions. Ratings were made on a scale from 1 (not at all responsible) to 6 (completely responsible). Included in this list of 36 were different versions of the basic stigmas, AIDS, obesity, and cancer, designed to imply the three levels of stigma onset controllability. On the basis of these ratings, the 15 stigmas in Table 1 were chosen for study. The first 5 were categorized as controllable, the next 5 as neutral, and the last 5 as uncontrollable. A multivariate analysis of variance confirmed that these three groups of stigma significantly differed with regard to their perceived onset controllability (Wilks’ $\lambda = .33$), $F(10, 100) = 20.41, p < .01$. Three replications were used in which the stigma labels were paired with different photographs presented in different random orders. Some of these photographs were yoked to specific kinds of stigmas. For example, the photographs used for the stigmas “obese and does not exercise” and “obese due to a glandular disorder” were all of men who might plausibly be considered obese.

Following the computer task, participants were asked to complete a paper-and-pencil questionnaire that included the Disgust Sensitivity Scale (DS; Rozin et al., 1999) and a newly designed MTCPS scale. As previously noted, the MTCPS scale is similar to the MTCP scale used in Study 1, except additional questions were included asking about motivations to control prejudice against obese people and people with cancer. Also included was a manipulation check in which the participants rated the degree of personal responsibility they attributed to people with each of the 15 stigmas used in the computer task.

### Results

Analyses of the manipulation check data revealed that the average perceived responsibility was 1.51 ($SD = 0.51$) for the uncontrollable stigmas, 3.25 ($SD = 0.67$) for the neutral stigmas, and 5.30 ($SD = 0.65$) for the controllable stigmas. These means were significantly different, $F(2, 184) = 1,200.03, p < .01$. Thus, the manipulation check confirmed the patterns found in our pretest.

Data were collapsed across the five stigmas in each of the three controllability conditions. Preliminary analyses checked for replication effects and found none. So all analyses reported here collapse across replications.

The measure of stigma approach–avoidance used in these analyses is somewhat different from that used in the previous study. Participants in Study 1 responded to three pieces of neutral information about each stimulus person prior to being exposed to stigmatizing information. That allowed the use of the neutral trials as within-participant controls against which to contrast their responses to stigma. In Study 2, participants responded to 15 different persons (plus 3 practice persons), each with a different stigmatizing condition. Although we did not have the neutral comparisons, we were able to average the distances from the photographs at each 0.5-s interval across the five stigmas within each condition (controllable, neutral and uncontrollable) to achieve a more reliable measure of relative stigma approach–avoidance within the conditions. Greater distances indicate more stigma avoidance. Thus, the dependent variable in Study 2 consisted of the average distance in pixels of the cursor to the photographs in each condition at 500-ms intervals across 10.0 s of possible cursor movement.

These distance measures were analyzed using a GLM analysis. Controllability (uncontrollable vs. neutral vs. controllable) and time (twenty 0.5-s intervals) were considered within-participants factors. The scores on the DS and the MTCPS scales (coefficient $\alpha = .82$ and .88, respectively) were considered continuous.

### Table 1

<table>
<thead>
<tr>
<th>Stigma</th>
<th>M</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Controllable</td>
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<tr>
<td>Abuses a child</td>
<td>5.28</td>
<td>1.19</td>
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<td>Lung cancer and smoked for 20 years</td>
<td>5.27</td>
<td>1.06</td>
</tr>
<tr>
<td>AIDS from unprotected gay sex</td>
<td>5.21</td>
<td>1.11</td>
</tr>
<tr>
<td>Addicted to drugs</td>
<td>4.86</td>
<td>1.29</td>
</tr>
<tr>
<td>Obese and does not exercise</td>
<td>4.80</td>
<td>1.22</td>
</tr>
<tr>
<td>Neutral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obese</td>
<td>4.04</td>
<td>1.17</td>
</tr>
<tr>
<td>AIDS</td>
<td>4.00</td>
<td>1.27</td>
</tr>
<tr>
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<tr>
<td>Breast cancer</td>
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</tr>
<tr>
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<td>0.96</td>
</tr>
<tr>
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<td>0.97</td>
</tr>
<tr>
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### Table 1

<p>| Responsibility Ratings for 15 Stigmas in Study 2 |
|-----------------------------------------------|------|------|</p>
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between-participants predictors (i.e., covariates) in this analysis. Support was found for all three hypotheses. With regard to our first hypothesis, participants who were highly sensitive to disgust tended to have more immediate avoidant reactions to stigmas. Figure 4 shows the relationship of stigma avoidance (i.e., distance of the cursor to the photographs) to DS and MTCPS over time; Time × DS × MTCPS interaction, $F(19, 1672) = 1.84, p = .02$. The data in Figure 4 are collapsed across the three levels of controllability. Figure 4 plots the percent of variance in cursor distance related to DS and MTCPS over the twenty 0.5-s intervals. As predicted, the relationship between disgust sensitivity and stigma avoidance peaked early on and then dissipated as participants contemplated their reactions to a stigmatized person. A trend analysis of the percent of variance in distance related to disgust sensitivity showed a curvilinear pattern over time. The test for the linear trend of time was not significant, $F(1, 18) = 0.18, p = .68$, but other trends were significant: quadratic, $F(1, 17) = 8.80, p < .01$; cubic, $F(1, 16) = 19.81, p < .01$; and quartic, $F(1, 15) = 16.06, p < .01$. The curvilinear nature of the strength of relationship between DS and stigma avoidance (or distance) over time is consistent with the prediction that early reactions to stigmas would be more highly correlated with feelings of disgust than later reactions (see Figure 4). All of the partial correlations involving DS (controlling for MTCPS) were statistically significant except the one at the first 500-ms interval ($ps < .01$). So although the impact of DS on reactions to the stigmatized peaked early on and then dissipated somewhat, it did not go away entirely as time passed. This pattern is consistent with the theoretical model depicted in Figure 1.

In line with our second hypothesis, the relationship between participants’ motivation to control prejudice and their stigma avoidance built slowly over time and then stayed at a fairly constant level. Those higher in motivations to control prejudice approached people with stigmas more as time progressed. A test for the linear trend over time in the percent of variance in distance related to MTCPS was statistically significant, $F(1, 18) = 31.63, p < .01$. The significant linear trend is consistent with the prediction that rule-based processes, such as reflectively considering whether one should refrain from prejudice regarding persons with stigmas, should build in importance over time. The partial correlations involving MTCPS were statistically significant beginning at the 2.0-s interval ($ps < .01$).

In summary, these findings support our first and second hypotheses. Participants who were higher in DS were more likely to keep their distance from the stigmatized than those with lower DS, particularly in the early phases of exposure. Participants who were more highly motivated to control stigma prejudice were more likely to show approach behavior than those less so motivated, particularly in the later phases of contemplating their interactions.

**Perceived Onset Controllability of Stigma**

In support of our third hypothesis, participants generally kept greater distance from people with controllable ($M = 363.69$) than neutral ($M = 275.40$) or uncontrollable ($M = 274.42$) stigmas; main effect for controllability, $F(2, 176) = 178.85, p < .01$. This main effect was qualified by a significant Controllability × Time interaction, $F(38, 3344) = 55.70, p < .01$. Figure 5 shows the

![Graph](image-url)
relationship of stigma approach–avoidance to perceived onset controllability over time. Over the 10.0 s, the participants tended to keep their distance from individuals with controllable stigmas. At all points after the 1st s, participants kept a significantly greater distance from the persons with the controllable stigmas as compared with the uncontrollable and neutral stigmas ($p < .01$). In the first 500-ms interval, there was a slight, but statistically significant, difference between the distances of participants to the neutral ($M = 480.33$) as compared with the uncontrollable ($M = 478.13$) stigmas, $F(1, 91) = 5.01$, $p = .03$. Then the distances between the neutral and uncontrollable stigmas statistically converged at the 1.0-s interval. Then, from the 1.5-s interval to the 3.0-s interval, participants moved significantly closer to those with the neutral stigmas than those with the uncontrollable stigmas ($p < .01$). These two distances statistically converged again at the 3.5-, 4.0- and 4.5-s intervals ($p > .50$) and then significantly diverged at the 5.0-s interval with the participants moving closer to the uncontrollable ($M = 234.05$) than the neutral ($M = 242.41$) stigmas, $F(1, 91) = 9.24$, $p < .01$. At all subsequent intervals, participants’ cursors were significantly closer to the photographs of people with uncontrollable as compared with neutral stigmas ($p < .01$). This pattern is consistent with the hypothesis that the impact of attribution on reactions to stigma represents a rule-based process. In other words, people take time to consider the implications of information suggesting that the onset of a stigma is uncontrollable and only adjust their reactions to people with uncontrollable stigmas after having thought through issues of blame or responsibility.⁶

The GLM analyses also indicate that individual differences in DS and MTCPS each interacted with perceived controllability and time, $F(38, 3344) = 5.40$, $p < .01$, and $F(38, 3344) = 4.90$, $p < .01$, respectively. To understand these three-way interactions better, median splits were performed on DS and MTCPS, respectively, and a mixed-design analysis of variance (ANOVA) was performed. Analyses of the means from this ANOVA displayed patterns similar to that shown in Figure 5, except the degree of avoidance toward people with controllable stigmas was amplified when participants were low in MTCPS or when they were high in DS. In other words, these interactions were ordinal in nature and did not portray patterns that were qualitatively different from those reported in Figure 5. For example, the cross-over pattern shown in Figure 5 was replicated in both the high- and low-MTCPS groups. So participants initially were more avoidant of people with uncontrollable stigmas than neutral stigmas, but over time, they came to approach more closely those with uncontrollable stigmas. Simi-

⁶ One alternative interpretation of the Controllability × Time interaction is that it represents the nonmovement of the responses on the controllable conditions over time relative to the movement in the neutral and uncontrollable conditions. To establish that the interaction is not an artifact of this comparison, we recomputed the analysis comparing only the neutral and uncontrollable conditions over time. Even when the controllable condition was eliminated, the Controllability × Time interaction was statistically significant, $F(19, 1672) = 47.50$, $p < .01$. 

![Figure 5. Distance from controllable, neutral, and uncontrollable stigmas over time in Study 2.](image-url)
larly, the cross-over pattern was replicated in examining those in the high- and low-DS groups.

Discussion of Study 2

Consistent with predictions about reflexive processes, participants who were higher in disgust sensitivity were more likely to keep their distance from persons with stigmas. This relationship interacted with time showing that the strongest relationships between disgust sensitivity and avoidance were within the first 3.0 s. Consistent with predictions about rule-based processes, participants’ motivations to respond without prejudice led them to move closer to persons with stigma. This relationship built more slowly over time. Also consistent with predictions about attributional considerations involving a rule-based process, participants approached stimulus persons with uncontrollable stigmas more than those with the more controllable, neutral stigmas only after 5.0 s of reflection. Thus, participants took time to fully consider that a stigma had an uncontrollable onset. Only after time for such consideration did they approach the stigmatized person.

Conclusions

Many researchers in social psychology have theorized that social perception involves dual processes: the automatic versus the controlled, the swift versus the slow, the associative versus the rule-based, and so on. In most cases, these dual processes are viewed as alternative systems where, because of social circumstances or experimental variations, the social perceiver is likely to use one of these processes at the expense of the other (Chaiken & Trope, 1999). Yet the implication that these two processes unfold over time in a dynamic progression has not been previously examined. These two studies reveal that reactions to perceived stigma involve both reflexive and rule-based processes and that each of these processes has a time course. The reflexive process is immediate and, in the case of reactions to stigma, often emotional or affect laden. Although spontaneous reactions to stigma are often powerful, fortunately, they do not necessarily prevail. Human beings are also capable of more thoughtful, rule-based reactions to stigma. Our studies imply that people sometimes consider negative reactions to stigma a form of prejudice. Those who so regard stigma may be motivated to compensate for or overcome their initial prejudicial reactions. Such rule-based processes take time and presumably some effort to muster. What these two studies reveal uniquely is that it is possible to track reflexive and rule-based processes over the course of time in people’s reactions to stigmatized individuals.

We assume that immediate reactions to perceived stigma are generally negative in nature and that people have a spontaneous avoidant reaction to stigma. This assumption is consistent with how all major theorists from Goffman (1963) to the present day (e.g., Heatherton, Kleck, Hebl, & Hull, 2000) have viewed stigma. Our data, however, also show that there are individual differences in the degree to which these initial reactions are negative. When people have negative stereotypes that are spontaneously evoked by the stigma (as in Study 1) or when people are more highly sensitive to disgust emotions (as in Study 2), then their immediate reactions to stigma tend to be more avoidant.

Emotional Reactions to Stigma

The specific emotional response to stigma explored in Study 2 was disgust. Another common emotional reaction thought to be evoked by stigma is fear or a sense of peril (Jones et al., 1984). Although both disgust and fear entail a desire for avoidance, fear is associated with distinct facial expressions and autonomic nervous system activity different from disgust (Ekman, 1992). As Jones et al. (1984) pointed out, there are many reasons why people might fear someone with a stigma. With some forms of stigma, like the possession of an infectious disease, fear may have evolved as an adaptive response (Kurzban & Leary, 2001). In the study of emotional reactions to disease-related stigma, Dijker and his colleagues (Dijker & Koomen, 2003; Dijker & Raejmaekers, 1999) have found that one reliable predictor of a fear (or anxiety) emotional reaction is the seriousness of the stigma. For example, diseases that are life-threatening or very debilitating (though not necessarily contagious) are more likely to evoke fear or anxiety. From the perspective of the reflexive/rule-based model, fear might be immediately evoked by the stigma or it could also be derived from an appraisal of the potential consequences of associating with the stigmatized. For example, Corrigan et al. (2002) found that a stereotype that people who are mentally ill are dangerous predicted fear reactions to mental illness stigma. Also, Dijker, Kok, and Koomen (1996) found that perceived risk, an appraisal of the likelihood of negative consequences, was correlated with fear reactions to persons with HIV. In future studies using the methodology of the studies presented here, it would be possible to chart the impact of fear on reactions to stigma over time. Some people may be generally prone to fear or anxiety responses (Spielberger & Sydeman, 1994), and others may have more intense fears related to specific forms of stigma (e.g., Bell, Molitor, & Flynn, 1999; Bouton et al., 1987). The roles of such individual differences related to fear in predicting immediate and delayed reactions to a perceived stigma would shed light on the question of whether fear is a spontaneous response to stigma or a response derived from an appraisal of potential risks.

Avoiding Contact

Both Studies 1 and 2 involved reactions to stigmas where the participants contemplated physical contact with the stigmatized. In Study 1, participants were led to believe that they might have actual physical contact with a stigmatized person, whereas in Study 2, participants contemplated hypothetical physical contact with a variety of stigmatized persons. We chose to incorporate physical contact into our experiment cover stories because such interaction with the stigmatized is likely to evoke strong emotional responses (Rozin et al., 1992; Rozin, Markwith, & McCauley, 1994). One of the dominant emotional reactions to physical contact with the stigmatized is a sense of disgust, as if such contact risks contamination. Rozin et al. (1992; Rozin, Markwith, & McCauley, 1994) suggested that such reactions reflect the law of contagion, a sympathetic magic belief that holds “once in contact, always in contact” (Rozin, Millman, & Nemeroff, 1986). What one risks psychologically is a transfer of the “essence” of the stigmatized person to the self. In other words, one risks becoming stigmatized. Goffman (1963) recognized this possibility in what he called courtesy stigma (see Hebl & Mannix, 2003). Although people may
show the strongest aversion to actual physical contact with a stigmatized person, they also manifest aversions to a lesser extent to many forms of indirect contact (Rozin et al., 1992). For example, people have been found to be averse to coming into contact with physical objects once touched or owned by someone with HIV. Thus, when we consider the implications of the current research for social avoidance of the stigmatized, it seems reasonable to suggest that stronger aversions might be manifested in social situations where the potential for actual physical contact is perceived to be greater.

In many ways, the cursor movements in the experimental tasks we used may be understood as a symbolic or computer-simulated form of approach–avoidance behavior. Some might question whether such a computer simulation is too artificial to be considered a form of approach–avoidance behavior. Yet research by Chen and Bargh (1999) and Neumann and Strack (2000) has illustrated that important cognitive and affective aspects of approach–avoidance behavior may be reflected in how participants respond to virtual stimuli using a computer interface. It might be possible to conduct research in which one measures the actual physical distance that people keep with regard to a stigmatized person and how this distance changes over time. The principal problem with such real-world analogues of our research is that the psychological processes that we measured unfold very quickly, and timing measures must be made very precisely. When thinking of future research directions, a more fruitful approach might be to turn to an immersive virtual environment technology (IVET; Blascovich et al., 2002). Blascovich et al. (2002) have used IVET to precisely measure how close or far people will approach virtual stimulus persons in a three-dimensional virtual environment (Bailenson, Blascovich, Beall, & Loomis, 2003). IVET allows precision in measurement of both distance and time dimensions. IVET also allows a great deal of control with regard to the characteristics of virtual stimulus persons. Research has shown that people may manifest strong emotional reactions to stimuli encountered in virtual environments. For example, anxiety can be induced in phobic participants by exposing them to phobogenic stimuli in virtual environments derived from computer games (Robillard, Bouchard, Fournier, & Renaud, 2003). The potential of IVET for studying psychological reactions to stigma seems very promising (Hebl & Kleck, 2002).

**Some Limitations**

The two studies reported in this article found that people who are motivated to control prejudicial responses against the stigmatized display more approach behavior toward the stigmatized after they have had time to reflect on their reactions. In addition, Study 2 showed that it is possible to measure the motivation to control prejudice regarding stigma in a manner that generalizes to many stigmatizing conditions. One caution about this finding is that the situation in which participants reacted to stigmas in Study 2 was a health care setting. This situation might have encouraged participants to view the various stigmas as illnesses or as conditions for which people seek hospital treatment. Such a perspective might have made salient the norm to be kind to people who are ill. After all, participants in Study 2 were asked to role-play the duties of a hospital worker whose job included interacting with patients. In future studies, it would be useful to examine social reactions to the stigmatized in other settings where the norm of treating people with kindness is not as salient.

**Time and Thought**

In the current studies, reflection or the passage of time was generally related to more approach behavior, but there were some exceptions. For example, in Study 1, participants became more avoidant to the person with the criminal stigma over the course of the fourth trial and remained somewhat avoidant throughout the fifth trial. Also, participants in the second study generally kept their distance from people with controllable stigmas over time. Theoretically, rule-based processes could result in enhanced avoidance responses under some circumstances. One example of such a response might be where people entertain justifications for their initially negative reactions to stigma after reflection. Crandall (2000) suggested that people often have elaborate ideologies that serve to justify stigmatization. At the root of many of these ideologies is a rationale for blaming the stigmatized for their conditions (Alicke, 2000; Crandall & Eshleman, 2003). So a thoughtful consideration of the possible reasons for one’s negative reactions to stigma might actually “liberate prejudice, leading to public communication and private acceptance of prejudices” (Crandall & Eshleman, 2003, p. 417). One potential direction for future research is to examine the possibility that certain ideological beliefs might predict greater avoidance of the stigmatized over time.

**Final Thoughts**

Finally, the reflexive/rule-based theoretical model and the methodology developed in this study would seem useful in the study of reactions to a variety of social stimuli. Prior work by Vallacher et al. (1994) used a similar methodology to track the time course of approach–avoidance reactions that people have toward others they regard positively, negatively, or with ambivalence. People may have both reflexive and rule-based reactions to consumer goods, political issues, art, humor, and many other stimuli of social relevance as well as other people. The methodology used in these studies combines a visual representation of approach–avoidance behavior with continuous, real-time response tracking. The use of continuous response-tracking techniques to assess changing affective states has a long history in applied research. For example, political pollsters have long used continuous attitude measurement techniques (often operationalized by having participants turn a dial to indicate changes in their evaluative responses) to track focus group reactions to political messages (F. Crocker, 1996). Also, advertising researchers have used continuous response methodologies to assess viewers’ “wearout” to advertisements (a reduction in favorable responses after repeated exposures to a message; Hughes, 1992). In recent work by Pham, Cohen, Pracejus, and Hughes (2001), participants were asked to turn a dial to indicate the favorability of their reactions to either magazine photographs or television commercials. Among other findings, Pham et al. reported that those participants who were instructed to focus on their feelings about the stimuli responded more quickly in registering their favorability than those asked to focus on reasons they might like or dislike the stimuli. These findings seem consistent with the reflexive/rule-based model explored here and additionally...
suggest that people may be influenced to “go with their feelings” more in some situations than in others. By examining how approach–avoidance responses unfold over time and the factors that influence the relative impact of reflexive and rule-based processes, we can gain a better understanding of the dynamic system of social cognitive processes.

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Call for Nominations

The Publications and Communications (P&C) Board has opened nominations for the editorships of Clinician’s Research Digest, Emotion, JEP: Learning, Memory, and Cognition, Professional Psychology: Research and Practice, and Psychology, Public Policy, and Law for the years 2007–2012. Elizabeth M. Altmaier, PhD; Richard J. Davidson, PhD, and Klaus R. Scherer, PhD; Thomas O. Nelson, PhD; Mary Beth Kenkel, PhD; and Jane Goodman-Delahunty, PhD, respectively, are the incumbent editors.

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