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On Being Sad and Mistaken: Mood Effects on the Accuracy of Thin-Slice Judgments

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A series of studies explored how sadness impacts the accuracy of social judgments. In Study 1, induced sadness led to reduced accuracy in judgments of teacher effectiveness from brief samples of nonverbal behavior (*thin slices*). In Study 2, sad participants showed reduced accuracy in judging relationship type from thin slices as well as diminished judgmental efficiency. Study 3 revealed that higher Beck Depression Inventory scores were associated with diminished accuracy on the Profile of Nonverbal Sensitivity. Finally, Study 4 tested the possibility that sadness impairs accuracy by promoting a more deliberative information-processing style. As expected, accuracy was higher among participants in a sad mood condition who completed the judgment task while simultaneously performing a distracting cognitive load task.

The ability to form accurate judgments about others is fundamental to social well-being. Initial impressions and evaluations are used as the primary basis for guiding subsequent interaction, and accurate judgments help social perceivers form satisfying relationships and avoid potentially harmful interactions. Fortunately for social perceivers, judgments of certain psychological constructs based on brief glimpses or *thin slices* of behavior are often surprisingly accurate (for a review, see Ambady, Bernieri, & Richeson, 2000). However, given the highly interpretive nature of social inferences (Asch, 1946; Heider, 1958; Kelly, 1955), the accuracy of such judgments is likely susceptible to a number of situational forces and internal states. In this work, we explore the effects of mood on social judgment accuracy. Because fluctuations in affective state can dramatically alter the way one thinks about other people (Bodenhausen, Sheppard, & Kramer, 1994; Bower, 1981; Forgas, 1992; Forgas & Bower, 1987; Gouaux, 1971; Park & Banaji, 2000), mood likely has a strong influence on the accuracy of everyday social judgments.

The ability to draw valid inferences about others has long-term consequences not only for interpersonal behavior but also for psychological health. Across the life span, those who have difficulty deciphering subtle cues to the thoughts, feelings, and intentions of those around them are prone to a range of psychological disorders (Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979; Russell, Stokes, Jones, Czogalik, & Rohleder, 1993). Impairments and systematic biases in social judgment are theorized to play a particularly important role in the development and maintenance of depression (Coyne, 1976; Lewinsohn, 1974); this speculation has received considerable empirical support (e.g., Feinberg, Rifkin, Schaffer, & Walker, 1986; Giannini, Folts, Melemis, Giannini, & Loiselle, 1995; Lane & DePaulo, 1999; Zuroff & Colussy, 1986). The present work represents an attempt to consider the role of sadness, at both state and trait levels, in the ability to draw valid inferences about others on the basis of thin slices of behavior.

Mood Effects on Social Judgment: An Overview

Moods elicit widespread effects on social decision making. As discussed by Forgas (1992, 1994), affect can influence social judgment accuracy in two main ways. It can play an informational role, biasing the informational base on which social perceivers rely when forming judgments of others. This type of effect is often associated with mood congruency, the tendency to render judgments that are biased in the direction of a prevailing affective state. Affect can also produce processing effects, altering the information-processing strategies adopted by social decision makers. Though the informational/processing distinction has traditionally been adopted by those examining the effects of transient mood, it is also implicit in the work of those who study the interpersonal aspects of chronic sadness. For instance, some work has explored the link between depression and negatively distorted social judgments, and other studies focus on the use of particular information-processing strategies among depressed people. The present work is based on an integration of these approaches. In exploring how sadness at the state and trait levels may affect the validity of everyday social judgments, we consider possible informational and processing strategy effects.

Informational Effects of Transient and Enduring Affect

At the state level, mood states can exert strong effects on social information processing by priming mood-congruent material. For instance, Terwogt, Kremer, and Stegge (1991) found that after

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being exposed to a mood induction procedure, children showed mood-congruent distortions in their evaluations and interpretations of facial displays of emotion. Adults exposed to a mood induction procedure exhibit similar distortions in their perception of emotional displays (Bouhuys, Bloem & Groothuis, 1995; David, 1989). In addition to these effects on the interpretation of nonverbal cues, affective states also systematically bias more global judgments of other people. Happy people tend to evaluate others more positively (Forgas & Bower, 1987; Forgas, Bower, & Krantz, 1984; Gouaux, 1971) and report more liking for others (Friedman, Jacobson, Clore, & Rubin, 1978). By contrast, those in negative moods make more negative judgments of others (Griffitt, 1970; Schiffenbauer, 1974).

There are two main accounts for how mood exerts informational effects on social judgment. Models of information accessibility and memory posit that affective states indirectly influence the encoding, integration, and retrieval of similarly valenced social stimuli (Bower, 1981; Isen, 1984). The affect-as-information model posits that mood has a more direct effect, in that judges rely directly on their affective states as an informational cue when making evaluations of others (Schwarz, 1990; Schwarz & Bless, 1991; Schwarz & Clore, 1983, 1988).

At the trait level, systematic distortions in social perception are theorized to play an important role in the development and maintenance of depression. According to interpersonal theories of depression (Coyne, 1976; Lewinsohn, 1974), depressed individuals are likely to exhibit a negative bias when interpreting the behavior of those around them. In support of this notion, individuals with depression often display a negative bias in the judgment of facial expressions (Gur, Erwin, Gur, Zwil, Heimberg & Kraemer, 1992; Hale, 1998; Mandal & Bhattacharya, 1985; Nandi, Saha, Bhattacharya, & Mandal, 1982) and attend more to negative social stimuli of other types (Gillis & Bernieri, 1993; Lane & DePaulo, 1999). At a more global level, participants who are high in negative affect have been found to rate others less positively than do low negative affect participants (Bass & Fiedler, 1961; Gotlib & Meltzer, 1987; Kaplan, 1968; Strack & Coyne, 1983). Of course, these systematic distortions can render depressed individuals less accurate than nondepressed controls at recognizing emotion from facial displays (Feinberg et al., 1986; Giannini et al., 1995; Persad & Polivy, 1993; Zuroff & Colussy, 1986) as well as in making more global judgments on the basis of verbal and nonverbal cues (Aube & Whiffen, 1996).

Research on depressive realism (Alloy & Abramson, 1988; Lewinsohn, Mischel, Chaplin, & Barton, 1980), however, has challenged the notion that depressives always hold more unrealistic views. For instance, those with depression have been found to avoid overestimating the favorability of impressions they convey to others (Gotlib & Meltzer, 1987; Lewinsohn et al., 1980) and to be more accurate in recognizing when they have little or no control over the occurrence of events (Alloy & Abramson, 1979; Alloy, Abramson, & Viscusi, 1981). Kaplan (1968) found that high negative affect participants were better judges in that their less positive ratings of targets converged more closely with targets' self-ratings. However, increased realism among depressed individuals is not a consistent finding. The original contingency paradigm (Alloy & Abramson, 1979) has been criticized for a lack of realism and its inability to emotionally involve participants. When more realistic, personally relevant stimuli are used, depressed individuals tend to show traditional negative biases and inaccuracy. Thus, depressed participants in the study by Gotlib and Meltzer (1987) were more accurate in assessing how third-party observers rated them, but they were less accurate in assessing how their own interaction partners assessed them (see also Campbell & Fehr, 1990; Dunning & Story, 1991). In sum, as noted by Pacini, Muir, and Epstein (1998), there seems to be "an inverse relation between the demonstration of the depressive realism phenomenon and the realism of the experimental conditions" (p. 1057).

Processing Effects of Transient and Enduring Affect

The work reviewed above deals mainly with biases in sad and depressed individuals' social information base. However, both transient and enduring affective states also exert effects on the manner in which social information is processed. At the state level, happy people tend to process information in a more heuristic and less systematic manner, relying more on cognitive short cuts and general knowledge structures and less on careful, logical thought (Bless, Bohner, Schwarz, & Strack, 1990; Forgas, 1991; Mackie & Worth, 1989; Schwarz & Bless, 1991; Sinclair, 1988). This leads to greater efficiency in their judgments (Forgas, 1991; Niedenthal & Setterlund, 1994). In contrast, sad people tend to use systematic and detailed information-processing styles (Chaiken, Liberman, & Eagly, 1989; Forgas & Bower, 1987; Schwarz & Bless, 1991). Individuals in a sad mood are more likely to spontaneously engage in detail-oriented, cognitively taxing, highly analytical processing (Bless et al., 1990; Mackie & Worth, 1989; Worth & Mackie, 1987).

There are several possible explanations for the shifts in processing strategy associated with affective states. As reviewed by Forgas (1998), competing explanations tend to focus on functional, motivational, and processing capacity effects. Functional explanations posit that moods exist to inform perceivers of the current state of their social adjustment. Happiness may inform people of a favorable situation and may thus trigger a loose, more heuristic, top-down processing style. Sadness, in contrast, may trigger more systematic processing of stimulus information because it signals some type of social failure or danger (Forgas, 1992; Forgas & Bower, 1987; Schwarz, 1990). The motivational account posits that happy individuals eschew deliberate thinking in a motivated attempt to avoid losing their temporary elation (Isen, 1984), whereas sad individuals process information more diligently in an attempt to improve their mood (Clark & Isen, 1982; Forgas, 1991). Finally, some theorists ascribe to the view that processing capacity itself is influenced by mood, and that happy individuals temporarily lack the cognitive capacity required for deliberate thought (Isen, 1987; Isen & Daubman, 1984; Mackie & Worth, 1989).

Whatever their cause, the processing strategy changes resulting from mood induction have varied effects on the validity of social and nonsocial judgments. Happiness alone is associated with both impaired and enhanced judgments, depending in large part on the type of task involved. Hirt, Melton, McDonald, and Harackiewicz (1996) suggested that positive mood may enhance performance on creativity tasks yet impair performance on tasks requiring more detailed, systematic processing. In support of this distinction, positive mood reliably leads to more creativity in problem solving (e.g., Estrada, Young, & Isen, 1994; Greene & Noice, 1988; Isen, Daubman & Nowicki, 1987; Isen, Johnson, Mertz, & Robinson,

1985), improved integration of available information (e.g., Estrada, Isen, & Young, 1997), and more flexible classification of material (e.g., Isen & Daubman, 1984; Isen, Niedenthal, & Cantor, 1992; Kahn & Isen, 1993). By contrast, in a wide range of tasks requiring more systematic information processing, positive affect results in a simplification of the task and diminished judgmental quality (e.g., Isen & Means, 1983; Sinclair, 1988). Happy moods can lead to increased reliance on cognitive short cuts, including category knowledge in the form of stereotypes (Bodenhausen et al., 1994; Park & Banaji, 2000). Happy people are also less influenced by the quality of persuasive messages (e.g., Bless et al., 1990; Bless, Mackie, & Schwarz, 1992; Mackie & Worth, 1989; Worth & Mackie, 1987), and they demonstrate reduced attention to information about frequency and covariation (Stroessner & Mackie, 1992).

Processing strategy changes associated with sadness also influence judgment quality. In many cases, they render sad individuals more likely to avoid errors and biases in their social judgments. For instance, Forgas (1998) reported that sad participants demonstrated a reduced tendency to commit the fundamental attribution error (FAE; Ross, 1977), as compared with happy participants. In addition, Forgas (1998) used a surprise recall measure to identify possible differences in the social memory banks of happy and sad participants. It is notable that sad participants remembered more information about a target's attitude as compared with happy participants. A mediational analysis of these results suggested that the differential processing strategies associated with happiness and sadness (as indicated by the recall memory data) substantially mediated the commission of the FAE. Transient sadness also appears to yield a reduced rate of commission of the halo error (Sinclair, 1988). Like Forgas, Sinclair (1988) attributed these findings to differential processing strategies, in that sad participants' decreased rate of halo errors was presumed to follow from their use of careful, systematic processing. The link between transient sadness and higher quality social judgments has been extended to a number of other domains. In situations in which they are called on for help, sad individuals tend to engage in more cost–benefit analysis (Schaller & Cialdini, 1990). They also attend more to argument strength in processing a persuasive message (Bless et al., 1990).

It appears that the use of deliberative processing strategies characterizes the experience of chronic as well as transient sadness. Weary and her colleagues (Weary, Marsh, Gleicher, & Edwards, 1993) have advanced an explanation for the effects of mild and moderate depression on social information processing. This theory posits that depressed people, concerned with feelings of uncertainty and an inability to predict and control the social environment, are more sensitive to available social information and are more careful when interpreting social cues. In support of this view, depressed people have been found to pay more attention to social norms (Weary, Jordan, & Hill, 1985) and social comparison information (Weary, Elbin, & Hill, 1987), and they seek out more diagnostic information about others (Hildebrand-Saints & Weary, 1989). This motivated search for diagnostic information is likely to make depressed individuals less efficient in their judgments of others. In support of the notion that depressed people, like sad people, process social information in a less efficient manner, Cooley and Nowicki (1989) reported that depressed participants were slower than nondepressed participants in processing displays of emotion in faces.

The Present Work

Thus, a great deal of work has demonstrated that mood, at the short- and long-term levels, is associated with informational and processing effects, both of which could alter the accuracy of everyday social judgments. However, in terms of the objective accuracy of social judgments, the findings in regard to informational and processing effects appear incompatible. A long line of research suggests that sadness at both the state and the trait level yields systematic distortions and diminished accuracy in judgments of social cues. This is especially true when the social judgment stimuli are affective in nature, such that sadness prompts mood-congruent interpretations and evaluations. By contrast, work guided by an interest in the effects of sadness on processing strategies finds that sad individuals are more likely to avoid errors and biases, which leads to higher quality social judgments. Experimentally induced sadness and natural levels of depression are associated with heightened vigilance and increased effort in the processing of social cues, an effect that yields improved accuracy. In fact, distortions in judgment, such as the FAE (Forgas, 1998) and the halo error (Sinclair, 1988), are reduced by the experience of sadness.

Possible reasons for this inconsistency may involve differences in methodology used in various studies. Although researchers who are interested in informational effects of sadness have traditionally relied on nonverbal behavior samples as social judgment stimuli (Carton, Kessler & Pape, 1999; Feinberg et al., 1986; Giannini et al., 1995; Zuroff & Colussy, 1986), work within the process realm has generally used written summaries of target actors. For instance, Carton et al. (1999) used the Diagnostic Analysis of Nonverbal Accuracy 2 (DANVA 2; Nowicki & Duke, 1994), which presents participants with facial displays and vocal clues to a range of emotional states. By contrast, Forgas (1998) presented participants with essays written by students supposedly participating in a debate and asked them to make impressions of the student writers. Likewise, participants in Sinclair's (1988) study made judgments of teacher effectiveness after reviewing written summaries of teachers' classroom behavior. The presence or absence of nonverbal cues in judgmental stimuli may contribute to considerable variation in the way social information is processed.

As outlined elsewhere (Gilbert & Krull, 1988), the process of decoding nonverbal behavior is qualitatively different from the comprehension of written or spoken language. The main difference is that, unlike the comprehension of verbal information, the interpretation of nonverbal behavior meets several of the criteria of automatic processing cited by Bargh (1994). It proceeds outside awareness (Dimberg, Thunberg & Elmehed, 2000; LeDoux, 1996; Niedenthal, 1990), and it occurs without intention (Dimberg, 1997; Dimberg & Thunberg, 1998; Dimberg et al., 2000; Dimberg & Petterson, 2000). It is also efficient, in that it is not impeded by concurrent processing (Gilbert, Pelham & Krull, 1988).

Conceptualizing nonverbal decoding as an automatic process has important theoretical implications. Those who are interested in processing strategy differences advance the notion that sadness leads to heightened social judgment accuracy because it generates a more careful information-processing style (Forgas, 1998; Sin-

clair, 1988; Sinclair & Mark, 1992). This explanation is valid only when more careful information is optimal. However, in the case of automatic processes, increased attention paradoxically reduces the efficiency of the process (Gilbert & Krull, 1988; Greenwald & Banaji, 1995; Vallacher & Wegner, 1987; Wilson, Hodges, & LaFleur, 1995; Wilson & Schooler, 1991). The accuracy of everyday social judgments, which rely heavily on the interpretation of nonverbal cues, may thus be diminished rather than facilitated by careful deliberation. Gilbert and Krull (1988) advanced some support for this notion, demonstrating that a cognitive load manipulation improved judgmental accuracy by focusing attention on more diagnostic vocal cues. Similar results were reported by Patterson and Stockbridge (1998), who found that participants who used a first impression strategy when cognitive resources were depleted demonstrated enhanced accuracy. In this study, Patterson and Stockbridge used the Interpersonal Perception Task (IPT; Costanzo & Archer, 1989), which is composed of brief, naturalistic videotaped scenes for which there are objectively correct answers. Taken together, these results indicate that a careful, deliberative strategy of interpreting nonverbal cues is not only unnecessary but may actually be somewhat of a hindrance to accurate judgment. It is thus unclear whether the effects of sadness on social judgment accuracy can be generalized to more ecologically valid, nonverbal stimuli.

The purpose of this work is to examine the role of state and trait sadness in social judgment accuracy using an ecologically valid set of stimuli. In this work, we consider the effects of transient and chronic sadness on thin-slice judgments, which capture the processes used in making everyday social judgments (Ambady et al., 2000). A thin slice is defined as a brief excerpt of expressive behavior sampled from the behavioral stream. (By *brief*, we refer to any excerpt with dynamic information less than 5 min long.) Previous work has demonstrated that thin slices provide information about a range of psychological constructs, including dispositional characteristics, social relations, and job performance (for a review, see Ambady et al., 2000). In the present studies, as in previous thin-slice research, accuracy is defined as the correspondence between participants' judgments of a target individual and well-defined external criteria (e.g., Ambady & Rosenthal, 1992, 1993).

Study 1: Induced Sadness and Judgments of Teacher Effectiveness

In Study 1, judgments of teacher effectiveness were compared with students' end-of-semester ratings of the same teachers. This criterion variable was chosen because it is characterized by ecological validity and has interpersonal consequence for both the perceiver and the target. (Teaching effectiveness is often evaluated solely on the basis of ratings of supervisors and students, and such ratings influence salary, promotion, and tenure decisions.) In addition, judgments of teacher effectiveness rely heavily on the ability to interpret nonverbal cues. Ambady and Rosenthal (1992, 1993) have reported that naïve observers can assess a teacher's effectiveness from very brief, silent video clips (6–30 s) extracted from longer interactions. This ability is attributable to the fact that nonverbal cues relate to the important affective aspects of teaching (Rosenthal, 1989).

Method

Participants

Participants were 35 undergraduates (22 women, 13 men). Participants were recruited on the basis of flyers posted around campus and in the lobby of the psychology building. They were paid for their participation.

Stimuli

Stimuli consisted of 10-s silent video clips of 13 college teachers used previously by Ambady and Rosenthal (1993). Consistent with previous work (Ambady & Rosenthal, 1993) three 10-s clips of each teacher were used. Each clip focused on the teacher alone (without any of the students). These clips were assembled and recorded onto one videotape. The order of the three clips was randomized in a Latin-square-like design. The final stimulus tape contained 39 clips: 3 clips for each of the 13 teachers.

Procedure

Mood induction. Participants were randomly assigned to one of three conditions: (a) happy, (b) control, or (c) sad. After arriving in the laboratory, participants were greeted by a research assistant and were led to a small room. Participants in the happy condition viewed a 10-min segment of a Robin Williams comedic performance. This clip has previously been found to elicit a high degree of amusement (Gross & Levenson, 1995). Participants in the control condition viewed a 10-min segment of a nature documentary. In the sad condition, participants viewed a 10-min segment from the movie *The Champ*, selected for its emotional intensity and its reliability in eliciting a discrete state of sadness (Gross & Levenson, 1995). The use of film clips to manipulate mood has been extensively applied and has been found to produce significant and lasting changes in mood (e.g., Forgas, 1992; Forgas, Bower, & Moylan, 1990; Forgas & Moylan, 1987; Gross & Levenson, 1995).

Ratings. Following the mood induction procedure, participants viewed the teacher video clips. To ensure that they were exposed to only 10 s of teachers' behavior, the research assistant asked participants to view each clip only once. After viewing each clip, participants made their ratings of the previously viewed teacher's effectiveness. Ratings were made as to judges' overall impression of the teacher's effectiveness on a scale ranging from 1 (*not at all effective*) to 7 (*very effective*). Participants indicated their judgments on a written response sheet. After viewing and rating all of the video clips, participants were paid, thanked, and debriefed.

Results and Discussion

We obtained an overall accuracy score for each judge by first averaging each judges' three ratings for each teacher. For each judge, each teacher's averaged rating was correlated with students' end-of-semester ratings, yielding 13 accuracy scores per judge. (For all analyses, within-subject correlations were converted to *z* scores by means of Fisher's *r*-to-*z* transformation; the means reported here have been converted back to correlation coefficients.) These scores were then averaged to yield a measure of overall accuracy. Overall accuracy on the task served as the dependent variable in subsequent analyses, with condition (happy, sad, or control) serving as the independent variable.

As indicated in Figure 1, a one-way analysis of variance (ANOVA) revealed a significant main effect of the mood manipulation on judgmental accuracy, $F(2, 32) = 8.65$, $p = .001$. Participants who watched the sad movie clip performed significantly worse ($M = 0.20$) than did both participants who watched the neutral segment ($M = 0.41$) and those who watched the

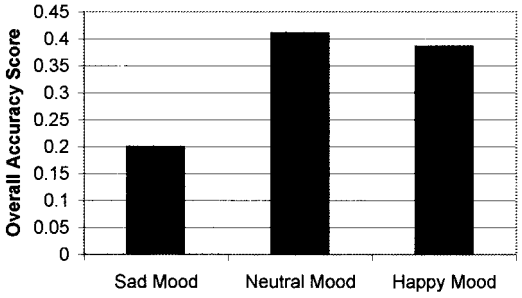

Figure 1. The effects of mood (happy, neutral, and sad) on accuracy of participants' ratings of teachers' effectiveness.

amusing segment ($M = 0.39$). A planned contrast[1] was used to compare the accuracy levels following happy, sad, and neutral mood induction. This revealed that accuracy was significantly lower in the sad condition as compared with the happy and control conditions, $t(32) = 8.56$, $p < .001$, one-tailed. There were no significant differences in the accuracy of judgments made by participants in the happy or control conditions.

The results of Study 1 are consistent with the prediction that sadness hinders the ability to make accurate social judgments. In this study, a short-term affective state significantly diminished the accuracy of judgments based on minimal information. Because thin slices of behavior simulate the judgmental stimuli normally relied on in real-life brief social encounters, this effect may reliably index how mood impacts everyday social judgments.

These results are somewhat inconsistent with findings in the realm of processing effects on social judgments. In prior work, sadness has been associated with a diminished tendency to rely on simple heuristics and, thus, improved judgmental accuracy (e.g., Bless et al., 1990; Forgas, 1998; Sinclair, 1988). This effect is often attributed to the notion that sadness renders people more vigilant and careful in their processing of social information. In this study, however, sadness led to a significant decrease in judgmental accuracy. Differences in methodology, particularly the type of judgment stimuli, may explain this inconsistency. In the present study, unlike in past impression formation studies (Forgas, 1991, 1998; Sinclair, 1988), participants were exposed to the dynamic nonverbal behaviors that compose everyday social exchanges. It has previously been noted that the interpretation of nonverbal behavior calls on an automatic form of cognitive processing, one that does not rely on controlled and conscious thought (Dimberg et al., 2000; LeDoux, 1996; Niedenthal, 1990). It may thus be that judgments based heavily on nonverbal cues by default draw on automatic processing and are, therefore, impeded by the elaborate and deliberate processing that comes with transient sadness. This conclusion is tempered by the fact that no measure of cognitive processing was obtained while participants completed their teacher effectiveness ratings.

Study 2: Induced Sadness and Judgments of Relationship Type

To more closely test the prediction that sadness impairs social judgment accuracy by prompting more careful deliberation, we conducted a second study that obtained a measure of the speed with which participants made thin-slice judgments. If sad participants are using a more careful processing strategy, this should be reflected in the actual time they spend making their judgments. With the assumption that social judgment accuracy is impeded by deliberation, we predicted that sad participants would not only be less accurate, but they would also take more time doing so.

A secondary goal of Study 2 was to examine the generalizability of Study 1's findings by using a different criterion of judgmental accuracy. Accordingly, Study 2 examined the accuracy of judgments of interpersonal relationship status. Participants were asked to judge the type of relationship between opposite-sex dyads on the basis of brief glimpses of their behavior, with the criterion for accuracy being the correspondence between judges' interpretations and the actual type of relationship between dyads. Because there are valid nonverbal cues to relationship type, status, and quality (Abramovitch, 1977; Archer & Akert, 1977; Grahe & Bernieri, 1999; Kahlbaugh & Haviland, 1994; Tickle-Degnen & Rosenthal, 1987, 1990), people are normally quite accurate when making this type of social judgment from minimal information. Thus, Ambady, Conroy, Mullins, and Tobia (2001) found that naïve observers can assess relationship type from very brief video clips (15 s) extracted from longer interactions.

Method

Participants

Forty-seven undergraduates (21 men, 26 women) were recruited to participate in this study. Participants were recruited on the basis of flyers posted around campus and in the lobby of the psychology building. They were paid for their participation.

Stimuli

Stimuli consisted of 15-s silent video clips of 45 opposite-sex dyads who were either (a) involved in a romantic relationship, (b) platonic friends, or (c) strangers. The dyads were shown on a television monitor sitting side by side having a brief discussion. The clips were used in a previous study that investigated whether relationship type could be predicted by thin-slice judgments (Ambady et al., 2001). The criterion variable in this study was participants' accuracy in identifying the type of relationship between the dyads—were they friends, lovers, or strangers? As in Study 1, participants indicated their judgments on a written response sheet after viewing each clip.

Procedure

Mood induction. Participants were randomly assigned to one of three conditions: (a) happy, (b) control, or (c) sad. After arriving in the laboratory, participants were greeted by a research assistant and were led to a small room. As in the previous study, participants in the happy mood condition viewed the 10-min Robin Williams performance, those in the control condition viewed the 10-min nature documentary, and those in the sad condition viewed the 10-min segment from the movie *The Champ.*

Ratings. Following the mood induction, participants began watching the dyad video clips. Again, participants were instructed to view each clip only once. Participants were asked to judge the relationship status of each

[1] Contrast weights of 1 were assigned to the happy and control conditions, and a contrast weight of −2 was assigned to the sad condition.

dyad in a forced-choice format, with strangers coded as 1, friends coded as 2, and lovers coded as 3.

Latency measure. An additional goal of Study 2 was to explore potential differences in information-processing strategies associated with the sad mood induction. To that end, an overall latency measure was taken while participants viewed the dyadic interactions and completed the rating task. A research assistant positioned outside of the testing room used a stopwatch to measure the time participants took to complete the entire set of relationship dyad ratings. Latencies thus refer to the total time participants took to complete the thin-slice task.

Results and Discussion

Accuracy

We computed accuracy scores by comparing participants' responses to the forced-choice questions with the actual nature of the dyadic relationships, with each response coded dichotomously as correct or incorrect. An overall measure of accuracy was computed for each participant, with the possible scores ranging from 0 (all incorrect) to 45 (all correct). As in Study 1, a one-way ANOVA revealed a significant effect of mood condition on accuracy, $F(2, 44) = 5.53$, $p < .01$. Sad participants had a significantly lower accuracy score ($M = 23.40$) than did participants in the happy ($M = 28.30$) or control ($M = 27.60$) conditions. A planned contrast[2] testing the hypothesis that participants in the sad condition would perform significantly worse than those in the happy and control conditions revealed a significant effect, $t(44) = 5.44$, $p < .01$, one-tailed.

Latency

The second analysis examined the time participants took to complete their ratings of relationship type. A one-way ANOVA revealed a significant main effect for mood condition on the time (in minutes) needed to complete the task, $F(2, 44) = 3.86$, $p < .05$. As expected, participants exposed to the sad mood induction took more time to make their judgments ($M = 31.30$ min) than did participants in both the control condition ($M = 29.40$ min) and the happy condition ($M = 27.70$ min). A planned contrast[3] revealed a linear trend in the latency of judgments, with sad participants taking more time than those in the control condition and those in the control condition taking more time than happy participants, $t(44) = 3.78$, $p < .01$, one-tailed.

Efficiency

An efficiency score was also computed for each participant in Study 2. We computed the efficiency score by combining the *z* score of the latency of participants' ratings with the *z* score of the accuracy (reverse scored). Positive scores on this measure indicate less efficiency of judgment. A one-way ANOVA revealed a significant main effect for mood condition on efficiency, $F(2, 44) = 13.27$, $p < .001$. As indicated in Figure 2, participants exposed to the sad mood induction were significantly less efficient in their judgments ($M = 0.56$) as compared with those in the happy condition ($M = -0.41$) and the control condition ($M = -0.11$). A planned contrast[4] again revealed a linear trend, in that sad participants were less efficient than those in the control condition and those in the control condition were less efficient than happy participants, $t(44) = 6.73$, $p < .01$.

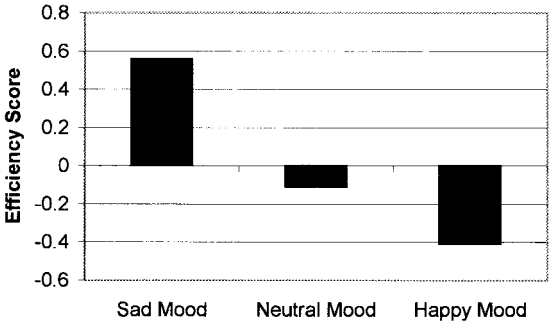

Figure 2. The effects of mood (happy, neutral, and sad) on participants' efficiency in judging dyadic relationship type. Positive scores indicate less efficiency.

The findings of Study 2 replicate and extend those of Study 1. In Study 2, as in Study 1, the ability to make judgments on the basis of brief samples of expressive behavior was impeded by the experience of transient sadness. Sad participants, compared with happy and control participants, were less accurate in their judgments of the nature of interpersonal relationships. Further, the results of Study 2 provide support for the generalizability of the effects of sadness on thin-slice accuracy. They demonstrate that the negative influence of sadness on thin-slice accuracy is not restricted to the domain of teacher effectiveness judgments but is also evidenced in judgments of the nature of interpersonal relationships.

Finally, the results of Study 2 are suggestive as to the cognitive mechanism underlying the effects of transient mood on social judgment accuracy. Sad participants took more time to complete the thin-slice task than did those in the control condition, and happy participants took less time. These results are consistent with several studies suggesting less efficient information processing in sad moods and more efficient processing in happy moods (e.g., Forgas, 1992; Forgas & Bower, 1987; Isen, 1984). It is notable that although happy and control participants performed equally well, happy participants completed their judgments more quickly than did control participants. In terms of efficiency, then, thin-slice judgments represent another domain in which happiness leads to superior performance.

It must be noted, however, that this latency measure is limited in that it refers to the overall time of task completion rather than to each individual thin-slice judgment. Future work using a more sensitive latency measure would be in a better position to test the hypothesis that sad people take longer in responding to presented stimuli and are less efficient in forming their judgments.

Studies 1 and 2 examine the effects of transient mood on social judgment accuracy. On the basis of the results of these studies, we

[2] Contrast weights of 1 were assigned to the happy and control conditions, and a contrast weight of −2 was assigned to the sad condition.

[3] A contrast weight of 1 was assigned to the happy condition, a contrast weight of 0 was assigned to the control condition, and a contrast weight of −1 was assigned to the sad condition.

[4] A contrast weight of −1 was assigned to the happy condition, a contrast weight of 0 was assigned to the control condition, and a contrast weight of 1 was assigned to the sad condition.

felt it was important to explore the role of more chronic sadness in the ability to form accurate social judgments. Thus, in Study 3 we examine the relationship between depression and nonverbal sensitivity.

Study 3: Relating Depression Inventory Scores to Nonverbal Sensitivity

The goal of Study 3 was to explore the role of individual differences in depression in nonverbal sensitivity. As discussed earlier, depression has been linked with informational and processing effects on social judgment, and both types of effects have implications for the accuracy of depressed individuals' everyday social judgments. According to interpersonal models of depression (Coyne, 1976; Lewinsohn, 1974) informational effects on social information processing play a key role in both the development and the maintenance of depression. Coyne's (1976) model posits more specifically that depressed or depression-prone individuals attempt to gain reassurance and support from others by displaying support-seeking, needy behavior. This display is believed to elicit a mixed response in others, with feelings of concern and comfort arising in tandem with feelings of irritation and rejection. Depressed individuals are believed to have a heightened sensitivity to the display of negative behavior in others and so are more attuned to the display of rejection than of comfort. Resulting feelings of rejection are hypothesized to instigate a new round of support-seeking behavior, provoking a vicious cycle that eventually worsens the depression or prolongs its course.

Empirical interest in these predictions has been intense in the past 2 decades, and many of the components of Coyne's (1976) model have received empirical support (for a review, see Lane & DePaulo, 1999). Of particular relevance to the present work are findings linking depression to distortions in the perception of social cues. Depressed individuals have been found to make distorted appraisals of others' reactions to them, particularly displaying a hypersensitivity to negative cues. When attempting to recognize the type of emotion found in facial displays, for instance, depressed people are more likely than are matched controls to see negative expressions (Bouhuys et al., 1995; Gur et al., 1992; Hale, 1998; Mandal & Bhattacharya, 1985; Nandi et al., 1982), an effect that predicts depression severity (Hale, 1998). Distorted perceptions of specific nonverbal cues alter the way depressed individuals attribute more global dispositions to others. Thus, depressed men perceive others as less friendly and so erroneously attribute hostile behavior to them (Colussy & Zuroff, 1985). In addition, depressed individuals are more sensitive to false reassurances and phoniness in others (Lane & DePaulo, 1999). It is not surprising that these biases render depressed individuals less accurate in the interpretation of nonverbal cues (e.g., Carton et al., 1999; Feinberg et al., 1986; Giannini et al., 1995; Zuroff & Colussy, 1986).

In addition to these informational effects, changes in processing strategy are also closely linked with the experience of depression. Weary and her colleagues (Edwards & Weary, 1998; Jacobson, Weary & Edwards, 1999) have provided support for the notion that depressed people are highly concerned with feelings of uncertainty and an inability to predict and control the social environment. Depressed people appear more motivated to pay careful attention to all aspects of the social world, and when processing social information they take on a strategy of intentionally searching for information that might render the world more understandable. As Weary and her colleagues have shown, the adoption of this more effortful processing strategy renders depressed individuals more sensitive to a range of social cues and information (Hildebrand-Saints & Weary, 1989; Marsh & Weary, 1989; Weary et al., 1985, 1987). For instance, they appear more interested in the past behavior and personalities of others and make more abstract trait inferences (Gleicher & Weary, 1991).

Thus, as in the case of experimentally induced sadness, depression is associated with distortions in the perception of nonverbal behavior and the adoption of a more careful strategy of social information processing. The main goal of Study 3 was to obtain an objective measure of social judgment accuracy among individuals with more chronic levels of sadness and to use ecologically valid stimuli in doing so. With some exceptions (Bernieri & Gillis, 1993; Carton et al., 1999; Gillis & Bernieri, 1993), prior work has generally presented still photographs or schematic displays of emotional faces (Bouhuys et al., 1995; Feinberg et al., 1986; Hale, 1998; Mandal & Bhattacharya, 1985; Persad & Polivy, 1993) rather than the dynamic movements expressed in real-life social encounters.

An additional goal of Study 3 was to investigate the accuracy of judgments based on specific channels of nonverbal communication as well as those based on specific types of affective cues. Consequently, we asked participants with varying levels of depression to complete the Profile of Nonverbal Sensitivity (PONS; Rosenthal et al., 1979). The PONS is a large set of visual and audio stimuli that is used to identify the accuracy with which people interpret nonverbal cues from brief samples of behavior. Because the PONS scenes represent different affective qualities, the measure identifies possible tendencies to differentially distort types of affective behavior. Validational studies reveal that those who score high on the PONS are generally rated as more interpersonally sensitive by their peers and supervisors (Rosenthal et al., 1979).

Although the PONS expressions are posed rather than naturalistic, it is doubtful that completion of the PONS and the thin-slice tasks draw on substantially different component processes. Both types of stimuli present extremely brief samples of behavior, and both present dynamic nonverbal cues as opposed to static displays or written summaries of behavior. Further support for the conceptual similarity between the PONS and thin slices comes from prior work on depression and social acuity. Results are consistent in demonstrating a link between depression and impaired nonverbal sensitivity, regardless of whether the stimuli are naturalistic (as with the IPT; used by Aube & Whiffen, 1996) or posed (as with DANVA 2; used by Carton et al., 1999).

Method

Participants

Participants included 52 undergraduate students (32 women, 20 men). Participants were recruited at university dining halls and were asked to complete a number of paper-and-pencil inventories, including the Beck Depression Inventory (BDI; Beck, 1967). They were also asked whether they were willing to participate in studies in the psychology department. Three weeks later, those who were interested in participating were contacted and scheduled for the study.

Procedure

Participants were greeted by a research assistant and were escorted to a small laboratory room. There they completed the BDI again and the PONS. The PONS was presented on a Macintosh computer with a 13-in. (33.02-cm) monitor. Participants made their responses by indicating on the keyboard which of the two choices they believed was the correct answer. After completing the PONS, participants were paid, thanked, and debriefed.

Measures

BDI. The BDI (Beck, 1967) is a 21-item self-report measure of depressive severity. Each item is rated on a 4-point scale (ranging from 0 to 3), yielding summary scores that range from 0 to 63. This instrument has demonstrated adequate reliability both in terms of internal consistency and in terms of stability. Beck, Steer, and Garbin (1988) reported coefficient alphas for psychiatric patients ranging from .76 to .95. Similar reliabilities have been reported for nonpsychiatric populations (Lightfoot & Oliver, 1985). This instrument has also demonstrated strong convergent and discriminant validity and adequate factorial validity (Beck et al., 1988).

PONS. The PONS test (Rosenthal et al., 1979) measures the ability to identify intentions and affect through different nonverbal channels. In this test, the participant views a female encoder acting out affective scenes that are each 2 s long. The scenes of the PONS capture expressions communicated through three bodily channels: the face, the body, and the full figure (the head and body). In addition, vocal cues are presented in two ways: by content filtering, which removes the higher frequencies on which word recognition depends, and by randomized splicing, which rearranges segments of the voice in a random manner. Six other channels were created using combinations of these channels. The 220 scenes also fall into a 2×2 configuration of affective variables (with 5 scenes each), representing the dimensions of positivity and dominance. The four affect quadrants are positive–submissive (e.g., expressing gratitude, helping a customer), positive–dominant (e.g., talking to a lost child, admiring nature), negative–submissive (e.g., asking forgiveness, returning a faulty item), and negative–dominant (e.g., criticizing someone for being late, expressing strong dislike). Following each scene, a two-item multiple choice question appears, with one item representing the correct response. Responses are coded dichotomously as correct or incorrect.

Results and Discussion

Correlational analyses revealed considerable stability of BDI scores between the screening and laboratory sessions ($r = .76$, $p < .0001$). Three participants did not complete the protocol and were dropped from the analyses.

Several PONS accuracy scores were computed for each participant. In addition to an overall accuracy measure (with a highest possible score of 220), an accuracy score for each of the 11 individual channels was computed. The highest possible score for each individual channel is 22. Finally, an accuracy score was computed for each of the four affect quadrants, and the highest possible score for each of these is 55.

Correlational Analyses

The first analysis consisted of a correlation between BDI and PONS scores. This analysis revealed a significant negative correlation between BDI scores and overall PONS scores, $r(49) = -.42$, $p < .002$, indicating that higher scores on depression were related to less accuracy in decoding nonverbal cues. As indicated in Table 1, scores on many of the specific channels and affect quadrants also yielded significant relationships. Higher scores on the BDI were significantly correlated with poorer decoding of vocal cues from both content-filtered, $r(49) = -.38$, $p < .007$, and randomized segments, $r(49) = -.37$, $p < .005$. BDI scores were significantly negatively correlated with accuracy in decoding three of the combined channels: face plus randomized segments ($r = -.30$), figure plus randomized segments ($r = -.33$), and figure plus content-filtered cues ($r = -.36$). In terms of the four affective quadrants, depression was correlated with significantly poorer decoding of positive–dominant ($r = -.30$), positive–submissive ($r = -.40$), and negative–submissive ($r = -.45$) cues. However, depression did not correlate with accuracy in the decoding of negative–dominant cues, which suggests that depressed individuals are relatively more accurate at understanding affective cues related to the expression of negativity and dominance but are relatively less accurate at understanding other combinations of affective cues.

Table 1
Correlations of BDI Scores With PONS Scales

PONS	*r*
Channel	
Total PONS	−.43**
CF	−.38**
Face	−.17
Body	−.20
Figure	−.15
RS	−.37**
Face + RS	−.30*
Face + CF	−.19
Body + RS	−.17
Body + CF	−.17
Figure + RS	−.33*
Figure + CF	−.36*
Affect	
Positive–dominant	−.30*
Positive–submissive	−.40**
Negative–dominant	−.09
Negative–submissive	−.45**

Note. BDI = Beck Depression Inventory; PONS = Profile of Nonverbal Sensitivity; CF = content-filtered speech; RS = randomized-spliced speech.
* $p < .05$. ** $p < .005$.

ANOVAs and t Tests

In addition to the correlational analyses, we also classified participants using the criteria established by Kendall, Hollon, Beck, Hammen, and Ingram (1987) for cut-off scores on the BDI (0–9 = nondepressed; 10–15 = dysphoric; 16 and above = dysphoric or depressed) and conducted ANOVAs comparing the performance of the three groups on the PONS. A 3 (depression level) × 2 (gender) ANOVA on overall performance on the PONS yielded a significant main effect for depression, $F(2, 43) = 8.27$, $p < .001$, indicating that nondepressed individuals ($M = 175.79$) were more accurate than were dysphoric ($M = 164.08$) or depressed individuals ($M = 164.24$). A *t* test comparing the performance of nondepressed individuals with that of depressed individuals (combining dysphoric and depressed individuals, whose performance was very similar) was highly significant, $t(47) = 4.14$,

$p < .0001$. The main effects for gender and the Depression Level × Gender interaction did not reach significance.

We also computed ANOVAs for all the channels and affect combinations, and no significant gender or Depression Level × Gender interaction effects emerged. But because the means for dysphoric and depressed individuals were very similar for all the nonverbal channels as well as for all four affect combinations, we combined the scores of these two groups and compared their performance with that of nondepressed individuals, and we report the results of these *t* tests rather than the ANOVAs. As shown in Table 2, these analyses indicated that depressed individuals performed significantly worse than nondepressed individuals in their judgments of content-filtered speech ($p = .02$), body cues ($p = .002$), random-spliced speech ($p = .02$), face plus random-spliced speech ($p = .02$), figure plus random-spliced speech ($p = .003$), and figure plus content-filtered speech ($p = .005$). Finally, *t* tests revealed that depressed individuals were significantly worse at decoding all the combinations of affective cues except for the combination of negativity and dominance (positive–dominance, $p = .006$; positive–submissive, $p = .003$; negative–submissive, $p = .0002$).

Thus, depressed and dysphoric participants in this study were less accurate than were nondepressed participants in their responses to the PONS test, as revealed by both correlational analyses and ANOVAs. These results extend previous work demonstrating an association between depression and diminished nonverbal sensitivity using still photographs and schematic displays of emotional faces (Bouhuys et al., 1995; Feinberg et al., 1986; Hale, 1998; Mandal & Bhattacharya, 1985; Persad & Polivy, 1993).

Some interesting effects emerged in terms of the specific nonverbal channels of the PONS. First, in both the correlations and the *t* tests, depression was associated with an impaired ability to interpret vocal cues. Carton et al. (1999) reported a similar effect with the DANVA 2. The observed relationship between depression and relative insensitivity to the emotional component of vocal cues may be causally related to the association between depression and poor relationship quality (for a review, see Segrin & Abramson, 1994). The voice conveys a range of emotions, from nervousness and anxiety (Harrigan, Harrigan, Sale, & Rosenthal, 1996; Harrigan, Larson, & Pflum, 1994; Kasl & Mahl, 1965; Mahl, 1956) to depression (Pope, Blass, Siegman, & Raher, 1970) and anger (Scherer, 1981). In attempting to understand others, depressed individuals may be at a particular disadvantage because they have difficulty inferring the affective component of what is being said.

Table 2
Mean PONS Scores by BDI Group

PONS	BDI: 9 or below (nondepressed)	BDI: Above 10 (depressed)	*t*(47)	*p*
Channel				
Total PONS	175.79	164.15	4.14	.0001
CF	12.90	11.55	2.50	.02
Face	16.48	15.95	1.31	.20
Body	16.24	14.40	3.24	.002
Figure	16.69	15.75	1.83	.07
RS	13.45	12.20	2.40	.02
Face + RS	17.31	16.20	2.50	.02
Face + CF	16.24	15.85	1.00	.32
Body + RS	15.72	14.90	1.95	.06
Body + CF	15.59	14.65	1.53	.13
Figure + RS	17.07	15.80	3.10	.003
Figure + CF	18.10	16.90	2.92	.005
Affect				
Positive–dominant	41.90	38.80	2.85	.006
Positive–submissive	41.24	38.50	3.12	.003
Negative–dominant	49.42	48.00	1.31	.19
Negative–submissive	43.17	38.90	4.07	.0002

Note. For the BDI, $n = 29$ nondepressed, and $n = 20$ depressed. PONS = Profile of Negative Sensitivity; BDI = Beck Depression Inventory; CF = content-filtered speech; RS = randomized-spliced speech.

One advantage of the PONS test is that it organizes expressed affect into four dimensions representing the combinations of positivity, negativity, dominance, and submissiveness. Our results suggest that a particular form of negative bias may exist in depressed individuals' interpretations of nonverbal cues. Depressed individuals performed more poorly when attempting to interpret three of the four types of affective scenes, and their accuracy was equivalent to that of nondepressed participants only for scenes expressing the combination of negativity and dominance. This selective accuracy to dominant negativity may render depressed people especially sensitive to criticism. This interpretation falls nicely in line with Coyne's (1976) interpersonal model of depression, which, as outlined above, suggests that one component of depression is a heightened attunement to possible signs of rejection.

Finally, these results also provide some indirect support for the proposed explanation for mood effects on social judgment accuracy. It has previously been noted that depressed people tend to carefully monitor many aspects of the social world (e.g., Hildebrand-Saints & Weary, 1989; Marsh & Weary, 1989; Weary et al., 1985, 1987) and are less efficient in their decoding of nonverbal cues (Cooley & Nowicki, 1989). This heightened vigilance presumably arises from feelings of a chronic lack of control (McCaul, 1983; Weary et al., 1985). However, we suggest that in the case of nonverbal behavior interpretation, careful deliberation may have the paradoxical effect of diminishing the ability to understand others. We conducted Study 4 in an attempt to more directly test this hypothesis.

Study 4: Can Distraction Correct for the Effects of Sadness?

If careful deliberation mediates between sadness and diminished social judgment accuracy, then a manipulation that limits sad participants' cognitive and attentional resources (and therefore prevents careful deliberation) should correct for the negative effects of sadness. Using this logic, we designed Study 4, in which some participants assigned to the sad mood condition were instructed to complete a distracting secondary task (i.e., a cognitive load) while completing the thin-slice task. Other participants assigned to the sad mood condition were given no cognitive load manipulation. We hypothesized that participants in a sad mood + cognitive load condition would behave more like participants in a neutral mood condition in terms of their thin-slice accuracy.

Method

Participants

Forty-nine undergraduates (21 men, 28 women) were recruited to participate in this study. Participants were recruited on the basis of flyers posted in the psychology building lobby, and they were paid for their participation.

Stimuli

Stimuli consisted of the 15-s silent video clips of dyadic interactions used in Study 2. Rating procedures were identical to those used in Study 2.

Procedure

Participants were randomly assigned to one of three conditions: (a) sad mood, (b) neutral mood, and (c) sad mood + cognitive load.

Mood induction. Participants assigned to the control condition viewed a 3-min nature documentary, and those in the sad condition viewed a 3-min segment from the movie *The Champ.*

Cognitive load. Participants in the sad mood + cognitive load condition received a cognitive load manipulation before beginning the task. The cognitive load manipulation instructed participants to count backward from 1,000 by 7s. Similar tasks have been used successfully in past research to manipulate processing load (e.g., Gilbert & Hixon, 1991; Gilbert & Krull, 1988).

Results and Discussion

As in Study 2, we computed accuracy scores by comparing participants' responses to the forced-choice questions with the actual nature of the dyadic relationships, with each response coded dichotomously as correct or incorrect. An overall measure of accuracy was computed for each participant, with the possible scores ranging from 0 (all incorrect) to 45 (all correct).

A one-way ANOVA revealed a significant effect of condition on accuracy, $F(2, 45) = 7.27$, $p < .002$. As displayed in Figure 3, sad participants had a significantly lower accuracy score ($M = 23.00$) than did participants in the sad + cognitive load ($M = 28.94$) and neutral ($M = 28.00$) mood conditions. Tukey's post hoc tests revealed that participants in the sad condition performed significantly worse than those in the sad + cognitive load condition ($p < .05$) as well as those in the control condition ($p < .05$).

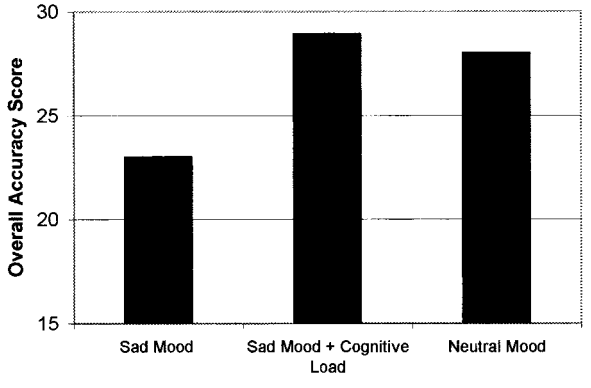

Figure 3. The effects of condition (sad mood, sad mood + cognitive load, and neutral mood) on participants' accuracy in judging dyadic relationship type.

There was no significant difference in performance between participants in the sad mood + cognitive load and neutral mood conditions.

Thus, consistent with our predictions, completion of a distracting secondary task alleviated the effects of sadness on thin-slice accuracy. When sad participants were forced to allocate some of their attentional resources to the cognitive load task, they performed as well as those in the control condition. These results provide further support for the hypothesis that a deliberative state of mind mediates between sadness and diminished social judgment accuracy.

In addition, these results are consistent with prior work indicating that performing simultaneous cognitive operations enables perceivers to form more valid social judgments, particularly when such judgments are based heavily on the interpretation of nonverbal cues (Gilbert & Krull, 1988).

On a methodological note, it is also interesting that the sadness-induced mood effects in this study were of a similar size to those found in Study 2, although a shorter mood induction procedure was used in this study. Rather than viewing a 10-min clip from the movie *The Champ*, sad participants in Study 4 viewed only a 3-min clip. This suggests that even brief manipulations of sadness can lead to substantial impairments in thin-slice accuracy.

General Discussion

In everyday life, mood fluctuations occur with ease and frequency. Given the highly constructive nature of social judgments, it is not surprising that mood fluctuations have dramatic effects on the formation of first impressions. Studies 1 and 2 suggest that sadness produces a significant impairment in the ability to draw valid inferences about others on the basis of brief observations. This effect was found in two domains of interpersonal consequence: teacher effectiveness and relationship type. Study 3 extends these findings by linking more chronic sadness with poorer sensitivity to the intentions and affect of others, also as expressed in brief samples of nonverbal behavior. The results of Study 4 support the proposed explanation for this pattern of findings by demonstrating that when sad participants are distracted by a secondary task, their performance falls in line with that of control participants.

In Studies 1, 2, and 4, we were able to generate significant impairments on the quality of social judgments. Previous work has found that individuals are normally surprisingly accurate in their ability to gauge a range of interpersonal variables from brief samples of expressive behavior (for a review, see Ambady et al., 2000). The current findings thus highlight the powerful role of an intraindividual process in social judgments. The most likely explanation for this effect is that sad participants relied on a careful and deliberative strategy of interpreting the thin slices before making their judgments, and that this strategy impaired their ability to interpret the nonverbal behaviors that provide valid cues to both teacher effectiveness and dyadic relationship type. Though the nature of the studies precludes an assessment of this causal explanation, converging lines of evidence support the suggestion that enhanced processing diligence impairs social judgment accuracy.

First, Study 4 directly manipulated participants' available cognitive resources by instructing some participants to perform mental

calculations while completing the thin-slice judgment task. In line with our expectations, this cognitive load manipulation corrected for the effects of sadness. Participants in the sad mood condition who were exposed to the cognitive load manipulation performed at a level equal to that of control participants. By contrast, participants in a sad mood condition who did not receive the cognitive load performed significantly worse than both other groups. This pattern of results provides some support for the proposed explanation by demonstrating that sad participants who lack the cognitive resources necessary for careful deliberation fail to show the traditional performance impairments associated with sadness.

The latency and efficiency findings of Study 2 also support the hypothesized role of deliberation. A response-time measure revealed that participants in the sad mood condition took more time to complete the task of judging relationship type, even though they performed significantly worse than those in the neutral and happy mood conditions. Although we recognize the limitations of this measure, we believe that this increase in latency reflects sad participants' use of a more careful and deliberate approach to the task of judging relationship type. In future work, it would be interesting to test sad participants' subsequent memory for details of the thin-slice clips. This would likely provide a more direct measure of the extent to which they carefully scrutinize the information available to them before forming judgments.

Finally, there is ample theoretical support for the proposed explanation. Nonverbal cues, which provide the basis for thin-slice judgments, are naturally interpreted in a largely automatic, cognition-free fashion. Their interpretation occurs outside awareness and without intention, in a highly efficient manner. Because increased attention devoted to an otherwise automatic process reduces the effectiveness of the process, it is likely that a shift in processing strategy toward careful deliberation accounts for the effects of sadness on thin-slice accuracy (Dunning & Stern, 1994; Fallshore & Schooler, 1995).

Although alternative explanations for the effects of sadness on social information processing cannot be ruled out, prior findings do help rule out one of the most obvious of these: motivational differences. Some might argue that, independent of deliberation, transient sadness impairs social judgment accuracy simply by causing participants to expend less effort on the task at hand. However, work conducted by Bernieri and colleagues (Bernieri, 1988; Bernieri & Gillis, 1994; Gada, Bernieri, & Grahe, 1996) has consistently found that thin-slice accuracy is quite impervious to motivational differences. If thin-slice accuracy can be boosted by increased motivation, then incentives designed to increase motivation should increase thin-slice accuracy. On the contrary, monetary incentives for accuracy fail to impact accuracy on thin-slice judgments of rapport (Bernieri & Gillis, 1994), on the PONS (Bernieri, 1988), and on the IPT (Gada et al., 1996). If motivational differences are at work, then thin-slice accuracy should also succumb to the effects of fatigue. However, at least one study has demonstrated that fatigue has no effect on thin-slice accuracy (Bernieri & Gillis, 1994).

The latency and efficiency findings of Study 2 provide further (albeit indirect) support for the notion that sad participants did not simply expend less effort when assessing relationship type. We suggest that rather than simply expending less effort on the task, sad participants were deliberating carefully and considering all available information before forming their impressions of relationship type, a process that resulted in both longer reaction times and diminished accuracy.

Why should careful deliberation disrupt judgmental accuracy? Previous work suggests that the most negative impact of careful reasoning occurs when the issues being reasoned about have a large affective component. This is attributed to the fact that affect-based attitudes are less accessible to consciousness, and analyzing reasons is likely to emphasize "cold" cognitive aspects at the expense of the affective basis of the attitudes (Miller & Tesser, 1986; Wilson & Schooler, 1991). Thus, one explanation for the poorer judgments associated with reasoning is the tendency of individuals to focus on the wrong reasons for their preferences and choices (Nisbett & Wilson, 1977) and ignore relevant information pertaining to their attitudes (Wilson, Dunn, Kraft, & Lisle, 1989).

Methodological Implications

In conducting this work, we drew on the previously documented informational and processing effects of sadness. By presenting nonverbal cues to affect, intentions, dispositions, and social relations, we capitalized on the techniques for gauging social judgment accuracy traditionally used by those interested in affective influences on information bases. Studies 1 and 2 diverge from past research in the realm of processing effects only in that these studies presented the nonverbal components of communication to perceivers; the mood manipulations and rating procedures were similar to those used previously. The divergent findings are attributed to the nature of the impression formation task, specifically the relatively automatic form of cognitive processing elicited by the interpretation of nonverbal behavior. Thus, methodologically, this work serves as a powerful reminder of the importance of ecologically valid stimuli in social judgment tasks.

Practical Implications

This work may also have important implications for our understanding of the social skills deficits associated with sadness and depression. The present findings suggest that social judgment accuracy is quite susceptible to affective influences. These influences likely play an important role in the formation of the superficial relationships that constitute the majority of one's daily social encounters and in the maintenance of long-term relationships that provide invaluable social support. Social skills training programs for those suffering from depression may benefit from greater attention to the consequences of ruminating excessively about the social signals given off by others. However, care must be taken in generalizing from the nonclinical population used in Study 3 to clinical populations. Severely depressed individuals may exhibit passivity in the face of social demands, rather than increased vigilance and diminished judgmental accuracy.

Conclusion

In sum, these studies suggest that affect has a powerful influence on social judgment accuracy. Sadness significantly impaired the ability to interpret brief cues to important social constructs, including job effectiveness and relationship type. Moreover, this work is suggestive as to the mechanism underlying the effect of sadness on social acuity. Although past work has demonstrated that sadness

prompts a more deliberate processing strategy, the present work has provided the connection between deliberation and diminished thin-slice accuracy. It appears that even a small and transient increase in sadness can produce alterations in the manner in which social information is processed, paradoxically resulting in a diminished capability to interpret the social world.

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