
Social Exclusion and Selective Memory: How the Need to Belong Influences Memory for Social Events

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The need to belong has been forwarded as a pervasive human motive, influencing a range of cognitive, emotional, and behavioral responses. The current research explored the influence of belongingness needs on the selective retention of social information. Just as physical hunger results in selective memory for food-relevant stimuli, it was hypothesized that social hunger, aroused when belongingness needs were unmet, would result in selective memory for socially relevant stimuli. In two studies, the authors used a simulated computer chat room to present brief acceptance or rejection experiences to participants. Participants then read a diary containing both social and individual events. In both, rejection experiences resulted in selective memory for the explicitly social events of the diary. The implications of these results for the existence and consequences of a basic need to belong are discussed.

Humans are inherently social creatures. We gather in groups the world over and form affectional pair-bonds in every known human society (Brewer & Caporael, 1995). Social exclusion is an effective and ubiquitous form of punishment across all age groups and cultures (see Williams, 1997, for review), and a lack of positive social relationships has repeatedly been associated with startling decreases in physical and mental well-being (for review, see Gardner, Gabriel, & Diekmann, 2000). Indeed, the need to belong—a need fulfilled only through affiliation with and acceptance from others—is so universally powerful that it has been proposed to be as basic to our psychological makeup as hunger or thirst is to our physical makeup (Baumeister & Leary, 1995).

In their review of the evidence supporting the need to belong as an innate, evolutionarily adaptive human motive, Baumeister and Leary (1995) set several criteria for inclusion as a fundamental human motivation. Two of these were (a) that a fundamental motive should drive cognitive responses and (b) that satiation patterns should be evident (i.e., the motive should increase when levels of belongingness fall below threshold and diminish when levels of belongingness are satisfied). The current studies explored the interplay of these two criteria through investigating the extent to which situationally induced belongingness needs affected the processing of subsequent social information.

One possible consequence of a basic need to belong might be the development of a social monitoring system that guides social information processing. Higgins (1996) has argued that a regulatory function of self-knowledge is to monitor an individual's current state in relation to a desired end-state. Given the importance of social belonging as a desired end-state, it would seem highly plausible that an individual's current level of

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social acceptance would be monitored. Indeed, the sociometer hypothesis forwards that self-esteem provides an indicator of an individual's current level of social acceptance (Leary, Tambor, Terdal, & Downs, 1995).

Brewer and Caporael (1995) point out that social monitoring would be favored in evolution. Given the adaptive nature of living in social groupings for our early ancestors and the dire consequences of expulsion, successful individuals may have been motivated to maintain their acceptance within the group and thus sensitively attuned to information relevant to this motive. In other words, just as physical hunger directs attention toward and biases memory for food cues (Atkinson & McClelland, 1948), the arousal of social hunger may direct attention toward and bias memory for social cues. Evidence for such a social monitoring system would fulfill some of the aforementioned requirements of Baumeister and Leary's (1995) criteria—first, socially relevant information should be preferentially processed, and second, this processing should be changed in the face of increased belongingness needs.

The Preferential Processing of Socially Relevant Information

Baumeister and Leary (1995) discussed a wide body of research supporting the importance of belongingness information in cognitive processing. Evidence that socially relevant information is preferentially processed is abundant. First, there is evidence that social links, whether relational or group-based, are naturally extracted from the information stream. For example, people spontaneously categorize others in terms of their relationships (e.g., married couple, friendship pair), and this knowledge subsequently furnishes a storage strategy for information about the individuals within those relationships (Sedikides, Olsen, & Reis, 1993). In addition, social links are spontaneously considered when forming attributions; the extent to which an event may have been caused by interpersonal demands has been found to be the strongest dimension in attributional processing (Anderson, 1991).

Second, the amount and depth of information processing are affected by relational concerns. Greater processing is induced by targets with whom we expect to form a relationship as compared to those with whom we expect little social contact (Devine, Sedikides, & Fuhrman, 1989), greater thought is devoted to relationship partners to whom we are committed than to others (Beach & Tesser, 1988), and rumination appears to be a common response to a relational loss (Nolen-Hoeksema, McBride, & Larson, 1997).

Finally, our cognitive processes seem biased to favor those with whom we feel we belong in comparison to

strangers. Numerous studies have demonstrated that we tend to bias both evaluations and attributions in ways that favor relationship partners or ingroup members above those less close to us (Fletcher & Fitness, 1996). Indeed, a blurring of boundaries seems to occur between the self and the ones with whom we most belong; the most significant dyadic relationships and the most important ingroups become incorporated into the representation of the self (Brewer & Gardner, 1996).

In sum, belongingness does indeed seem to shape cognitive activity across a wide variety of attributional, evaluative, and memorial processing. However, the extent to which these tendencies increase or decrease as a function of the satiation levels of the need to belong has not been empirically explored. Given Baumeister and Leary's (1995) theory, it is likely that the processing of social information will be strongly affected by the extent to which an individual's belongingness needs are currently met.

The Effect of Belongingness Needs on Social Interaction and Information Processing

Indirect evidence for changes in information processing as a result of the need to belong has been found. For example, Ko (1994) reported that after being left out of a ball-toss game, participants increased their use of the word *we*, implying that a brief instance of social rejection motivated participants to include the self in part of a larger social whole. Similarly, Brewer and Pickett (1999) found that heightening a need for assimilation and belonging led to increased self-stereotyping. Finally, behavioral evidence was presented by Williams and Sommers (1997), who demonstrated that women socially compensated to rejection from a group by working harder at a collective task. In all of these studies, then, when faced with rejection, individuals strove toward inclusion.

The aforementioned studies all report shifts in overt self-reports and behavior that are consistent with an attempt to fulfill the need to belong; thus, they provide indirect evidence that this motive influences the intervening cognitive processes. The current article presents two studies designed to assess more directly the effects of a brief social rejection or acceptance experience on information processing, specifically on the selective retention of motivationally relevant events as a function of these experiences.

Kelly (1955) first proposed that the idiosyncratic beliefs and needs of the individual influence the way in which the world is represented. Markus, Smith, and Moreland (1985) provided evidence that this was so by demonstrating that chronically self-relevant dimensions ease the processing of relevant information, resulting in

an advantage for schematic information in memory. In an impressive demonstration of the ways in which chronic differences in self-beliefs and motives bias memory not merely for specific information (e.g., schematic traits) but also for more abstract patterns of events relevant to those motives, Higgins and Tykocinski (1992) showed that an individual's chronic self-guides changed the type of information that was later recalled about another person's life. Specifically, they showed that participants who were chronically motivated to avoid losses (those with actual-ought self-discrepancies) or to anticipate gains (those with actual-ideal self-discrepancies) preferentially remembered events reported in another student's diary that were consistent with these underlying motivations. Individuals suffering from actual-ought discrepancies remembered more negative events that were framed in terms of losses and more positive events that were framed in terms of loss avoidance. In contrast, individuals suffering from actual-ideal discrepancies remembered more positive events that were framed in terms of gains and more negative events that were framed in terms of gains unachieved. Self-relevant dimensions, then, related either to the self-schema or to chronic motivations appear to be both preferentially processed and selectively remembered.

Utilizing an adaptation of Higgins and Tykocinski's (1992) diary paradigm as a measure of motivated processing, we hypothesized that the need to belong, activated by recent social experience, would similarly serve to bias memory for relevant information. Specifically, we predicted that individuals whose belongingness needs were unmet because of a recent social rejection, those who were presumably socially hungry, would recall a greater proportion of social information, whereas those for whom belongingness needs were satisfied with a recent social acceptance would not show this bias.

EXPERIMENT 1

Experiment 1 was designed to assess the influence of belongingness needs on the recall of the events in another person's diary. We hypothesized that a need to belong, aroused by a prior social rejection experience, would result in selective memory for the explicitly social events. We also designed Experiment 1 to allow us to explore an additional hypothesis, that of rejection-induced biases toward specific types of social events. In particular, we were interested in whether the need to belong had differential effects if it was aroused by rejection from a dyad versus rejection from a group.

Brewer and Gardner (1996) distinguished between relational and collective aspects of the social self; the relational self represents the self in relation to specific others (e.g., "I am Bert's wife"), whereas the collective self represents the self as a member of a larger group

(e.g., "I am a Northwestern faculty member"). It is possible that individuals possess specific relational versus collective belongingness needs, that these needs may be aroused through differential experiences (e.g., the loss of a relationship vs. exclusion from a social group), and that any selective memory effects may thus be specific to relational or collective information. To explore this additional possibility, a 3 (social experience: social acceptance, interpersonal rejection, collective rejection) \times 3 (event type: individual, relational, collective) \times 2 (event valence: positive, negative) experiment was designed. Both the interpersonal and the collective rejection experiences should be sufficient to arouse belongingness needs. Whether this arousal then has general or more specific effects on memory remains to be seen.

METHOD

Participants

The study consisted of 91 introductory psychology students (47 female) who participated in the experiment for partial course credit. Participants were run in groups of 5 and were randomly assigned to one of three "social experience" conditions. Three participants reported suspicion concerning the simulated chat room, and their data were excluded.

Procedure

All participants were told that they were taking part in a study of "indirect impression formation" that investigated the ways in which impressions were formed in the absence of face-to-face interaction. They were told that the study had two parts, one in which they would form impressions of other people after interacting with them in a computer chat room and a second in which they would form an impression of a different person through reading a diary describing daily events. They also were told that mood, computer experience, and verbal ability would be measured in order to assess the influences of these variables on "indirect impression formation."

Participants were placed into an individual cubicle with a computer. They were told that they would be connected into a chat room with participants from another location (the computer science building) as well as from their own location (the psychology labs). The computerized chat room was in actuality a computer program designed to present the illusion of interaction with four other people. Four computerized confederates were identified by initials. Each confederate had an individualized typing profile (e.g., fast vs. hunt-and-peck, the use of only lowercase letters, perfect punctuation or none, differential use of slang, etc.) in an attempt to make the interactions as realistic as possible. Interaction went on

in a serial fashion, with each confederate responding when their initials appeared on the screen. Participants were instructed to get to know the others and to respond when their own initials appeared on screen. Participants' initials appeared second on the screen during each round; thus, each participant responded in the second position throughout.

Four rounds of discussion followed an initial practice round in which everyone in the chat room greeted one another; each discussion round was presented on a single screen. First, the initial confederate's responses would appear at the top of the screen after the initials "B.J." After B.J. had typed about four lines, the participant's own initials would appear and he or she would have up to four lines to respond. Then the other three computerized confederates (J.C., R.P., and G.W.) would respond in serial order.

The nature of the chat program varied and constituted the manipulation of social experience. Participants who were placed in the social acceptance condition received responses from the others in the chat room that indicated approval, agreement, and affirmation, all cues that denote acceptance. These types of responses were obviously missing in the two rejection conditions, and in fact, participants in these conditions received somewhat unmistakable cues of exclusion from the others.

Participants assigned to the social acceptance condition experienced a chat room that discussed favorite movies, clothing styles, and music. In each case, the first confederate would pose a question for the group to discuss and then the participant would type his or her response in the second position; during two discussion rounds, the confederate who responded in the third position would affirm the participant's choices (e.g., by responding "I totally hear you!" or "Cool!" before continuing). The discussion remained friendly throughout, with ambiguous but positive confederate responses such as "I like all kinds of music so everybody's choices seem pretty good."

Participants assigned to the interpersonal rejection condition experienced a chat room in which the four confederates broke off into dyads based on common interests that could not be shared by the participant (e.g., one dyad shared a love for the imaginary band "Hoodoo Meatbucket"). Dyads directed their comments to one another using initials so it was obvious that no one was addressing the real participant.

Participants assigned to the collective rejection condition experienced a third chat room in which all four confederates surprisingly discovered that they shared a common ingroup: They had all participated in marching band, albeit in different high schools. Thus, the four rounds of discussion reflected (a) the delighted discov-

ery of this fact, (b) discussion of musical instruments played in band, (c) good-natured complaints about band uniforms, and (d) discussion of summer band camp. A review of the participants' responses in this condition revealed that none of them had been in marching band; therefore, all were successfully excluded from the group conversation.

After the chat room, participants answered questions meant to further the cover story (e.g., "How easy was it to form impressions in the chat room?"). They also completed the PANAS mood scale (Watson, Tellegen, & Clark, 1988) before continuing to the next part of the indirect impression study, which presented the diary of another individual. Each participant read the diary of a same-sex student (presented as either Donald or Donna) and the events of his or her life over the course of 4 days. Each day presented seven events, and the type of event constituted the within-participant independent variables. The seven event types were as follows: individual positive events, individual negative events, relational positive events, relational negative events, collective positive events, collective negative events, and neutral filler items. The appendix lists all of the events. The diary task was self-paced; each page of the diary (all seven events of 1 day) was presented on the screen and participants pressed a key to read the next page.

After reading the diary, participants answered questions concerning how easily they formed an impression. They then received the timed "verbal abilities" task, in which they made as many words as possible using letters from the words *crustacean* and *librarian*. This task ensured that participants were engaged in an unrelated task for 4 minutes.

Participants were then presented with a surprise recall test; they were instructed to write down as many events from the diary that they could remember and were given up to 10 minutes to complete this task. After the recall measures, participants answered two manipulation checks concerning their chat room experience: "How interested were the others in what you had to say?" and "How included did you feel in the chat room?" Both questions were answered using 7-point scales ranging from 1 (*not at all*) to 7 (*extremely*). Finally, participants answered questions designed to assess suspicion: one open-ended question that asked "Was there anything suspicious or strange about the computerized chat session?" and one closed-ended question that asked "How realistic did the computerized conversation feel?" (both questions were answered using a 7-point scale).

At this point, participants underwent an extensive debriefing designed to remove any lingering effects of the acceptance/rejection manipulations. The debriefing included rerunning the computer chat room program so that each participant could see that regardless of

what they typed, the computerized confederates responded identically. All participants also were given the opportunity to view the other chat room experiences if they wished. After it was clear that participants understood that the chat room interactions were programmed rather than personal, they were asked not to discuss the experiment with others in their psychology class and the debriefing was complete.

RESULTS AND DISCUSSION¹

Manipulation Checks

The two manipulation checks were examined using a one-way ANOVA and follow-up planned comparisons. Both the participants' perception of other's interest in them and their feelings of inclusion were affected by the chat room manipulation: interest $F(2, 85) = 14.05, p < .01$ and inclusion $F(2, 85) = 27.26, p < .01$. Planned comparisons revealed that participants exposed to the social acceptance manipulation reported significantly higher levels of felt interest from the others ($M = 2.96$) than did those in either the interpersonal rejection condition ($M = 1.38$), $t(83) = 4.39, p < .01$, or the collective rejection condition ($M = 1.52$), $t(83) = 4.38, p < .01$, which did not significantly differ from one another. Likewise, participants in the social acceptance condition reported significantly higher levels of felt inclusion ($M = 3.82$) than were reported by either the interpersonal rejection ($M = 1.38$), $t(83) = 6.84, p < .01$, or collective rejection ($M = 1.72$), $t(83) = 5.87, p < .01$, conditions, which did not differ. Thus, the manipulation of social acceptance versus social rejection was successful.

In addition, we investigated participants' scores on the PANAS mood scale as a function of social experience. No effects of the manipulation of acceptance or rejection on general mood were found ($F < 1$). Although initially surprising, the lack of an effect on these general mood measures replicates prior research by Nezlek, Kowalski, Leary, Blevins, and Holgate (1997), who also found broad affective measures to be insensitive to brief acceptance or rejection experiences. Most important for the present investigation was the finding that the manipulation successfully affected feelings of inclusion.

Recall of Social Events

The number of correctly recalled events in each of the seven categories was then computed for every participant. To control for large individual differences in memory ability (correct recall of events ranged from 3 to 18, out of a possible 28 events), the number in each category was then divided by the total number of correctly recalled events for each participant. Thus, these indexes reflected the proportion of remembered events that fell

within any particular category and corrected for individual differences in general recall.²

We hypothesized that social rejection in the chat room would increase the retention of the explicitly social events of the diary as compared to social acceptance. Thus, the indexes reflecting memory for the social events were entered into a 3 (social experience: social acceptance, interpersonal rejection, collective rejection) \times 2 (social event type: relational, collective) \times 2 (event valence: positive, negative) repeated-measures ANOVA with social experience entered as a between-participants factor.³

Most important for the present investigation, the main effect for social experience was in the expected direction and was significant, $F(2, 84) = 7.31, p < .01$. Participants who had previously experienced social acceptance in the chat room recalled fewer of the social events (both interpersonal and collective) of the diary overall than did participants who had experienced interpersonal or collective rejection. Planned comparisons among the three social experience conditions revealed that memory for the social information did not differ between the two types of rejection experiences, $t(57) = -0.55, p > .58$. However, memory for social information was significantly larger for both interpersonal, $t(56) = 3.39, p < .01$, and collective rejection, $t(55) = 3.08, p < .01$, compared to acceptance (see Figure 1).

Of importance, the effect of acceptance versus rejection on recall was neither qualified by the valence of the event (positive or negative) nor by the type of social event (interpersonal or collective). However, independent effects for both event valence and event type were found. A main effect for event valence, $F(1, 84) = 9.26, p < .01$, revealed that negative events ($M = .39$) were recalled more than positive events ($M = .32$) across both rejection and acceptance conditions. A main effect for event type, $F(1, 84) = 41.15, p < .01$, revealed that interpersonal events ($M = .44$) were recalled more than the collective events ($M = .27$). Finally, an interaction between valence and event type, $F(1, 84) = 10.69, p < .01$ revealed that whereas negative interpersonal events were remembered to a greater extent than were positive events, negative and positive collective events were remembered with equal frequency. No other main effects or interactions emerged as significant.

The results are highly supportive of the postulate that belongingness needs influence the processing of social information. When the need to belong was aroused (e.g., in the two rejection conditions), information consistent with that motivation was favored in memory. Consistent with a satiation curve for belongingness, those who should have felt social satiety from a recent social acceptance experience showed less selective memory for

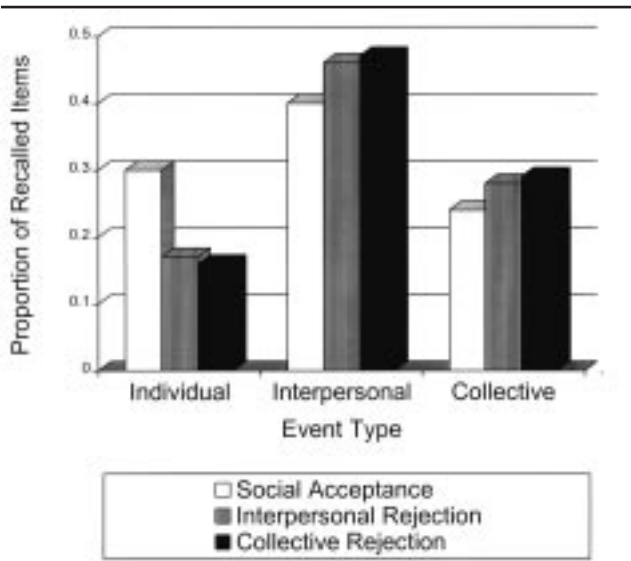


Figure 1 Distribution of memory across the events of the diary as a function of chat room experience in Experiment 1. Mean proportions of individual, interpersonal, and collective recall are shown.

the social information than their rejected and thus socially hungry counterparts.

To investigate the satiation curve hypothesis further, we examined the correlations between the participants' reported feelings of inclusion in the chat room and the extent of their bias in recall for the social events of the diary. If the selective memory effects resulted from a need to belong that was aroused by the rejection experiences, then we would expect a negative correlation between reports of feeling included and the proportion of memory that was allocated to social information. Indeed, felt inclusion was strongly negatively correlated with memory for social events, $r(86) = -.61$, $p < .01$, suggesting that the feelings of relative inclusion/exclusion were strongly related to the memory effects.

The results of Experiment 1, then, clearly supported the premise that belongingness needs have a biasing effect on memory for social events. Participants whose need to belong was experimentally aroused through a rejection experience showed an advantage in memory for explicitly social information, and the extent of feeling included was negatively related to this bias. Of importance, the valence of the information did not interact with prior social experience, ruling out mood-congruent recall or simple valence priming as explanations of the effect. If the effects had been due to priming, rejected individuals should have been biased toward the rejection-relevant or negative social events and accepted individuals should have been biased toward the acceptance-relevant or positive social events. Instead, rejected individuals recalled more of both the rejection and acceptance events and accepted individuals recalled

fewer of both, lending credence to the hypothesis that it was the social nature of the events rather than the valence that was important.

Although the evidence for the influence of general belongingness needs on social information processing was strong, no support for distinct relational versus collective belongingness needs was found. Memory bias toward explicitly social events was clearly invoked by social rejection; however, it was not affected by the type of rejection. Participants displayed similar patterns of recall regardless of whether their rejection had been interpersonal or collective in nature.

It is possible that these data speak to the nature of belongingness needs—that humans need acceptance and affiliation from others and that these needs can be fulfilled in both pair relations and group relations. It is also possible that the distinction between interpersonal versus collective rejection was not particularly powerful in this study. In both types of chat rooms, the participant is unable to converse meaningfully with anyone; likewise, in both the collective- and interpersonal-rejection conditions, information and conversation from four other participants are seen on the screen. Perhaps for these methodological reasons, no differentiation between them occurred. To rule out this possibility, as well as to replicate the general influence of belongingness needs on memory biases, a second study was designed that would more clearly distinguish between interpersonal and collective rejection and acceptance experiences.

EXPERIMENT 2

Experiment 2 was designed to replicate the prior findings that an arousal of the need to belong results in increased memory for social information. In addition, to better investigate whether these needs are general or specific to relational or collective needs, we changed the chat room experience to make it more clearly a dyadic or group interaction. Thus, a 2 (social experience: acceptance, rejection) \times 2 (chat room size: dyad, group) \times 3 (event type: individual, relational, collective) \times 2 (event valence: positive, negative) experiment was conducted.

METHOD

Participants

The study included 75 male and female introductory psychology students who participated for partial course credit. Participants were run in groups of 4 and were randomly assigned to one of four social experience conditions. Of the 75 participants, 18 reported suspicion concerning the computer-simulated chat room, and their data were excluded. The larger number of suspicious

participants may have been due to the relatively greater proportion of participants in this experiment who reported being highly familiar with computers and on-line interaction. The open-ended questions concerning the suspiciousness of the chat room were answered by these participants in ways that demonstrated experience within real computerized chat rooms, often contrasting specifics of our simulated chat room with those on the Internet. Of importance, relatively equal numbers of participants in each condition were maintained; thus, we were not concerned with mortality as an explanation for the results.

Procedure

The procedure for Experiment 2 was identical to Experiment 1, with the addition of two clearly dyadic conditions in order to distinguish more clearly between interpersonal and collective experiences. Participants were randomly assigned to one of four chat rooms: dyadic acceptance, dyadic rejection, collective acceptance, and collective rejection. Participants in the two collective conditions were told that their chat room experience was intended to mimic the way communities formed on the Internet and that they would be interacting with four other participants. The collective acceptance condition was identical to the social acceptance condition of Experiment 1, and the collective rejection condition was identical to the collective rejection condition of Experiment 1.

Participants in the two dyadic conditions were told that their chat room experience was intended to investigate the way friendships formed on the Internet and that they would be interacting with one other participant. They were told that to make the interaction easier, the computer would assign one participant to act as an interviewer and ask "getting to know you" questions, whereas the other participant would be the interviewee and would merely have to respond. The computer then told them that they were assigned to the interviewee position and that B.J. (the computerized confederate) was the interviewer. The first two rounds of questions for the dyadic acceptance and rejection conditions were identical: B.J. asked about the participant's major and local hangouts and responded in an affirming manner (e.g., "Cool!" or "Good answer!") before asking another question. The third question concerned the controversy over the television show "Ellen" and the participant's opinion of the show and of homosexuality in general. Participants in the dyadic acceptance condition were affirmed in their answer to this question (e.g., "I hear you. . . I feel the same way"), whereas those in the rejection condition were disagreed with (e.g., "No way, really? I don't 'get' people like you"). These responses were designed to apply to any opinion expressed by the participant, even if

the participant stated that he or she had no opinion whatsoever about the controversy.

A feedback session also was added at the end of the chat room experience in which participants typed their reactions to the chat room and were then shown the reactions of the other participants. The feedback was added to increase the strength of the experimental manipulations. Participants in the dyadic acceptance condition received the following:

The experience was kind of weird, nobody "interviews" their friends . . . BUT my "friend" turned out to be really nice. And it became clear to me at the end that we could be friends in real life . . . that if I met 'em I would probably want to hang out. So maybe this can help you understand friendship formation after all.

Participants in the dyadic rejection condition received the following:

The experience was kind of weird, nobody "interviews" their friends . . . PLUS although my "friend" seemed nice at first, it became clear by the end that we would never be friends in real life—that if I met 'em, I wouldn't want to be friends or hang out. So if you're interested in friendship, this won't help you much.

Participants in the collective acceptance condition received feedback from the four other participants that was inclusive; for example, one computerized confederate said,

I liked it!! I thought it was cool that we were all chatting together. It wasn't as awkward as I expected, everyone liked one another, and I really did feel like part of a new community!

Finally, participants in the collective rejection condition received feedback from the other participants that was rejecting; for example, one computerized confederate said,

I thought it was a fairly good success. We had a lot in common, except for one person, who seemed nice enough but just really didn't really fit in with the rest of us. Sort of a "fish out of water." The rest of us felt like a community, at least to me.

The diary task, filler tasks, recall task, and manipulation and suspicion checks were identical to Experiment 1. All participants also underwent an extensive debriefing that followed the procedures outlined in Experiment 1.

RESULTS AND DISCUSSION

Manipulation Checks

The two manipulation checks, reported feelings of inclusion and interest from others, were examined using a separate 2 (social experience: acceptance, rejection) \times 2 (chat room size: dyad, group) ANOVA. Both manipulation checks displayed only main effects for social experience. Participants assigned to the two acceptance conditions felt significantly more included ($M = 5.71$) than those in the rejection conditions ($M = 3.10$), $F(1, 56) = 67.87$, $p < .01$. Similarly, participants in the acceptance conditions felt that the others in the chat room were more interested in what they had to say ($M = 4.57$) than did those in the rejection conditions ($M = 2.40$), $F(1, 56) = 30.79$, $p < .01$. Analyses of the mood data revealed that the manipulation of acceptance or rejection had no effect on general mood state as measured by the PANAS ($F < 1$). As in Experiment 1, the manipulations affected specific feelings of inclusion but not general mood.

Recall of Social Events

Following the procedures in Experiment 1, indexes were created of the number of correctly recalled events in each of the seven categories divided by the total number of correctly recalled events. These indexes, reflecting the proportion of remembered events that fell within a category while correcting for individual differences in general recall, were entered into a 2 (social experience: acceptance, rejection) \times 2 (chat room size: dyad, group) \times 2 (event type: relational, collective) \times 2 (event valence: positive, negative) repeated-measures ANOVA with event type and valence as within-participants factors.⁴

Most important for the investigation of the need to belong was the replication of the social experience main effect, $F(1, 53) = 8.45$, $p < .01$. As in Experiment 1, participants' acceptance or rejection chat room experiences affected selective recall of the explicitly social events of the diary. This effect did not interact with chat room size, $F(1, 53) = 1.02$, $p = .32$. Planned comparisons revealed that, compared to the two social acceptance conditions, memory for interpersonal events was significantly higher in both of the rejection conditions, $t(53) = 2.36$, $p < .05$. The type of acceptance or rejection (e.g., dyad or group) did not significantly affect the results. A similar pattern emerged for the collective events, participants who felt accepted remembered less than those who felt rejected, but this difference did not attain significance. Once again, the type of acceptance or rejection (dyad or group) did not affect the results (see Figure 2).

A main effect for event type, $F(1, 53) = 45.72$, $p < .01$, revealed that interpersonal events ($M = .44$) were once

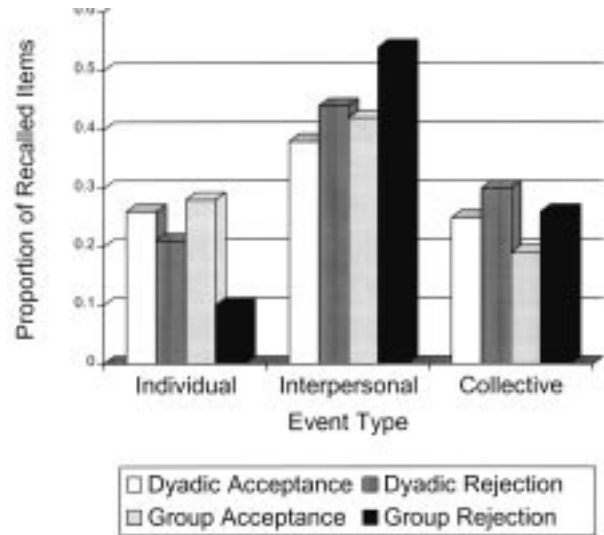


Figure 2 Distribution of memory across the events of the diary as a function of chat room experience in Experiment 2. Mean proportions of individual, interpersonal, and collective recall are shown.

again recalled significantly more than collective events ($M = .26$). In addition, the Valence \times Event Type interaction found in Experiment 1 was replicated here, $F(1, 53) = 8.23$, $p < .01$, revealing that negative interpersonal events were recalled to a greater degree than positive interpersonal events but that recall for collective events was equivalent across valence. As in Experiment 1, valence did not interact with social experience or with chat room size.

As for the correlation between felt inclusion and the selective recall of social events, the pattern found in Experiment 1 was replicated. To the extent that participants reported low feelings of inclusion, memory for the social events was higher, $r(57) = -.58$, $p < .01$.

We had altered the chat room experiences in Experiment 2 to make the distinction between dyadic and collective rejection more clear and thus to allow us to more confidently investigate whether social processing was guided in a distinct fashion as a function of the type of acceptance or rejection that was experienced. Just as in Experiment 1, however, the antecedents and consequences of belongingness needs appeared to be more general; the three-way interaction among social experience (acceptance or rejection), chat room size (dyad or group), and type of event (interpersonal or collective) did not reach significance ($F < 1$). Thus, the results of Experiment 2, similar to those of Experiment 1, found little support for a hypothesis of distinct social monitoring systems. Instead, it appears that a need to belong may be aroused by either interpersonal or collective rejection.

tion; furthermore, when this need is aroused, it biases information processing toward social information more generally.

In sum, then, the results of Experiment 2 provided a replication and clarification of Experiment 1. As Baumeister and Leary (1995) had predicted, belongingness needs appear to guide information processing and retention in a motive-consistent fashion. However, the hypothesis that the type of social acceptance or rejection that was experienced would influence recall for consistent events was not supported, despite the clear procedural distinctions in Experiment 2 between the dyadic and group interactions, implying that the need to belong may be general in nature.

GENERAL DISCUSSION

We began with the assumption that humans have a strong and basic need for affiliation and acceptance (Baumeister & Leary, 1995). Past research has presented ample behavioral evidence consistent with a need to belong; individuals who are rejected will symbolically (Ko, 1994) or explicitly (Williams & Sommers, 1997) attempt to connect themselves to a larger social whole. The primary goal of the current research was to examine how social perception and memory were affected by belongingness needs.

The prediction derived from Baumeister and Leary's (1995) conceptualization of a satiation function for the need to belong was supported in both experiments. We referred to this process as social monitoring and predicted that, as with other drive states (e.g., hunger) (Atkinson & McClelland, 1948), the need to belong would increase retention of drive-relevant information. Indeed, rejected individuals in both studies retained more of the explicitly social information than did their accepted counterparts.

Of importance, the valence of the information did not interact with prior social experience. In both studies, rejected individuals recalled an increased level of both the positive and the negative social events and accepted individuals recalled fewer of both. These results are thus similar in form to Higgins and Tykocinski's (1992) results, which found that the match between event framing and the chronic motivations of their participants affected recall, the valence of the event did not. Similarly, the match between the social or nonsocial context of the events and situationally induced belongingness needs drove recall in the current studies, not the valence of the events themselves.

In combination, then, these results strongly support the notion that sensitivity to social information varies as a function of current belongingness needs. Why would

belongingness needs influence processing in these ways? Given the fundamental importance of belonging, a processing system sensitive to an individual's current levels of belonging would be adaptive in self-regulation. Our thoughts and actions often are driven in the service of goals; indeed, it has been argued that goals may activate procedural knowledge that allows the assessment of both the level of discrepancy from a goal and directs processing in the direction of goal attainment (Higgins, 1996). Likewise, greater attention may be paid to goal-relevant events in the environment, and these events may be retained to a greater degree in an attempt to learn how to satisfy these goals.

The very importance of belonging as a primary goal of all human beings points to the adaptive utility of a social monitoring system. Such a system would attend to current levels of belonging in order to allow for regulation and compensation. When belongingness needs are unmet, greater processing of socially relevant information in the environment ensues. To the extent that such goal-directed processing provides information that allows for belongingness needs to be fulfilled, it serves an important and adaptive function.⁵

The current studies found no support for the specificity of interpersonal versus collective belongingness; it did not seem to matter with whom our participants belonged—it only mattered that they did or did not belong. Before concluding that belongingness needs are general in nature, however, it is important to note that belongingness needs may be more specific in the natural world than in our lab. For example, evolution may favor separate systems for romantic pair-bonds versus group memberships. Indeed, evidence from the relationships literature implies that rumination often focuses on specific romantic losses (Tait & Silver, 1989) and that substitution of a new romantic partner is the most effective means of reducing distress (Coyne & DeLongis, 1986). Furthermore, examinations into real-world group memberships have shown that even the strongest relationships do not appear to fully compensate for needs fulfilled by belonging to a group (Palmonari, Pombeni, & Kirchler, 1989). The distinction between the artificial and short-lived relationships/group memberships examined in this study versus the real world also may explain the rather surprising finding that collective rejection (rejection by a greater number of individuals) did not have a greater impact than dyadic rejection on feelings of inclusion or memory. For example, although social impact theory (Latane, 1981) would predict that the sheer number of rejecting individuals in the collective condition should have had greater impact than the dyads in Experiment 2, social impact theory also maintains that the importance of the others (e.g., strength

and immediacy) interacts with number to produce impact. With fleeting and relatively unimportant interactions, such as those in our chat rooms, the only feature processed may be the accepting or rejecting nature of the experience. Research comparing real-world romantic relationships and group identities may thus be necessary to assess the true specificity of belongingness needs on information processing.

In conclusion, the importance of belonging has been emphasized throughout the history of psychology. The need to belong was stressed by early motivation theorists (e.g., Maslow, 1971), and more recently, cogent arguments for its fundamental nature have been presented (Baumeister & Leary, 1995). The present research, by demonstrating shifts in the processing of social information as a function of belongingness needs, provides a first step in understanding how these very basic needs may be monitored and regulated. We believe that just as physical hunger increases sensitivity to food cues (Atkinson & McClelland, 1948), social hunger increases sensitivity to social cues, implying that an individual's shifting levels of belonging may fundamentally shape the perception and representation of his or her social world.

APPENDIX

Individual positive events

- I bought an instant lottery ticket and won \$10.
- I received the highest grade in the class on my English paper.
- I've been running for only a few weeks but today I ran 2 miles and wasn't even really winded.
- I took a long peaceful walk by myself today, enjoying the beautiful weather.

Individual negative events

- A \$5 bill fell out of my pocket and blew away before I could grab it.
- I overslept and got to my chemistry midterm late; I'm sure I failed the exam.
- I went to the dentist and had three cavities—Ugh, I can't believe it.
- I got a haircut that I absolutely can't stand; it's incredibly ugly.

Interpersonal positive events

- I received a package in the mail from my brother (who I'm really close to) and it was full of these hilarious pictures from our last vacation together.
- My roommate and I went out on the town tonight and had a really great time together.
- It occurred to me today that my relationship with my girlfriend (boyfriend) is going really well—we seem really happy.

My best friend and I had a blast trouncing the rest of the dorm in the Ping Pong championship.

Interpersonal negative events

- My girlfriend (boyfriend) totally flirted with someone else tonight and practically ignored me; I don't know how seriously I should take it.
- My best friend blew me off; we had made weekend plans but I guess they just didn't matter.
- My roommate and I got into an enormous fight tonight over the room being such a mess—I don't know if we're ever going to stop fighting about the same old stuff.
- I forgot all about my older sister's birthday—I think I really let her down and I don't know if she'll accept my apology.

Collective positive events

- My intramural soccer team won its final game in regular season—now we get to compete for the Intramural Championship.
- I was elected as one of just a few brothers (sisters) in my fraternity (sorority) to represent us on the Greek Council.
- All of us in my fraternity (sorority) have been working really hard on the Greek Week Community Drive, and today we placed first out of all the Greek organizations.
- It looks like my University's basketball team is going to the Final Four!

Collective negative events

- I forgot to bring the music for a really important practice session for the Student Choir that I sing in (we're going to competition soon)—boy was everyone mad.
- My fraternity (sorority) did really terribly in the Greek Week Skit Night—in fact, we probably came in dead last.
- My Irish heritage is really important to me but when I went to the student Irish Association they acted like I didn't belong there, like they thought I didn't fit in.
- I was reading an editorial in the student paper—it seems that no matter how hard we try, my university just gets no respect in the business world.

Neutral events

- I went to the post office and bought stamps so I could mail out the rent check.
- I went to the grocery store.
- I rode the bus to get to work.
- I ordered a cheeseburger and some fries for lunch today.

NOTE: One event of each type was presented on each day of the diary. Within a day, events were presented in random order on the monitor screen. Participants viewed a diary of a same-sex student—either Donald or Donna—and the information was changed to be consistent with gender expectancies (e.g., fraternity and girlfriend for Donald, sorority and boyfriend for Donna).

NOTES

1. Slight changes in degrees of freedom in both experiments reflect missing data for some participants.
2. Analyses conducted on the raw numbers of events recalled revealed the same patterns as the data reported here, and the correla-

tions between raw recall and the proportion index ranged between .50 to .74 across both studies ($p < .05$). We preferred the proportion indexes for two reasons. First, they corrected for large individual differences in memory ability, and second, they were conceptually closest to what we wanted to investigate. Assuming that each individual has an idiosyncratic memory capacity, we were interested in how this capacity would be distributed across the different types of events and, more important, any changes in distribution as a function of situationally evoked belongingness needs. This question seemed best addressed through analyzing the proportion indexes.

3. Because of the ipsative nature of the proportion scores, only the indexes reflecting the memory for social events were entered into the analysis. As the proportion of recall focused on these social events increased, the proportion reflecting the individual events decreased. Indeed, analyses on the individual events showed that compared to the social acceptance condition, memory for individual events was significantly lower in both the interpersonal rejection, $t(84) = -4.51, p < .01$, and the collective rejection, $t(84) = -4.75, p < .01$, conditions. The index reflecting recall of the neutral filler events was entered into a separate one-way ANOVA. This index was uniformly small across conditions ($M = .08, F < 1$). Finally, analyses examining gender as a moderator revealed only a Gender \times Type of Event interaction; females recalled more interpersonal events across all experimental conditions and males recalled more collective events across all experimental conditions. This gender effect may be explained by gender differences in chronic concerns with relationships versus groups (see Gabriel & Gardner, 1999). Of importance, gender did not interact with social experience.

4. As in Experiment 1, the index reflecting recall of the neutral filler items was low across all conditions ($M = .07$) and was not entered into subsequent analyses. In addition, because of the ipsative nature of the proportion measures, the individual events were left out of the main analysis. Analysis of these items separately revealed that participants who experienced acceptance recalled significantly more individual events than did those who experienced rejection, $t(53) = -3.45, p < .01$.

5. These same information-processing mechanisms may become maladaptive when belonging needs remain perpetually unfulfilled. For lonely individuals, chronic belongingness needs may have the ironic effect of increasing attention toward and retention of information that would make others in the environment appear socially embedded and thus heighten their sense of continued social isolation. Current research is investigating this hypothesis.

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