

Do Emotion Regulation Difficulties in Depression Extend to Social Context? Everyday Interpersonal Emotion Regulation in Current and Remitted Major Depressive Disorder

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Individuals with major depressive disorder (MDD) have difficulties regulating emotion on their own. As people also use social resources to regulate emotion (i.e., interpersonal emotion regulation [IER]), we examined whether these difficulties extend to IER in current and remitted MDD compared to those with no psychiatric disorders (i.e., controls). Adults with current MDD ($n = 48$), remitted MDD ($n = 80$), and controls ($n = 87$) assessed via diagnostic interviewing completed 2-week experience sampling, reporting on how frequently (IER frequency), from whom (sharing partners), and why (IER goals) they sought IER; how the sharing partners responded (sharing partner's extrinsic IER strategies and warmth); and how their feelings about the problem and the sharing partner changed following IER (IER outcomes). Using multilevel modeling, the current-MDD group did not differ from controls in IER frequency and sharing partners, but the current-MDD group demonstrated a more mixed (albeit generally adaptive) profile of received IER strategies and benefited similarly or more from certain IER strategies than the other two groups, suggesting that IER may be a promising avenue for effective emotion regulation in current MDD. The remitted-MDD group sought IER most frequently and demonstrated the most adaptive profile of received IER strategies, and they and the current-MDD group reported seeking more types of IER goals than controls. People with remitted MDD seem highly motivated to pursue IER support and their pursuit takes place in particularly supportive social contexts. Research is needed to examine mechanisms driving these group differences and how IER predicts the course of MDD.

General Scientific Summary

In efforts to investigate whether emotion regulation (ER) difficulties in major depressive disorder (MDD) extend to social context, this study examined everyday interpersonal emotion regulation (IER) among adults with current MDD, those whose MDD was in remission, and a healthy control group using the experience sampling method. Although groups showed many similarities in IER processes, they differed in several aspects of IER, including intrinsic IER frequency and goals, extrinsic IER strategies received from others, and IER outcomes following certain IER strategies. This research represents initial efforts to elucidate the characteristics and utility of everyday IER at different stages of MDD and provides preliminary evidence that IER may be a promising avenue for effective ER in MDD.


Editor's Note. Aidan G. C. Wright served as the action editor for this article.—AGCW

This article was published Online First December 7, 2023.

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This research was supported by the Ann W. and Spencer T. Olin-Chancellor's Fellowship, Washington University in St. Louis, to Daphne Y. Liu. The current research was approved by the Washington University Institutional Review Board (201709046). The results reported in our article have not been previously published or preposted online, although some were presented at the 2021 and 2022 Annual Meetings of the Society for Research in Psychopathology and the 2022 Annual Meeting of the Society for Affective Science. Some descriptive findings on the healthy control group were published in 2021 in *Affective Science* (10.1007/s42761-021-00044-y). The authors have no conflicts of interest to declare. This study was not preregistered. Relevant data and analysis code can be found at <https://osf.io/yfcfw/>. (Liu, 2023).

Daphne Y. Liu served as lead for conceptualization, formal analysis, software, visualization, and writing—original draft, contributed equally to data curation, investigation, methodology, and writing—review and editing, and served in a supporting role for project administration, resources, and supervision. Michael J Strube served in a supporting role for formal analysis, resources, software, visualization, and writing—review and editing. Renee J. Thompson served as lead for conceptualization, data curation, funding acquisition, investigation, methodology, project administration, resources, software, supervision, and writing—review and editing and served in a supporting role for formal analysis, visualization, and writing—original draft.

 The data are available at <https://osf.io/yfcfw/>

 The experimental materials are available at <https://osf.io/yfcfw/>

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Keywords: interpersonal emotion regulation, social sharing, major depressive disorder, remitted depression, experience sampling

Supplemental materials: <https://doi.org/10.1037/abn0000877.supp>

Extensive evidence suggests that people with major depressive disorder (MDD) have difficulty regulating emotion on their own (i.e., intrapersonal emotion regulation; *D. Y. Liu & Thompson, 2017*). However, a common way to regulate emotion is to utilize social resources, a phenomenon known as interpersonal emotion regulation (IER; *Zaki & Williams, 2013*). IER has significant implications for emotional and social well-being (*Williams et al., 2018*) and represents a mechanism through which depressed individuals benefit from social support (*Marroquín, 2011*). Elucidating IER in MDD could help paint a fuller picture of how emotion regulation (ER) goes awry in MDD. Taking a naturalistic approach, the current research sought to understand everyday IER in the context of sharing negative emotional experiences in adults with current and remitted MDD and those without current or past psychiatric disorders (i.e., controls).

Extant Literature on IER

IER refers to the goal-directed process of regulating emotion through social interactions (*Zaki & Williams, 2013*). It can be further divided into intrinsic and extrinsic IER, with intrinsic IER aimed at regulating one's own emotion, whereas extrinsic IER directed toward regulating someone else's emotion (*Zaki & Williams, 2013*). Though not always, both intrinsic and extrinsic IER can occur during an IER episode. For example, in the context of negative emotional experiences, the sharer may engage in intrinsic IER via social sharing with another person, or the sharing partner, who may in turn engage in extrinsic IER by regulating the sharer's emotion. In IER episodes involving two people (i.e., dyadic IER), the sharer decides whether and from whom to seek IER, and the sharing partner can choose how to respond via extrinsic IER, all of which represent basic elements of the IER and can shape IER trajectory and outcome.

Sharer's Intrinsic IER-Seeking Behaviors

To understand the basic elements of the sharer's intrinsic IER-seeking behaviors, we focus on how much (IER frequency), from whom (tendency to share with close vs. nonclose others), and why (IER goals) people seek IER. These elements are integral to IER and have implications for well-being. For example, seeking IER too little may deprive oneself of social support and opportunities to learn regulation skills. Additionally, excessively relying on a single source, such as one's spouse, to regulate emotions could bring undue burden to the spouse, possibly straining the relationship.

Because IER is a goal-directed process, it is critical to examine the sharer's IER goals. Following negative experiences, one may have problem-oriented goals and emotion-oriented goals (*Rimé, 2009*). When people face negative events, their preexisting beliefs about the world are challenged and they may need information or advice aimed to help them make sense of or improve the situation (*Janoff-Bulman, 1992*; problem-oriented goals). People are also prone to feel vulnerable, insecure, and alone during times of distress. They may desire comfort, reassurance, and validation from others (*Bowlby, 1969*; emotion-oriented goals). The sharer's IER goal is critical as it can influence how the sharer discloses the emotional

experience, how the sharing partner responds, and how the sharer evaluates IER outcome.

Sharing Partner's Extrinsic IER Response

Following the sharer's disclosure, the sharing partner can respond in various ways via extrinsic IER, which we refer to as extrinsic IER strategies, and some strategies may be more supportive than others. The sharing partner may choose to address the negative event, such as suggesting an alternative interpretation (reappraisal) or a solution to the problem (problem-solving). They may also respond directly to the sharer's emotions, such as encouraging the sharer to share more about their feelings (encouraging sharing) and expressing love and care (affection). Although these four extrinsic IER strategies are likely to make the sharer feel better and be associated with positive IER outcomes, other strategies may make the sharer feel worse, such as suggesting that the sharer was responsible for what happened (blaming) or the sharer's emotions are unwarranted (invalidation). Importantly, no strategies are universally adaptive or maladaptive, and the utility of a strategy is context-dependent (*Aldao et al., 2015*).

In addition to the type of extrinsic IER strategies, the sharing partner's extrinsic IER may vary in perceived warmth. Warmth signals friendliness and trustworthiness and predicts valence of the social interaction (*Fiske et al., 2007*). Thus, how warm the sharing partner is perceived by the sharer can play a vital role in shaping IER.

Sharer's IER Outcomes

It is important to understand how these basic elements of IER are related to IER outcomes. Two relevant outcomes are: how the sharer feels about the original problem (problem outcome) and how close the sharer feels toward the sharing partner (relationship outcome) after the IER interaction. These two outcomes assess IER outcomes at the individual and relationship levels, respectively.

IER and Depression

IER is likely influenced by multiple domains of functioning—interpersonal, cognitive, and emotional. Drawing upon a broad range of relevant theory and research, we expect IER to manifest differently depending on the sharer's MDD status (i.e., current or remitted MDD). We theorize that the sharer's MDD status could shape (a) the sharer's intrinsic IER-seeking behaviors, (b) the sharing partner's extrinsic IER, and (c) the sharer's IER outcomes.

Sharer's MDD and Sharer's Intrinsic IER-Seeking Behaviors

Several interpersonal and emotional processes associated with MDD could impact IER-seeking behaviors, including the frequency of seeking IER and tendency to share with close (vs. nonclose) others. Relative to controls, individuals with current MDD experience elevated social anhedonia (i.e., the reduced need for and enjoyment from social contact; *Blanchard et al., 2001*) and are more likely to

avoid expressing emotions (i.e., emotional suppression; Visted et al., 2018). As IER often entails the initiation of social contact and emotional self-disclosure, individuals with current MDD may be less likely to seek IER than controls. Moreover, the reduced interest in social engagement limits opportunities for maintaining existing relationships and creating new ones, resulting in further isolation and more restricted social networks. Thus, adults with current MDD may almost exclusively seek IER from close others (e.g., spouse, close friend) rather than nonclose others (e.g., acquaintance).

Some evidence indicates that elevated social anhedonia during a major depressive episode shows reductions when it is measured after MDD remits (Blanchard et al., 2001). However, those with remitted MDD still experience greater emotional suppression than controls, albeit to a lesser extent than those with current MDD (Visted et al., 2018). Thus, those with remitted MDD may show a reduced tendency of seeking IER and more exclusively share with close (vs. nonclose) others than controls, but the differences are likely smaller compared to those between individuals with current MDD and controls.

Sharer's MDD and Sharing Partner's Extrinsic IER Response

The sharer's MDD may also be associated with the sharing partner's extrinsic IER strategies and warmth. MDD is characterized by impairments in interpersonal functioning (Kupferberg et al., 2016). Compared to controls, adults with current MDD engage in fewer important social skills (e.g., eye contact; Fiquer et al., 2018) and more problematic interpersonal behaviors that seem to be driven by emotion-oriented goals (Coyne, 1976). Specifically, they are more likely to repeatedly seek assurances about their worth (e.g., Kwon et al., 2017) and solicit negative feedback from others (e.g., Rehman et al., 2008) than controls. These interpersonal impairments can elicit negative evaluations and social rejection by others (Evraire & Dozois, 2011; Joiner et al., 1999). As such, individuals with current MDD may be less likely to receive reappraisal, problem-solving, encouraging sharing and affection, more likely to receive invalidation and blaming, and receive less warm responses from their sharing partners.

Evidence suggests that poor social skills observed in individuals with current MDD may be specific to the depressed state, rather than trait-like vulnerability factors for MDD (Fiquer et al., 2013). However, problematic interpersonal behaviors have been found among people whose MDD is in partial or full remission, albeit at an improved level compared to those with current MDD (Bistricky et al., 2016; Kwon et al., 2017; Rehman et al., 2008). Thus, individuals with remitted MDD may be at higher risk for social rejection than controls, but experience it to a lesser degree relative to those with current MDD. Thus, frequencies of receiving the six extrinsic IER strategies and levels of sharing partner's warmth reported by people with remitted MDD likely fall between those reported by people with current MDD and controls.

Sharer's MDD and Sharer's IER Outcomes

Besides the basic elements of IER, the sharer's MDD status can influence how the sharer reacts to and is impacted by the sharing partner's response. According to the mood-brightening effect in MDD, individuals with current MDD show greater emotional reactivity (e.g., decreased negative affect [NA]) to positive daily events,

particularly interpersonal ones (Bylsma et al., 2011; Starr & Hershenberg, 2017). Although this mood-brightening effect has mostly been found among those with current MDD, it was not accounted for by individuals' baseline mood (Bylsma et al., 2011), suggesting that this effect may be partially explained by trait characteristics of those prone to depression (e.g., unstable self-worth; Bylsma et al., 2011). The mood-brightening effect has been extended to other domains of functioning beyond emotion in depression, including maladaptive cognitions and withdrawal behaviors (Khazanov et al., 2019). This effect may extend to IER outcomes. As receiving IER support can be a positive interpersonal event, people with current MDD may show greater benefits from reappraisal, problem-solving, encouraging sharing, and affection than controls, with those with remitted MDD falling in between. We also expect this pattern of findings considering that individuals with current MDD, and remitted MDD to a lesser extent, have greater difficulties with intrapersonal IER and thus could benefit more from these extrinsic IER strategies.

In contrast, receiving blaming and invalidation from the sharing partner can be experienced as social rejection, a form of interpersonal stress. People with current MDD demonstrated greater sensitivity to rejection (Jobst et al., 2015) and reactivity to interpersonal stress than controls (Sheets & Arney, 2020). However, these tendencies may no longer be present when MDD is in remission (Kudo et al., 2017; Sheets & Arney, 2020). Therefore, when receiving invalidation and blaming, those with current MDD may experience worse IER outcomes than those with remitted MDD and controls, who were not expected to differ.

The Current Study

The current study aimed to understand how everyday IER manifests in MDD, recruiting three groups. We examined IER among adults in a current depressive episode (current-MDD group), those who experienced recurrent depressive episodes but the most recent one had fully remitted (remitted-MDD group), and those with no history of psychiatric disorders (control group). We used an experience sampling method (ESM) to examine everyday IER processes to increase ecological validity and minimize recall bias, which is critical given the negative biases in MDD (Gotlib & Joormann, 2010). As people regulate emotions more frequently and effortfully in negative than in positive situations (English et al., 2017), and people frequently regulate emotion via social sharing (Williams et al., 2018), we focused on dyadic IER in the context of sharing negative emotional experiences.

The current study had three aims. We examined how the sharer's MDD status was associated with the sharer's intrinsic IER-seeking behaviors (Aim 1); the sharing partner's extrinsic IER response (Aim 2); the associations between sharing partner's extrinsic IER strategies and the sharer's IER outcomes (Aim 3). Aim 1 was to examine how the sharer's MDD status was related to three basic elements of IER-seeking behaviors—how much, from whom, and why people seek IER. We hypothesized that the current-MDD group would be less likely to seek IER (Hypothesis 1a [H1a]), seek IER more exclusively from close (vs. nonclose) others (Hypothesis 1b [H1b]), and be more likely to seek emotion-oriented (vs. problem-oriented) goals (Hypothesis 1c [H1c]) than the control group, with the remitted-MDD group falling in between.

Aim 2 was to examine how the sharer's MDD status was related to the sharing partner's response—extrinsic IER strategies and warmth. We hypothesized that the current-MDD group would be less likely to

receive reappraisal, problem-solving, encouraging sharing, and affection (Hypothesis 2a [H2a]), be more likely to receive blaming and invalidation (Hypothesis 2b [H2b]), and receive less warm responses from the sharing partner (Hypothesis 2c [H2c]) than the control group, with the remitted-MDD group falling in between.

Aim 3 was to examine how the associations between sharing partner's extrinsic IER strategies and sharer's IER outcomes varied by the sharer's MDD status. We hypothesized that reappraisal, problem-solving, encouraging sharing, and affection would be more strongly associated with improved IER outcomes for the current-MDD group than for the control group, with the remitted-MDD group falling in between (Hypothesis 3a [H3a]). We hypothesized that invalidation and blaming would be more strongly associated with worsened problem and relationship outcomes for the current-MDD group than for the remitted-MDD and control groups, who were not expected to differ (Hypothesis 3b [H3b]). All study aims and hypotheses are summarized in Table 1.

Method

Participants

A total of 215 individuals between 18 and 77 years of age ($M = 44.3$, $SD = 16.1$) were recruited from St. Louis, MO, USA through participant registries and online advertisements to participate in a study on emotion and depression. The sample was composed of 66.0% women and 34.0% men because women are nearly twice as likely to experience a major depressive episode as men (National Institute of Mental Health, 2017). Participants identified as 69.8% White, 19.5% Black, 7.0% multiracial, 2.8% Asian, 0.5% Native American or Alaskan Native, and 0.5% did not report their race/

ethnicity. Additionally, 1.4% of participants identified as Latinx/a/o. Not included in the 215 participants were individuals who withdrew ($n = 7$), had technical problems ($n = 7$), low ESM compliance ($< 20.0\%$ surveys; $n = 7$), or whose behavior evoked concerns about data validity (i.e., was intoxicated at the laboratory session; $n = 1$).

Eligibility criteria included speaking English as a primary language and having no severe visual or hearing impairments. Additionally, participants needed to meet criteria for one of three groups as defined by the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-5*; American Psychiatric Association [APA], 2013). For the current-MDD group ($n = 48$), participants were in a current major depressive episode as part of an MDD or persistent depressive disorder (PDD) diagnosis. For the remitted-MDD group ($n = 80$), participants met criteria for at least two depressive episodes (major depressive episodes or persistent depressive episodes), the most recent of which was in full remission. For the control group ($n = 87$), participants had never experienced any depressive disorders or anxiety disorders. Individuals with current comorbid anxiety disorders were eligible for the two depressed groups because MDD has high rates of comorbidity with anxiety disorders (Kessler et al., 2003). Exclusion criteria for all groups included lifetime bipolar I or II diagnosis and psychotic symptoms as defined by the *DSM-5* (APA, 2013). See Table 2 for participants' characteristics by group.

Procedures

Participants completed a laboratory session, during which they provided informed consent and completed self-report measures, and relevant modules of the *Structured Clinical Interview for DSM-5.0* (SCID-5; First et al., 2015), and an ESM tutorial.

Table 1

Summary of Study Aims, Hypotheses, and Findings

Study aims	Hypotheses	Study findings
Aim 1: How the sharer's MDD status is associated with the sharer's intrinsic IER seeking behaviors	1a. IER frequency: $cMDD < rMDD < CTL$ 1b. Sharing with close versus nonclose others: $cMDD > rMDD > CTL$ 1c. Seeking emotion-oriented versus problem-oriented IER goals: $cMDD > rMDD > CTL$	$rMDD > CTL$; $cMDD = rMDD$; $cMDD = CTL$ $cMDD = rMDD = CTL$ Compared to CTLs, cMDDs and rMDDs (who did not differ) were more likely to seek both problem- and emotion-oriented goals simultaneously (vs. seeking either type alone)
Aim 2: How the sharer's MDD status is associated with sharing partner's extrinsic IER response	2a. Frequencies of receiving reappraisal, problem-solving, encouraging sharing, and affection: $cMDD < rMDD < CTL$ 2b. Frequencies of receiving invalidation and blaming: $cMDD > rMDD > CTL$ 2c. Perceived sharing partner's warmth: $cMDD < rMDD < CTL$	Reappraisal: $cMDD = rMDD = CTL$ Problem-solving: $cMDD = rMDD = CTL$ Encouraging sharing: $(cMDD = rMDD) > CTL$ Affection: $rMDD > CTL$; $cMDD = rMDD$; $rMDD = CTL$ Invalidation: $cMDD = rMDD = CTL$ Blaming: $cMDD > (rMDD = CTL)$ $cMDD = rMDD = CTL$
Aim 3: How the associations between sharing partner's extrinsic IER strategies and sharer's IER outcomes vary by the sharer's MDD status ^a	3a. Strength of associations between IER strategies and outcomes for reappraisal, problem-solving, encouraging sharing, and affection: $cMDD > rMDD > CTL$ 3b. Strength of associations between IER strategies and outcomes for invalidation and blaming: $cMDD > rMDD > CTL$	Reappraisal: $rMDD < (cMDD = CTL)$ for problem outcome; $cMDD = rMDD = CTL$ for relationship outcome Problem-solving: $cMDD = rMDD = CTL$ Encouraging sharing: $cMDD = rMDD = CTL$ Affection: $cMDD > (rMDD = CTL)$ Invalidation: $cMDD = rMDD = CTL$ Blaming: $cMDD = rMDD = CTL$

Note. MDD = major depressive disorder; cMDD = the current-MDD group; CTL = the control group; IER = interpersonal emotion regulation; rMDD = the remitted-MDD group.

^a Hypotheses or findings are the same for problem and relationship outcomes unless otherwise noted.

Table 2
Demographic, Clinical, and Compliance Data by Group

Variable	Current-MDD (<i>n</i> = 48)	Remitted-MDD (<i>n</i> = 80)	Control (<i>n</i> = 87)	Difference test	
Demographics					
Gender (% women)	72.9	71.3	57.5	$\chi^2(2) = 4.83, p = .09$	
Age (<i>M, SD</i>)	42.0 (14.2)	44.3 (16.3)	45.5 (16.9)	$F(2, 212) = 0.72, p = .49$	
Race (%)					
African American	20.8	18.8	19.5	$\chi^2(6) = 4.91, p = .56$	
Asian	4.2	0	4.6		
Caucasian	70.8	72.5	66.7		
Other/multiracial	4.2	8.8	9.2		
Not reported	0	1.2	0		
Education (%)					
High school or lower	12.5	8.8	9.2	$\chi^2(6) = 7.96, p = .24$	
Some college	31.2	21.2	23.0		
Bachelor's degree	39.6	28.8	32.2		
Professional degree	16.7	40.0	33.3		
Marital status (%)					
Never married	33.3	31.6	29.1	$\chi^2(6) = 7.87, p = .25$	
Married or cohabiting	29.2	43.0	47.7		
Separated/divorced	31.2	24.1	22.1		
Widowed	6.2	1.3	1.2		
In relationship (%)					
	68.9	63.6	74.1	$\chi^2(2) = 2.01, p = .37$	
Clinical characteristics (<i>M, SD</i>)					
Total number of depressive episodes	11.8 (21.8) ^a	5.14 (14.9) ^b	0 (0) ^c	$F(2, 209) = 11.37, p < .001$	
Total duration of depressive episodes (months)	71.9 (82.5) ^a	30.0 (41.9) ^b	0 (0) ^c		$F(2, 211) = 11.37, p < .001$
Current anxiety disorder (%)	70.8% ^a	18.8% ^b	0% ^c		$F(2, 211) = 89.4, p < .001$
Compliance (<i>M, SD</i>)					
% of surveys completed	72.8% (19.0)	75.7% (16.9)	74.3% (19.6)	$F(2, 212) = 0.30, p = .74$	

Note. Different superscripts within a row indicate significant ($p < .05$) group differences. MDD = major depressive disorder.

Interviews were conducted by psychology doctoral students. Diagnostic reliability was calculated based on 48 interviews. Interrater reliabilities for current or past MDD and PDD diagnoses were perfect ($\kappa = 1.0$). Participants completed an ESM tutorial, including a practice survey. They received surveys on their iPhone or a provided iPod Touch 4 (Apple, Seattle, WA, United States).

Starting the day after the laboratory session, participants received five surveys daily, which occurred randomly within each of the five three-hour time windows, totaling 70 surveys. We collected a total of 11,191 surveys.¹ Same-day surveys occurred on average 180 min apart ($SD = 62$). Participants completed, on average, 74.8% of surveys ($SD = 18.3\%$; range = 20.0%–98.6%). Completion rates did not differ by group (current-MDD: $M = 72.8\%$, $SD = 19.0\%$; remitted-MDD: $M = 75.7\%$, $SD = 16.9\%$; control: $M = 74.3\%$, $SD = 19.6\%$), $F(2, 212) = 0.30, p = .74$. For the ESM period, participants were compensated \$40 with a bonus of \$10 for completing at least 80% of surveys. The protocol was approved by a university institutional review board.

ESM Measures

Negative Emotion Sharing

To assess the occurrence of sharing negative emotional experiences, participants responded (“yes” or “no”) to the question, “Since the last beep, have you shared any negative experiences or feelings with anyone?” At the tutorial, participants were instructed to report situations where they shared information in person or over the phone (e.g., call, text) and not to report situations where it was unclear whether the sharing partner received the message (e.g., via text but did not receive a response). Of the full sample,

91.2% ($n = 198$; current-MDD = 47, remitted-MDD = 77, control = 74) reported sharing at least once over the ESM period. The other 17 participants (current-MDD = 1, remitted-MDD = 3, control = 13) did not report any sharing; these participants were included for examining frequencies of sharing.

Sharing Partner Type

The relationship with the sharing partner was assessed by the question, “Who was the person you shared them with?” Participants were provided with a checklist (fixed order): romantic partner; family member; friend; someone at work; acquaintance; and stranger. They could choose only one option. We combined acquaintances and strangers into “acquaintance/stranger” for data analyses given their low frequencies. We created a binary variable and categorized romantic partner, family member, and friend as close others (coded as 1) and someone at work and acquaintance/stranger as nonclose others (coded as 0).

Sharer's IER Goals

IER goals were assessed by the question, “Why did you share your experiences or feelings with this person? To obtain (select as many that apply).” Participants were provided with a two-item checklist (fixed order): “advice, help, or information” (problem-oriented goal) and “empathy, care, or understanding” (emotion-oriented

¹ As we did not embed quality checks in ESM surveys or exclude any surveys based on identifying careless responses statistically (e.g., Jaso et al., 2021), we could not rule out the possibility that some surveys may be subject to careless responding.

goal). We coded participants' response into one categorical variable with three levels: problem-oriented goals only, emotion-oriented goals only, and both types of goals.

Perceived Sharing Partner's Extrinsic IER Strategies

Perceived sharing partner's extrinsic IER strategies were assessed by the question, "How did this person respond to you? He/she (Check all that apply)": Participants were presented with the following (fixed order): "interpreted the situation in a positive light" (reappraisal); "suggested solutions to the problem" (problem-solving); "suggested that I was overreacting" (invalidation); "suggested that I contributed to the problem" (blaming); "encouraged me to share my feelings" (encouraging sharing); "showed love or affection" (affection); and "none of these." D. Y. Liu et al. (2021) details how these strategies were selected. Importantly, these extrinsic IER strategies were assessed based on perceptions of the participant (i.e., sharer).

Perceived Sharing Partner's Warmth

Perceived warmth of the sharing partner's response was assessed with the item, "During the interaction, this person acted." Participants rated the extent to which the sharing partner's response as cold or warm using a visual analog scale ranging from *cold* to *warm*. The indicator was presented at the midpoint of the scale, which indicated a neutral response. Participants' responses were automatically quantified by the app from -5 to 5 , respectively, with the midpoint representing 0 .

Sharer's IER Outcome

For problem outcome, participants were asked, "How did you feel about your original problem after the interaction?" and were presented with a visual analog scale ranging from *much worse* to *much better*. For relationship outcome, participants were asked, "How did your closeness to this person change after the interaction?" with a visual analog scale ranging from *much less close* to *much closer*. The indicator of each scale was presented at the midpoint, which indicated no change. Responses were automatically quantified by the app from -5 to 5 , respectively, with the midpoint representing 0 .

Analytic Plans

We conducted multilevel modeling (MLM) using R statistical software (V. 4.1.2; R Core Team, 2021). We conducted binomial logistic regression analyses for binary outcome variables (negative emotion sharing, close-vs.-nonclose others, IER strategies) and linear regression analyses for continuous outcome variables (warmth, IER outcomes), using the `glmer()` and `lmer()` functions, respectively, from the `lme4` package (Bates et al., 2015). For Aims 1 and 2, we entered the relevant Level 1 IER construct as the outcome variable and dummy-coded binary group variables at Level 2. For IER goals, we conducted Bayesian multinomial logistic regression analyses using the `brms` package (Bürkner, 2017) and the `brm()` function, which derives samples using a Markov Chain Monte Carlo algorithm (Zhao et al., 2006). We used the `brms` (Bayesian) package because it is the most comprehensive R solution for the multilevel multinomial logistic regression model and its use mimics the `glmer()` function from the `lme4` package.

For Aim 3, we conducted separate multilevel linear regressions predicting problem outcome and relationship outcome. For each outcome, we first entered the six (uncentered) IER strategy variables at Level 1 to examine associations between each strategy and the outcome (Step 1). We then added the group variables at Level 2 to examine strategy-group interactions (Step 2). Using uncentered binary strategy variables allowed us to interpret their effects as changes in the outcome variable when a strategy is endorsed (changing from 0 to 1) and we included person means of strategy variables to partial out Level 2 influence from Level 1 coefficient estimates. We also tested the effects of IER strategies accounting for sharing partner's warmth.

Transparency and Openness

This study was not preregistered. Relevant data and R analysis code can be found at <https://osf.io/ycfuw/>. An a priori power analysis was conducted for the parent project to determine the target sample sizes. See Section 1 in the online supplemental materials for post hoc simulation analyses of minimum detectable effects. Details of data exclusion are described in the "Participants" subsection.

Results

Descriptive Analyses Across the Full Sample

Means and standard deviations of IER variables across groups are presented in Table 3. Across the full sample, participants reported sharing negative emotional experiences 14.9% ($SD = 12.1\%$, range = $0\% - 56.0\%$) of the time (i.e., sharing 7.54 times over 2 weeks, or roughly once every 2 days), with almost all

Table 3
Means and Standard Deviations of IER Variables Across Groups

Variable	<i>M</i> or %	<i>SD</i>
Negative emotion sharing (%)	14.9	12.1
Sharing partner type (%)		
Romantic partner	26.1	32.1
Family member	22.0	26.5
Friend	31.0	30.1
Someone at work	11.5	17.8
Acquaintance	4.10	11.5
Stranger	5.29	15.7
IER goals (%)		
Emotion-oriented goals only	52.8	40.4
Problem-oriented goals only	29.2	26.1
Both types of goals	27.3	23.8
IER strategies (%)		
Reappraisal	27.3	28.0
Problem-solving	29.2	26.1
Invalidation	10.0	16.2
Blaming	6.44	12.3
Encouraging sharing	26.0	27.5
Affection	33.2	29.0
None of these	17.9	23.4
Warmth	2.35	1.55
Problem outcome	1.44	1.33
Relationship outcome	1.13	1.27

Note. This table presents descriptive statistics of IER variables aggregated first within and then across participants, which differ slightly from inferential statistics presented in Table 5 estimated based on MLM. IER = interpersonal emotion regulation; MLM = multilevel modeling.

($n = 198$; 92.1%) sharing at least once. Participants shared with close others most of the time and with nonclose others infrequently. They sought emotion-oriented goals only most often, followed by problem-oriented goals only and both types of goals. Participants most frequently reported receiving affection, reappraisal, encouraging sharing, and problem-solving, and received blaming and invalidation relatively infrequently. According to estimates of unconditional (i.e., intercept-only) models, on average, participants experienced their sharing partners as moderately warm, $b = 2.37$, $SE = 0.11$, $p < .001$, and reported somewhat improved problem outcome, $b = 1.43$, $SE = 0.09$, $p < .001$, and relationship outcome, $b = 1.12$, $SE = 0.09$, $p < .001$.

Intercorrelations among IER variables at the within- and between-person levels are presented in Table 4. Within-person level correlations were of most interest. In particular, reappraisal, problem-solving, encouraging sharing, and affection were associated with greater warmth and better problem and relationship outcomes, whereas blaming and invalidation were associated with lower warmth and worse IER outcomes. Problem and relationship outcomes were strongly correlated with each other.

Group Differences in Sharer’s IER-Seeking Behaviors (Aim 1)

We hypothesized that the current-MDD group would be less likely to seek IER (H1a), seek IER more exclusively from close (vs. nonclose) others (H1b), and be more likely to seek emotion-oriented (vs. problem-oriented) goals (H1c) compared to controls, with the remitted-MDD group falling in between. Inconsistent with H1a, remitted-MDD participants were more likely to share negative emotional experiences than controls, $b = 0.40$, $SE = 0.16$, $p = .01$ (Pseudo- $R^2 = .004$, 95% confidence interval, CI [0.002, 0.006]), with current-MDD participants falling nonsignificantly in between, $ps > .15$ (Table 5). Unexpectedly, no group differences emerged for tendency to share with close versus nonclose others (H1b).

Groups did not differ in the tendency to seek emotion-oriented goals only relative to seeking problem-oriented goals only (H1c; Figure 1). Interestingly, the current-MDD and remitted-MDD groups were significantly more likely than controls to seek both types of goals

relative to seeking problem-oriented goals only (current-MDD: $b = 1.23$, $SE = 0.42$, 95% CI [0.41, 2.07]; remitted-MDD: $b = 1.26$, $SE = 0.36$, 95% CI [0.56, 1.99]) or seeking emotion-oriented goals only (current-MDD: $b = 0.94$, $SE = 0.35$, 95% CI [0.27, 1.62]; remitted-MDD: $b = 0.80$, $SE = 0.31$, 95% CI [0.20, 1.41]). The two MDD groups did not differ in frequencies of seeking both types of goals relative to seeking either type alone. Full results of Bayesian multinomial regression analyses are included in Section 2 in the online supplemental materials.

Group Differences in Perceived Sharing Partner’s Response (Aim 2)

We predicted that the current-MDD group would be less likely to receive reappraisal, problem-solving, encouraging sharing, and affection (H2a), more likely to receive invalidation and blaming (H2b), and receive less warm responses from the sharing partner (H2c) than controls, with the remitted-MDD group falling in between. Significant group differences emerged for encouraging sharing and affection, but not for reappraisal and problem-solving (Table 5; Figure 2). Specifically, the current-MDD group, $b = 0.91$, $SE = 0.31$, $p = .004$ (Pseudo- $R^2 = .014$, 95% CI [0.005, 0.028]), and remitted-MDD group, $b = 1.34$, $SE = 0.27$, $p < .001$ (Pseudo- $R^2 = .043$, 95% CI [0.026, 0.064]), were more likely to receive encouraging sharing than controls, though the two MDD groups did not differ, $p = .14$. Additionally, the remitted-MDD group was more likely to receive affection than the control group, $b = 0.80$, $SE = 0.24$, $p < .001$ (Pseudo- $R^2 = .019$, 95% CI [0.008, 0.035]), with the current-MDD group falling nonsignificantly in between, $ps > .09$. These results contradicted H2a.

Significant group differences emerged for blaming, but not for invalidation. Specifically, the current-MDD group was significantly more likely to receive blaming than the remitted-MDD group, $b = 0.94$, $SE = 0.36$, $p = .01$ (Pseudo- $R^2 = .008$, 95% CI [0.001, 0.019]), and the control group, $b = 0.79$, $SE = 0.37$, $p = .03$ (Pseudo- $R^2 = .005$, 95% CI [0.000, 0.014]), who did not differ, $p = .66$. This finding on blaming partially supported H2b, but the finding on invalidation did not. Regarding perceived warmth of the sharing partner, the groups did not show differences, $ps > .11$, which did not support H2c.

Table 4
Correlations Between IER Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Problem-oriented goal	—	—	.13**	.53***	.20**	.34***	.00	-.19***	-.06	.06	.04
2. Emotion-oriented goal	—	—	.12*	-.26***	-.05	-.16	.41***	.53***	.20***	.05	.15***
3. Reappraisal	.51***	-.10	—	.09*	-.39***	-.14	.16**	.10*	.39***	.39***	.33***
4. Problem-solving	.51***	.04	.50***	—	-.07	.10	-.05	-.10*	.22***	.27***	.16***
5. Invalidation	.20	-.32*	-.03	.18	—	.43***	-.43***	-.23**	-.42***	-.34***	-.30***
6. Blaming	.26	-.12	-.04	.21	.93***	—	-.14	-.17*	-.32***	-.25***	-.23***
7. Encouraging sharing	.09	.55***	.22	.19	-.43**	-.16	—	.29***	.42***	.23***	.31***
8. Affection	-.14	.70***	.18	.19	-.53***	-.16	.66***	—	.60***	.38***	.49***
9. Warmth	.13	.08	.35**	.20	-.49***	-.55***	.49***	.52***	—	.57***	.56***
10. Problem outcome	.07	.05	.30**	.04	-.36**	-.45**	.37***	.35*	.77***	—	.58***
11. Relationship outcome	.09	.00	.29**	.21	-.21	-.32	.29**	.31*	.59***	.85***	—
Intraclass correlations	.19	.27	.37	.15	.30	.25	.40	.34	.24	.20	.28

Note. Correlation coefficients above and below the diagonal represent correlations at within-person and between-person levels, respectively. IER = interpersonal emotion regulation
* $p < .05$. ** $p < .01$. *** $p < .001$.

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Table 5
IER Variables by Group

Variable	Current-MDD (<i>n</i> = 48)	Remitted-MDD (<i>n</i> = 80)	Control (<i>n</i> = 87)
Negative emotion sharing	0.12 (0.02)_{ab}	0.14 (0.01)_a	0.10 (0.01)_b
Sharing with close versus nonclose others	0.82 (0.03) _a	0.81 (0.02) _a	0.85 (0.02) _a
IER strategies			
Reappraisal	0.25 (0.05) _a	0.21 (0.03) _a	0.18 (0.03) _a
Problem-solving	0.34 (0.04) _a	0.26 (0.02) _a	0.27 (0.03) _a
Encouraging sharing	0.25 (0.04)_a	0.34 (0.04)_a	0.12 (0.02)_b
Affection	0.32 (0.05)_{ab}	0.39 (0.04)_a	0.22 (0.03)_b
Invalidation	0.07 (0.02) _a	0.04 (0.01) _a	0.07 (0.02) _a
Blaming	0.07 (0.02)_a	0.03 (0.01)_b	0.03 (0.01)_b
Sharing partner's warmth	2.28 (0.22) _a	2.59 (0.17) _a	2.20 (0.18) _a

Note. The inferential statistics presented in this table are estimated frequencies (for negative emotion sharing, sharing with close vs. nonclose others, and each IER strategy) or values (for sharing partner's warmth) and their standard errors based on MLM, which differ slightly from the descriptive data presented in Table 3. Different subscripts within rows indicate significant ($p < .05$) group differences (bolded for clarity). IER = interpersonal emotion regulation; MDD = major depressive disorder; MLM = multilevel modeling.

Group Differences in Associations Between Perceived IER Strategies and Outcomes (Aim 3)

Across the full sample, reappraisal, problem-solving, encouraging sharing, and affection were positively associated with problem and relationship outcomes (Table 6, Panel 1). After controlling for warmth, they remained significantly associated with relationship outcome, and all but encouraging sharing remained significantly associated with problem outcome (Table 6, Panel 1). Invalidation and blaming were negatively associated with worse problem and relationship outcomes (Table 6, Panel 1), but they were no longer associated with either outcome when accounting for warmth (Table 6, Panel 2).

We then tested our hypothesis that reappraisal, problem-solving, encouraging sharing, and affection would be more strongly associated with improved IER outcomes for the current-MDD than for the control group, with the remitted-MDD group falling in between (H3a). Group significantly interacted with reappraisal in predicting problem (but not relationship) outcome and interacted with affection in predicting both problem and relationship outcomes (Figure 3). Specifically, relative to the remitted-MDD group, reappraisal was associated with greater improvement in problem outcome for the current-MDD group ($b = 0.82$, $SE = 0.31$, $p = .007$; Pseudo- $R^2 = .004$, 95% CI [0.000, 0.013]) and the control group ($b = 0.73$, $SE = 0.27$, $p = .008$; Pseudo- $R^2 = .005$, 95% CI [0.000, 0.012]), who did not differ. Additionally, affection was associated with greater improvement in both problem and relationship outcomes for the current-MDD group compared to (a) the remitted-MDD group (problem outcome: $b = 0.68$, $SE = 0.28$, $p = .02$; Pseudo- $R^2 = .003$, 95% CI [0.000, 0.011]; relationship outcome: $b = 0.81$, $SE = 0.24$, $p < .001$; Pseudo- $R^2 = .006$, 95% CI [0.001, 0.016]) and (b) the control group (problem outcome²: $b = 0.62$, $SE = 0.30$, $p = .04$; Pseudo- $R^2 = .002$, 95% CI [0.000, 0.009]; relationship outcome: $b = 0.69$, $SE = 0.26$, $p < .008$; Pseudo- $R^2 = .004$, 95% CI [0.000, 0.012]), who did not differ. Group did not interact with problem-solving or encouraging sharing in predicting either IER outcome. Thus, H3a was partially supported for affection, but not supported for the reappraisal, problem-solving, and encouraging sharing. For invalidation and blaming, their associations with either outcome did not vary across groups, which did not support our hypothesis that blaming and invalidation would be more strongly associated with

worsened IER outcomes for the current-MDD group than for the remitted-MDD and the control groups, who were not expected to differ (H3b).³

Depressive Episode Characteristics and NA as Covariates

Because the current-MDD and remitted-MDD groups differed in number and duration of depressive episodes (Table 2), we conducted two additional series of analyses testing our hypotheses, one controlling for number and the other for duration (both at Level 2). All significant findings held except that the groups no longer differed in associations between affection and either IER outcome. We also repeated our analyses controlling for lagged momentary NA at Level 1; see Section 3 in the online supplemental materials for the results and our concerns about controlling for NA in the context of the present research.

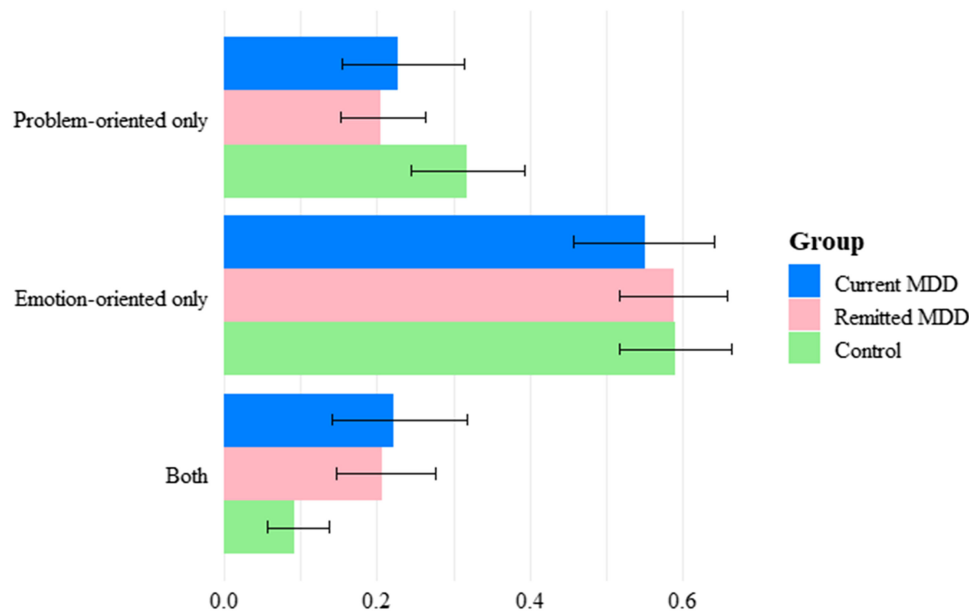
Discussion

Extensive research suggests that individuals with MDD experience difficulties with intrapersonal ER (D. Y. Liu & Thompson, 2017). We examined whether these difficulties extend to IER. This area of research is important given growing evidence supporting the ubiquity and critical implications of IER in well-being (Williams et al., 2018). We address this research gap by examining IER among adults with current and remitted MDD. Using ESM, we examined various aspects of everyday IER in the context of sharing negative emotional

²The difference between the current-MDD and control groups in the association between affection and problem outcome was no longer significant ($p = .06$) after applying the Benjamini-Hochberg adjustments to correct for multiple group comparisons (Benjamini & Hochberg, 1995). All other significant findings remained significant after adjusting for three pairwise group comparisons.

³We explored whether group moderated the associations between IER strategies and each outcome, controlling for warmth (both main effect and interactions with strategies). The moderating effect of group on the reappraisal-problem outcome association was significant. However, group did not moderate the associations between affection and either outcome, likely because warmth and affection overlap substantially as constructs. Thus, we did not test whether group moderated associations between IER strategies and outcomes controlling for warmth.

Figure 1
Probabilities of Endorsing Different Types of IER Goals by Group



Note. Error bars represent 95% credible intervals. IER = interpersonal emotion regulation. See the online article for the color version of this figure.

experiences, including intrinsic IER-seeking behaviors, sharing partners' extrinsic IER response, and IER outcomes.

Our first aim was to examine how MDD was associated with three basic elements of intrinsic IER-seeking behaviors—how much, from whom, and why people seek IER. The remitted-MDD group sought IER more frequently than controls, with the current-MDD group falling nonsignificantly in between. No group differences emerged for sharing with close (vs. nonclose) others. These findings did not support our hypotheses that those with current MDD would seek IER less frequently and more exclusively from close (vs. nonclose) others than controls due to their greater social isolation and emotional suppression (Hames et al., 2013; Visted et al., 2018). However, it is also possible that depressed people have more opportunities where IER could be used because they experience more negative emotions (Dunkley et al., 2017) and difficulties with intrapersonal ER than controls (D. Y. Liu & Thompson, 2017), and that they tend to use venting to cope with distress (Dixon-Gordon et al., 2018). Moreover, sharing emotional experiences represents basic social and emotional needs (Rimé, 2009), which may override one's diminished motivation in social engagement. Future research should examine how these processes contribute to IER frequency and choice of sharing partners in MDD.

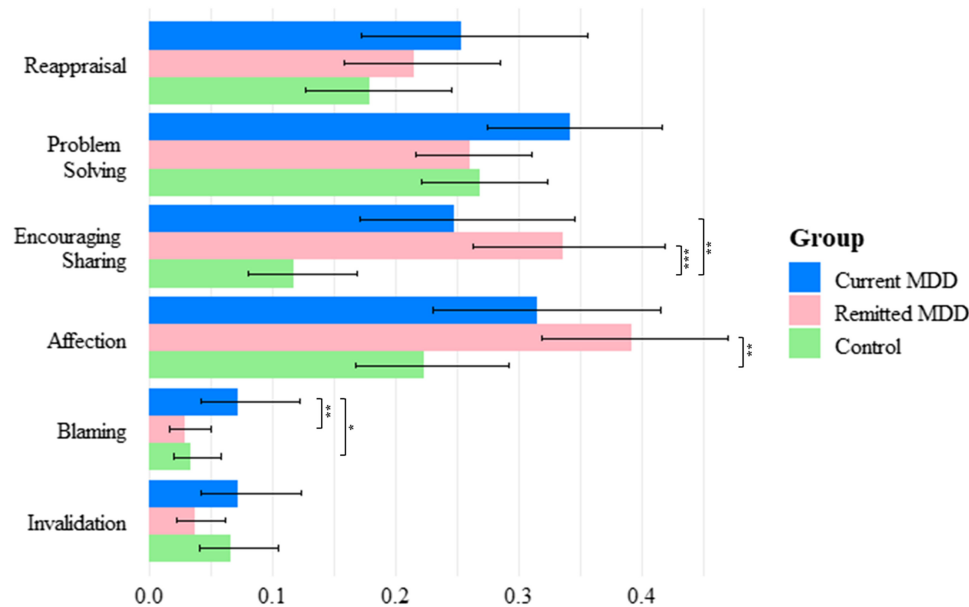
Regarding IER goals, participants across groups sought emotion-oriented goals only most often. The two MDD groups were more likely than controls to report seeking both problem-oriented and emotion-oriented goals as opposed to either type of goal alone. Individuals with current and remitted MDD may need more support when seeking IER, possibly due to their greater emotional distress compared to controls (R. T. Liu & Alloy, 2011). It may also be that they were less clear about their emotions (Thompson et al., 2015) and psychological needs (Dizén et al., 2005), and thus reported more generalized IER goals, though future research is needed to test

these hypotheses. As IER goals can shape subsequent aspects of IER, clarifying IER goals in MDD can help inform what contributes to other MDD-related differences in IER.

Our second aim was to examine how MDD status was associated with sharing partners' responses—extrinsic IER strategies and warmth. Although groups did not differ in perceived warmth of the sharing partner, group differences emerged for frequencies of perceived extrinsic IER strategies, and the two MDD groups showed distinct result patterns. Regarding perceived extrinsic IER strategies, those with current MDD were more likely than controls to receive encouraging sharing and blaming, but they received other strategies with similar frequencies as controls. As encouraging sharing was associated with better IER outcomes and blaming was associated with worse outcomes, it appears that those with MDD received a mixed profile of extrinsic IER strategies. This may reflect the more polarized responses currently depressed individuals encounter due to their high distress and problematic interpersonal styles (Kupferberg et al., 2016; R. T. Liu & Alloy, 2011). It may also represent mixed responses within the same sharing partners. Despite the mixed pattern, findings point to a generally supportive social network perceived by those with current MDD in that, though more likely to receive blaming (an infrequently endorsed strategy), they are similarly likely to receive reappraisal, problem-solving and affection and more likely to receive encouraging sharing than controls.

Individuals with remitted MDD were more likely than controls to receive encouraging sharing and affection, both of which were associated with improved IER outcomes. Along with controls, those with remitted MDD were less likely than those with current MDD to receive blaming, which was associated with worse IER outcomes. These findings suggest a particularly adaptive profile of perceived extrinsic IER strategies received by people with remitted MDD. Although we can only speculate, this profile may have contributed

Figure 2
Frequencies of Receiving Each IER Strategy by Group



Note. Error bars represent 95% CIs. IER = interpersonal emotion regulation; CI = confidence interval. See the online article for the color version of this figure.

* $p < .05$. ** $p < .01$. *** $p < .001$.

to their MDD remission, consistent with evidence that higher perceived support predicts depression remission (Lakey & Cronin, 2008).

Interestingly, both MDD groups reported higher frequencies of receiving encouraging sharing than the control group. Although seemingly supportive, frequent encouraging sharing may reflect or invite greater engagement of corumination, a process that is characterized by excessively discussing the negative nature and consequences of problems and is associated with higher depressive symptoms concurrently and over time (Rose et al., 2007). It is also likely that higher frequencies of receiving encouraging sharing may increase people's vulnerability for depressive psychopathology, possibly due to corumination (Bastin et al., 2018).

Our third aim was to examine whether the associations between perceived extrinsic IER strategies and IER outcomes varied by MDD status. Compared to controls, individuals with current MDD benefited more from affection but similarly from reappraisal, problem-solving, and encouraging sharing. The null findings for the latter three strategies are consistent prior evidence that depressive symptoms did not moderate the effectiveness of cognitive IER strategies (Levy-Gigi & Shamay-Tsoory, 2017). This result pattern, though only partially supporting our hypothesis, is promising given difficulties with intrapersonal ER in MDD (D. Y. Liu & Thompson, 2017). Affection may particularly help currently depressed individuals feel connected to others due to their social isolation (Hames et al., 2013) and broaden their perspectives by elevating their positive affect (Fredrickson, 2001). However, the heightened benefits from affection, along with the mood-brightening effect, may reflect that the emotional experiences in current MDD are less stable and more dependent on external events (Bylsma et al., 2011). As the mood-brightening effect was only supported by findings for affection, it is important for

future research to replicate the current findings and examine whether it may be an artifact of group differences in affective experiences related to the negative event prior to IER. These greater benefits may have also resulted from the more chronic depression history reported by those with current MDD as this finding did not hold when the number or duration of depressive episodes were accounted for, despite only recruiting individuals with recurrent major depressive episodes for the remitted-MDD group. Moreover, the long-term impact of IER in current MDD remains unclear, such as whether it may perpetuate intrapersonal ER difficulties (Marroquín, 2011).

Like the current-MDD group, the remitted-MDD group benefited similarly from problem-solving, encouraging sharing, and affection compared to controls. However, they benefited less from reappraisal than did controls (and the current-MDD group) in problem outcome. It is likely that people with remitted MDD already implement effective reappraisal skills on their own (Visted et al., 2018) and thus need less help from others. Their effective reappraisal skills might have contributed to their MDD remission, although this speculation remains to be tested in longitudinal research. Invalidation and blaming were similarly associated with worsened problem and relationship outcomes for all three groups, indicating their universally negative impact. Interestingly, they were no longer associated with either IER outcome after controlling for warmth, suggesting that invalidation and blaming negatively impact IER outcomes possibly through the sharing partner's lack of perceived warmth.

General Discussion and Implications

The current research advances our understanding of ER in MDD by extending the focus to IER. Overall, we found both group

Table 6
IER Strategies Predicting IER Outcomes

Predictors	Problem outcome			Relationship outcome		
	<i>b</i>	<i>SE</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>p</i>
Panel 1						
Intercept	0.81	0.19	<.001***	0.31	0.20	.11
Reappraisal	1.02	0.12	<.001***	0.72	0.10	<.001***
Problem-solving	0.89	0.11	<.001***	0.46	0.09	<.001***
Encouraging sharing	0.39	0.11	<.001***	0.58	0.10	<.001***
Affection	0.96	0.11	<.001***	1.10	0.09	<.001***
Invalidation	-0.98	0.18	<.001***	-0.54	0.15	<.001***
Blaming	-0.74	0.20	<.001***	-0.60	0.17	<.001***
Mean reappraisal	0.05	0.34	.87	0.34	0.33	.30
Mean problem-solving	-0.72	0.37	.051	0.09	0.36	.80
Mean encouraging sharing	0.00	0.36	.997	-0.38	0.35	.29
Mean affection	0.05	0.35	.89	0.06	0.34	.85
Mean invalidation	0.81	0.67	.23	0.57	0.65	.38
Mean blaming	-1.82	0.35	.03*	-0.95	0.81	.24
Panel 2: Controlling for warmth						
Intercept	0.82	0.10	<.001***	0.32	0.19	.09
Warmth (person-centered)	0.44	0.02	<.001***	0.36	0.02	<.001***
Reappraisal	0.62	0.11	<.001***	0.40	0.09	<.001***
Problem-solving	0.55	0.10	<.001***	0.18	0.08	.03*
Encouraging sharing	0.04	0.10	.67	0.29	0.09	.001**
Affection	0.25	0.10	.01*	0.52	0.09	<.001***
Invalidation	-0.24	0.16	.15	0.06	0.14	.67
Blaming	-0.20	0.18	.28	-0.15	0.16	.33
Mean reappraisal	0.45	0.33	.17	0.69	0.32	.04*
Mean problem-solving	-0.39	0.36	.28	0.36	0.35	.30
Mean encouraging sharing	0.32	0.35	.36	-0.13	0.35	.71
Mean affection	0.78	0.34	.02*	0.65	0.34	.054
Mean invalidation	0.02	0.65	.98	0.13	0.64	.84
Mean blaming	-2.29	0.80	.005**	-1.27	0.80	.11

Note. IER = interpersonal emotion regulation.
* $p < .05$. ** $p < .01$. *** $p < .001$.

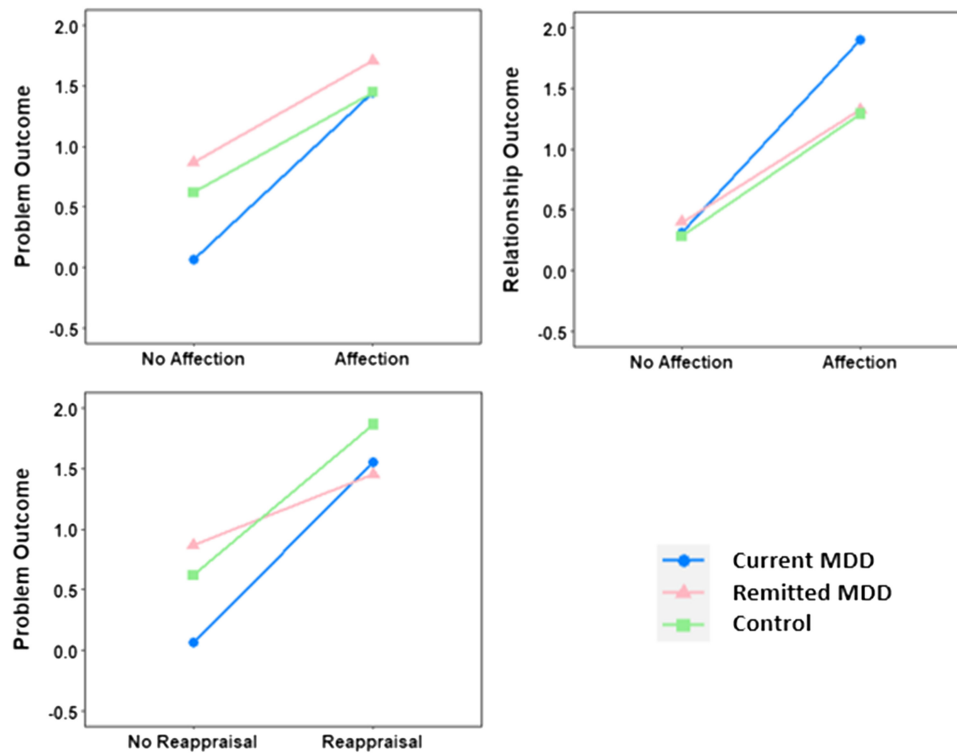
similarities and differences in various aspects of IER. The number of null findings for group comparisons and the small effect sizes of significant group differences provide preliminary evidence that the three groups may be more alike than different with respect to their self-reported IER. Thus, adults with current or remitted MDD did not appear to report pervasive difficulties in their IER experiences, at least in the context of sharing negative emotional experiences.

On the one hand, our findings for those with current MDD may be interpreted as promising for several reasons. First, their diminished motivation in social engagement and impaired interpersonal functioning (Kupferberg et al., 2016) did not appear to suppress their motivation to seek IER frequently and from both close and nonclose others. Additionally, despite abundant evidence that those with current MDD show negative biases in interpreting social information and evoke social rejection over time (Coyne, 1976; Gotlib & Joormann, 2010; Joiner et al., 1999), their depiction of the sharing partner's extrinsic IER responses were generally positive and warm, though they reported receiving blaming most frequently. Furthermore, those with current MDD showed similar or heightened benefits from certain IER strategies compared to controls, highlighting the utility of IER in current MDD. These promising interpretations contrast with the large body of research that has linked current MDD with impairments in intrapersonal ER (D. Y. Liu & Thompson, 2017) and highlight IER as an effective avenue through which currently depressed individuals receive help regulating their emotions.

On the other hand, many findings for current MDD were inconsistent with our hypotheses based on the well-established impairments in emotional, cognitive, and interpersonal functioning in MDD, and implications of the prevalent group similarities may not be so promising. For example, the group similarities in IER characteristics and outcomes may not fare well for those with current MDD because they may need more frequent or greater levels of IER support to achieve equivalent levels of well-being compared to controls due to higher levels of distress and ER difficulties. Moreover, IER difficulties may be more apparent when evaluating long-term repercussions of IER (e.g., perpetuating reassurance seeking and rumination; Starr, 2015) or impact on the sharing partner (Rauers & Riediger, 2022). Therefore, more research is needed to better understand how IER manifests in current MDD. Nonetheless, these initial findings help stimulate future research inquiries, such as the processes contributing to group similarities and differences, mechanisms underlying IER in MDD, and long-term emotional and social consequences of IER in MDD.

Several findings concerning remitted MDD are worth noting. Individuals whose MDD remitted were highly motivated to seek IER support, as evidenced by their higher frequency of seeking IER and (along with those with current MDD) seeking both types of IER goals compared to controls. Though this increased need for IER support may represent vulnerability factors for MDD, it may also be the consequence of previous major depressive episodes. Additionally, the remitted-MDD group appeared to receive the

Figure 3
Associations of Affection and Reappraisal With IER Outcomes by Group



Note. The top two figures depict significant group differences in the associations between affection and the two IER outcomes. The bottom left figure depicts significant group differences in the associations between reappraisal and problem outcome. IER = interpersonal emotion regulation. See the online article for the color version of this figure.

most adaptive pattern of extrinsic IER strategies. Individuals with remitted MDD received encouraging sharing and affection more frequently than controls, and unlike the current-MDD group, they did not receive more blaming than controls. Importantly, longitudinal studies are needed to examine the etiological role of various components of IER in MDD. Interestingly, unlike the current-MDD group, those with remitted MDD benefited similarly or less from certain extrinsic IER strategies than controls, possibly because they already possess many effective intrapersonal ER skills (e.g., using reappraisal; D. Y. Liu & Thompson, 2017).

The current research informs clinical interventions for depression. ER has been increasingly recognized as a viable target of intervention and mechanism of change in the treatment of psychopathology, including depression (Bailen & Thompson, 2023). As ER frequently occurs in social contexts (English et al., 2017), it would be important to incorporate IER into interventions targeting ER. Our finding that currently depressed individuals benefit from extrinsic IER speaks to the value of clinicians encouraging depressed clients to seek IER when appropriate and from supportive others. Clinicians may also consider helping depressed clients clarify their emotional needs and teach them interpersonal skills that invite helpful responses. Clinicians can also help depressed clients integrate effective skills accrued from IER interactions into their intrapersonal ER repertoire, such as modeling generating alternative interpretations. Besides treating active MDD, it may be important to integrate IER into

prevention efforts for MDD, particularly given its often recurrent nature (Burdusa & Iacono, 2007). For example, it may be important to encourage those whose MDD has remitted to continue utilizing their supportive social environments to manage their emotions and identify how they can maximize IER benefits. Future treatment research can test these speculations.

We note several study limitations and promising avenues for future research. First, we focused on IER following negative emotional experiences via social sharing. This did not capture IER experiences that do not involve sharing (e.g., asking for a hug after a stressful day) or that are not contingent on emotional events having occurred (e.g., bringing a friend to a social event to feel less anxious). Researchers should consider examining these and other forms of IER in MDD and clarify whether certain forms of IER may be more prevalent or efficacious in MDD (e.g., in-person vs. digital IER; McFarland & Hay, 2023). Researchers could also seek to examine IER of positive emotions in MDD. Compared to controls, people with MDD may be less likely to enhance positive emotions via IER due to anhedonia and negative beliefs about positive emotions (APA, 2013; Vanderlind et al., 2020), and as a result may experience deleterious relational consequences (Horn et al., 2017). Second, our assessment of IER did not include whether people deliberately shared negative emotional experiences (for intrinsic IER) or responded to others' sharing (for extrinsic IER) in efforts to regulate emotions because people are not always aware of their goals

for doing either (Zaki & Williams, 2013). Although this approach allowed us to capture IER interactions broadly, such as IER with implicit goals of changing emotion, people sometimes share their negative experiences or respond to social sharing for reasons other than impacting emotions. Future studies could assess people's goals when assessing IER.

Additionally, we assessed the sharer's and the sharing partner's IER behaviors only from the sharer's perspective. We did not collect data from the sharing partner or data that could have allowed for objective ratings of IER behaviors. On the one hand, some would suggest caution in interpreting our findings because the sharing partner's view was absent, and we cannot determine the accuracy of the sharer's perspective of the IER process. It could be argued that the sharing partner may be a more objective judge of the IER strategies as they may be, for example, less emotionally aroused than the sharer (Christensen et al., 2020). On the other hand, the sharer's perspective is critical in that the sharer will ultimately respond to the sharing partner based on what the sharer perceives the sharing partner did. For example, the sharer could perceive the sharing partner's response as blaming even if the sharing partner's perceived their response as problem-solving and objective coding did as well. Discrepancies in how people view the IER process and how these views line up with objective assessments are interesting lines of research. Regarding the former, related research suggests that there may be low congruence between the perceptions of the sharer and sharing partner on the IER exchange (Christensen et al., 2020), and the sharing partner's perception may at times be more strongly associated with psychopathology than was the sharer's perceptions (Christensen et al., 2020). Thus, examining the sharing partners' perspectives (e.g., their extrinsic IER goals and strategies) would provide a more complete understanding of IER in MDD. For example, the perceived IER support—reflected by perceived sharing partner's IER strategies and warmth—reported by sharers with MDD may have been an underestimation of the actual amount of support they receive in daily life due to their negative biases in interpreting social feedback (Daley & Hammen, 2002; Gotlib & Joormann, 2010). Further, sharing partners may be regulating the sharer's emotions at the cost of their own (Rauers & Riediger, 2022) or may put in increased effort to encourage the sharer to overcome reluctance to share, particularly when regulating emotions of those with MDD. A more comprehensive assessment of IER interactions would provide additional clarity, including helping discern the extent to which IER characteristics unique to MDD are influenced by characteristics of the sharing partner (e.g., supportiveness), the sharer (e.g., sharing behaviors), and their relationship (e.g., closeness). For example, frequently receiving encouraging sharing could be attributed to one's supportive social environment or one's reluctance to share emotions.

Moreover, we did not examine how one's MDD status is related to their own extrinsic IER efforts. Those with MDD may regulate others' emotions less frequently than controls due to social withdrawal (Kupferberg et al., 2016) and a greater self-focus (Watkins & Teasdale, 2004). Lastly, there may have been systematic differences in contextual factors (e.g., nature of negative experiences) and levels of psychological insight between groups that influenced our findings.

Despite these limitations, the current research represents the first efforts to elucidate everyday IER among adults with current and remitted MDD. Although groups showed many similarities in IER processes, they differed in several aspects of IER, including intrinsic IER frequency and goals, extrinsic IER strategies received from sharing partners, and IER outcomes following certain

strategies, above and beyond the severity of MDD course. Future research should further elucidate the mechanisms underlying these group differences and IER characteristics over the course of MDD. Such research can inform clinical interventions aimed at improving emotional and social well-being of those with and at risk for MDD.

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Received March 21, 2023

Revision received July 20, 2023

Accepted August 10, 2023 ■

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