

Functions of personal experience and of expression of regret

Amy Summerville

Joshua Buchanan

Miami University

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Abstract

Although learning and preparing for future behavior are well-established functions of regret, social functions have been largely ignored. We suggest a new model of the functions of regret, the Privately Experienced versus Expressed Regret (PEER) model, in which private experience and public expression differentially serve these functions. The current research examined this model using both naturalistic and experimental approaches. In Study 1, we coded tweets about regret posted on social media to examine whether this content emphasized social relationships versus learning and preparation. Study 2 experimentally examined the hypothesized social-closeness function for expression of regrets. Study 3 further examined how privately experienced and publicly expressed regrets differ on the social-closeness and learning and preparatory functions. Studies 4 and 5 confirmed the specific social closeness function rather than global social benefits. This research suggests that the social expression of regret differs from private experience in both form and function.

Functions of personal experience and of expression of regret

Regret, the negative emotion driven by an upward counterfactual thought about how things “might have been” better if one had acted differently in the past (Gilovich & Medvec, 1994), is a common emotion, second only to love in daily expression (Shimanoff, 1984). Although regret is characterized by negative affect, and has been linked to negative mental health outcomes (Roese et al., 2009), work over the past two decades has emphasized the functions of regret (e.g., Roese, 1994; Epstude & Roese, 2008). Past work on the functions of regret has concentrated on regret’s role in learning from past mistakes and forming strategic intentions for the future, but has seldom investigated social functions of regret. In contrast, the self-conscious emotions (shame, guilt, embarrassment, pride), which bear many similarities to regret, have well-documented social functions. We suggest that regret has previously unexplored social functions that rely on the social expression of regret.

Functions of regret

Counterfactual thoughts, the cognitive underpinning of regret, are beneficial to learning and planning (cf. Petrocelli & Harris, 2011; Sherman & McConnell, 1995). Counterfactual thoughts are particularly important in causal reasoning (Wells & Gavanski, 1989). The thought “if only we’d had more food, the party might have been a success” identifies the insufficient catering (and not the uncomfortable seating, harsh lighting, or bad music) as the reason that a party fizzled. For that reason, counterfactual thoughts facilitate the identification of relevant behavioral intentions (“In the future, I will order more food”; Smallman & Roese, 2009).

Generating *upward* counterfactual thoughts, focused on how things might have been better than reality, thus facilitates future performance (Roese, 1994).

Even in interpersonal contexts, the role of counterfactuals has been examined in terms of strategic behavior. For instance, counterfactual mindsets improve group performance, leading groups to consider disconfirmatory evidence (Kray & Galinsky, 2003) and share more unique information in group discussion (Galinsky & Kray, 2004). Discussions of the functions of counterfactual thoughts have focused on the learning, preparatory, and strategic value of these thoughts. In a recent review, in fact, Epstude and Roese (2008) stated that the functions of counterfactual thoughts “are best explained in terms of their role in behavior regulation and performance improvement” (p. 168).

Functions of the self-conscious emotions

The social functions of other emotions have been better developed. Embarrassment, for instance, is a highly social emotion (Miller & Leary, 1992). The expression of embarrassment communicates prosociality (Feinberg, Willer, & Keltner, 2012) and reduces aggression by onlookers following transgressions (Keltner & Buswell, 1997). The self-conscious emotions as a class (embarrassment, shame, guilt, and pride) serve an essential function in regulating social behavior, identifying situations in which one has violated social norms (Tangney et al., 1996), and acting as reinforcement (or punishment) for socially appropriate (or inappropriate) behavior. The neural substrates of these emotions appear to be central to social regulation, as individuals with damage that interferes with the

appropriate experience of self-conscious emotions show deficits in social perception (Beer et al., 2003).

The self-conscious emotions are not alone in providing a social function, however. Individuals may express sadness when trying to elicit help to deal with or prevent a loss (Hackenbracht & Tamir, 2010). Even anger may have an interpersonal function when one's goal is confrontation rather than reconciliation (Tamir & Ford, 2012). In fact, Rimé (2009) has argued that all emotions serve a fundamentally social function.

The social functions of regret

Consistent with the emphasis on the social functions of other emotions, some work has examined the social function of regret. A recent series of studies found that regrets relevant to social relationships (e.g., romantic regrets) were more intense than nonsocial regrets (e.g., work-related regrets), and this difference was due to the social impact of the regret (Morrison, Epstude, & Roese, 2012). Furthermore, these authors proposed that the need to belong (Baumeister & Leary, 1995), the desire for healthy relationships with others, mediates the relationship between domain and intensity. Likewise, past work on lay theories of regret supports this social closeness function, as individuals believe that regret can be helpful in bringing them closer to others (Saffrey, Summerville, & Roese, 2008).

Previous research on the public expression of regret suggests it is motivated by a goal of social closeness with others. Expressing regret is important to repairing damaged social ties (van der Pligt, Zeelenberg, & Manstead, 1998). Within the specific context of consumer behavior, Wetzer, Zeelenberg, and Pieters (2007b)

examined the expression of negative emotions as “negative word-of-mouth” about unsuccessful consumer purchases. Regret, but not disappointment or anger, was expressed to promote social ties with another individual. In contrast, disappointment and anger were expressed to warn others or punish the source of the negative experience (the manufacturer or service provider). This latter result suggests that the expression of regret has a specific closeness function above any general benefit of expressing negative emotions to others. The current research examines this specific function in a more general context of expressing regret.

Examining the public expression of regret may be particularly important in understanding the potential social function of regret. Emotion regulation differs between regulation strategies focused solely on the private experience of the emotion (reappraisal) versus those focused on the public expression of emotion (suppression; Gross, 1998, Gross & Johns, 2003). The latter, but not the former, is associated with dysfunction in close relationships, suggesting that the expression of emotion is important in social relationships. Indeed, the social functions of emotion expression can be served whether or not the individual actually experiences the emotion privately, indicating that expression and not private experience is what is essential to social functions of emotion (Russell, Bachorowski, & Fernandez-Dols, 2003).

Given the volume of work on the functions of emotional expression, it is important to differentiate the functions of expressing regret from the functions of expressing other negative emotions, which serve different goals. The expression of anger, for instance, signals dominance and power to the observer (Marsh, Adams, &

Fleck, 2005), a very different social function than closeness. Other theorists have argued that anger, disgust, and contempt are expressed following specific kinds of moral violations and thus serve a moral policing function, again distinct from closeness (Rozin, Lowery, Imada, & Haidt, 1999). Moreover, social functions of emotion expression need not involve any kind of correction or repair to social relationships: contempt serves a social-exclusion function of distancing the self from the target (Fischer & Roseman, 2007).

The social closeness function of expressing regret thus appears relatively specific and not a general consequence of any expression of a negative emotion. In past research, in fact, the goals of expressing regret have been specifically distinguished from the goals of expressing anger: individuals expressing regret desired their interaction partner to have different reactions to that emotional disclosure, and evaluated the partner more favorably when they did so, suggesting that the goals of expressing these two emotions differed (Wetzer, Zeelenberg, & Pieters, 2007a).

Privately experienced vs. expressed regret: The PEER model

In the *Privately Experienced versus Expressed Regret (PEER)* model (see Figure 1), we suggest that the closeness function of regret (Morrison, Epstude & Roese, 2012; Saffrey, Summerville, & Roese, 2008) is driven by the public expression of regret, independent of private experiences of the emotion. The PEER model suggests that regrets that are experienced privately but not shared publically will serve the learning and preparatory functions identified in previous research on the functions of regret. In contrast, we predict that the social benefits of regret are

contingent on public expression. We therefore predict that that the regrets that individuals express publically (versus those that they privately experience without subsequently making public) will be predominately oriented toward improving and maintaining social relationships, rather than learning and preparation. In integrating well-documented social functions of emotional expressions of other emotions into the relatively non-social current understanding of regret, the PEER model addresses a clear gap in discussions of regret's functions.

Overview of the current research

Across five studies, we investigate the claims of the PEER model that regret has a social function, and that the expression of regret, rather than private experience, is motivated by this goal. Study 1 examines the expression of regret on Twitter. We compiled tweets that used the “#2011Regrets” hashtag (a way to denote a topical category for the tweet) to examine whether regrets expressed via social media were consistent with a social closeness function. In Study 2, we experimentally investigated whether the expression of regret was sensitive to the importance of social relationships in different life domains. Study 3 further investigated if the social closeness function (versus a learning and preparatory function) is endorsed more highly for the public expression of regret relative to the private experience of regret. In the final two studies, we examined how the expression of regret relates to chronic social goals (Study 4), and how the closeness function of regret differs from social functions of other emotions (Study 5).

Study 1

In order to broadly examine the potential motivations for the expression of regret in actual social behavior, Study 1 investigated the public expression of regret by examining more than thirteen thousand tweets containing the #2011Regrets hashtag posted on Twitter during the last 2 weeks of 2011 (December 14-31, 2011). Social media is an increasingly ubiquitous and important forum for interaction. Recent estimates suggest 2 out of 3 online American adults use Facebook (Nielsen, 2012), and 13% use Twitter (Smith, 2011). Researchers have mined these sites to understand broad daily and weekly patterns of affect (Golder & Macy, 2011). In addition to this “macro-level” understanding of variation in affect over time, content analysis of social media sites could also provide a “micro-level” insight into the everyday expression of *specific* emotions.

Overview of Twitter. Twitter is a social networking service wherein users compose 140 character messages that are posted to the Twitter website. Each user has an individual Twitter account or “feed” which others can view *ad hoc* or subscribe to (“follow”) in order to see every new post the user makes. Although posts are viewable by anyone with internet access, most posts will be seen only by people acquainted with the individual in some way. Individuals can specifically address other users by including the “@” symbol followed by the desired username (e.g., “Happy birthday, @JaneDoe!”); unlike “private messages” within the system, these tweets are still viewable by the general public. Companies and celebrities also frequently utilize Twitter to both publicize new products and get in touch with fans or customers.

In recent estimates (Hepburn, 2010), Twitter has over 106 million users (52% female), 60% of whom are located outside the United States, posting 140 million tweets daily, on average (Twitter, 2011). Within the US, 13% of online adults use Twitter (Smith, 2011). The majority of users have completed some college (48% of users) or obtained a college degree (28% of users). Users are predominantly young to middle-aged adults (17% of users are under 25; 30% are 26-34; 27% are 35-44; 17% are 45 to 54, and 9% are older than 55). Among American users, African-American and Hispanic users are particularly likely to use Twitter, with 25% of online African-American adults and 19% of online Hispanic American adults (vs. 9% of non-Hispanic white American adults) using Twitter (Smith, 2011).

Although more diverse than a typical undergraduate sample, Twitter users are not a demographically representative sample. Moreover, the use of a truly public forum and the individual differences that make some individuals more interested in posting to the site likewise mean that the expression of regret on Twitter likely differs from the expression of regret in other contexts. However, it offers an opportunity to observe real behavior, rather than rely on retrospective self-report, and is thus an interesting preliminary venue for exploration of the PEER model.

Goals of Study 1. Overall, we expected that the patterns of results for regrets expressed on Twitter would diverge from patterns in previous research on privately experienced regret. Specifically, we expected that patterns of results characteristic of a learning or preparatory function would be weaker or absent on

Twitter compared to past research. We predicted that instead, new patterns consistent with a social closeness function would emerge.

We first examined the areas of life about which individuals expressed regret, a major focus of past research. We anticipated that, in line with the hypothesized social closeness function for expressing regret, social domains (i.e., romance, friendships, parenting, and family) would be more prevalent than domains focused on private learning (i.e., career, education, and finances). Furthermore, we anticipated that, compared to previous rankings of life domains in privately experienced regret (Morrison & Roese, 2011; Roese & Summerville, 2005), domains characterized by private learning would be mentioned less frequently on Twitter, and domains focused on social relationships would be mentioned more frequently. Additionally, because the concept of “living life without regrets” is common in popular culture, we predicted that some individuals would claim to not “believe in” regret or to feel no regret, an option not generally included in studies of experienced regret.

We also thought that targets of blame might differ between tweets and past research. Older adults, who may no longer benefit substantially from the preparatory benefits of regret, show a self-protective pattern of decreased self-blame and increased blame of others (Wrosch & Heckhausen, 2002). We believed that this pattern of frequently blaming people other than the self might emerge for public expression of regret, regardless of age, given the generally decreased emphasis on preparatory function. Alternatively, taking ownership of one's mistakes or expressing regret in an apology may help keep social ties strong

(McCullough et al., 1998). A social closeness function for expression of regret might therefore lead individuals to accept and emphasize self-blame.

We also examined possible consequences of regret. Given the different functions of expressed versus privately experienced regret in the PEER model, we expected these to differ from past research. Regret and counterfactual thought are generally associated with meaning-making, both in the creation of strategic intentions (Smallman & Roese, 2009) and in perceptions of fate (Kray et al., 2010). Although the focal end-of-year context may increase the prevalence of such consequences as individuals form resolutions for the new year, we predicted that these consequences would not emerge as common themes in publically expressed regrets, given their focus on a learning and preparatory rather than social closeness function.

Method

We used the website TweetReports.com to compile all tweets that included “#2011Regrets” from December 14th to December 31st, 2011, collecting 13,501 tweets. Each tweet was coded by two undergraduate coders. Tweets that were a “re-tweet” (reposting a previous tweet), a fragment of a conversation with another user (e.g., “@Jane123, hahah, it was memorable!”), contained nothing but the #2011Regrets hashtag, were obvious spam (e.g., “FREE REHAB Call 1-888-XXX-XXXX”), or were indecipherable (e.g., in a language other than English) were deleted from subsequent analyses. Additionally, two users who posted more than 50 tweets each, which were focused on their political beliefs (e.g., “The economy did not collapse fully bringing down an end to corporatism! #2011regrets”), were removed

as extreme outliers. (98% of users in the sample posted only one or two tweets containing “#2011Regrets,” and over 99% posted five or fewer.) The authors reviewed all tweets containing a reference to pop culture or identified as “sarcastic,” “humorous,” or “political” and removed 248 clearly facetious tweets. For example, “I thought that being extra awesome would be overkill. I could have been more awesome” and “Wasn't the father of Natalie Portman's child” were removed as they were clearly insincere, whereas “All the hearts I broke LOL not really” was not, as we could not rule out the possibility that the individual had sincere romantic regrets but was attempting to use humor defensively. For any user who had multiple tweets in this remaining data set, we then selected only the first tweet posted, resulting in a final data set of 4648 tweets by unique posters.

Coders identified the life domain relevant to the regret (Roese & Summerville, 2005; see Table 1). In identifying domains, we included a “general social” category for tweets that clearly focused on a social relationship but lacked sufficient information to disambiguate whether that relationship was romantic, platonic, or familial (e.g., “I shouldn't have gotten so mad at her” cannot be identified as one of the specific social domains.) Following the procedure of Roese and Summerville (2005), the 1021 tweets in this category were distributed equally to the tallies for romance, friendship, and family (i.e., the final tally for “romance” included 575 tweets identified as clearly pertaining to romance and $1021/3 = 340.3$ “general social” regrets, for a final total of 915.3 tweets in this domain). We used this procedure to ensure that our domain ranking would be as closely comparable as possible to previous rankings of privately expressed regrets that had also used this

procedure (Morrison & Roese, 2011; Roese & Summerville, 2005). Additionally, tweets could be coded as “everything” or as “no regrets” if the tweet specified e.g., “Too many to count” or “nothing,” respectively. Coders also identified mentions of blame, discussions of fate or God, learning, advice, and intentions/resolutions. Coders also recorded use of emoticons, sarcasm, and explicit mentions of humor (“just kidding”). Coders agreed in 97.1% of coding decisions, with discrepancies resolved by the second author, who was not a primary coder.

Results

Regret Domains. The frequency of domains can be seen in Table 1. As predicted, social relationships were a major focus of expressed regret. Romantic regrets predominated, accounting for 19.69% of all tweets. Overall, 40.0% of tweets referred to other people. Social domains (romance, friendship, family) were emphasized more in the present research (38.7%) than in Roese and Summerville’s (2005) meta-analysis (18.7%), though not more than in Morrison and Roese’s (2011) nationally representative sample (39.8%). In contrast, domains in which learning and preparation are particularly important (career, education, and finance) were far less prevalent on Twitter (5.9%) than in the nationally representative survey (37.7%), and meta-analysis (56.5%). On Twitter, domains relevant to social closeness (romance, friends, family) were mentioned far more frequently than domains relevant to learning and preparation (education, career, finance), with the former identified in 38.7% of tweets versus 5.9% for the latter, $Z = 39.29$, $p < .001$, odds ratio = 10.69. As predicted, the expression of regret on social media thus

appears to be highly social, consistent with the hypothesized social closeness motivation of the PEER model.

Blame.

Self-blame was expressed in 41.3% of all tweets, suggesting that expressed regret was not self-protective. Self-blame was apparently sincere, as it was associated with less frequent use of humor: 12.9% of tweets involving self-blame involved some form of humor, compared to 16.9% of other tweets, $Z = 3.73$, $p < .001$, odds ratio = 1.37. Consistent with a social closeness function, others were blamed in only 1.4% of total tweets. Blaming others was often done in the context of humor: 23.6% of tweets containing blame of others also involved humor, compared to 15.1% of other tweets, $Z = 1.92$, $p = .03$, odds ratio = 1.73. Patterns of blame were thus more consistent with a social-closeness than a self-enhancement motivation.

Outcomes of regret.

Consistent with the prediction of the PEER model that learning and preparatory function would be less relevant to the expression (versus private experience) of regret, only 3.7% of tweets mentioned learning. Additionally, 1.6% of tweets contained advice and 1.9% of tweets included a reference to a New Year's Resolution. Thus, tweets serving an obvious learning or preparatory function accounted for a very small percentage of tweets, consistent with the PEER model's prediction that this function is not primarily served by public expression. Similarly, only 2.4% of tweets mentioned fate or religious content, indicating that this form of meaning-making is not a common focus of publically expressed regret.

Discussion

Study 1 examined the expression of regret on Twitter during the final weeks of 2011, a time characterized by retrospection and reflection. Overall, the pattern of results relative to previous research were generally consistent with the PEER model's hypothesis that social closeness rather than learning and preparation would be the core function of the expression of regret. Social relationships, particularly romance, were identified more often than were domains relevant to learning and planning. We believe that, as predicted by the PEER model, this divergence was due to an emphasis on social closeness as a motivation for publically expressing regret.

Not all results were consistent with our predictions. The self was a more common focus than anticipated. One possible reason for this is that the self is highly salient in social media posts (e.g., Facebook instructs users "what's on your mind?" as a prompt for status updates). Additionally, the current research focused on end-of-year retrospection, when self-improvement may be more salient than at other times; future research should examine whether this pattern remains for public expression of regret during other time periods. Furthermore, demographic patterns may lead to a greater emphasis on the self. Twitter users are fairly young, with nearly 75% under the age of 45 (Hepburn, 2010). Given that identity formation is a major goal of adolescence and young adulthood (Erikson, 1968), the youth of Twitter users may partially account for the focus on individual identity and the lack of emphasis on parenting and career in the current data.

Of course, tweets differ in many ways from regrets reported in the lab or in phone surveys. In addition to their public nature, they may be more spontaneous rather than reflective and deliberative. They may be more recent and posted in the

heat of the moment, rather than recalled after time has passed, which would lead to important changes (Gilovich & Medvec, 1994, and Summerville, 2011). These data thus offer interesting initial descriptive support for the PEER model from a naturalistic context, but are also limited by the idiosyncrasies and non-representativeness of Twitter in general and the time period surveyed in particular. In the following studies, we therefore take an experimental approach to testing the PEER model.

Study 2

Although the pattern of results in Study 1 was consistent with the PEER model's hypothesized social closeness function for expressed regret, this motivation could not be tested directly. In Study 2, we therefore examined whether the public expression of regret was affected by the importance of maintaining and improving social relationships. We believe that the strength of this motivation likely differs across life domains. To the extent that it fulfils a social closeness motivation, public expression should be more prevalent in domains in which social relationships are highly important than in those in which those relationships are relatively unimportant. In order to maintain parallels between this investigation and past examinations of the private experience of regret, we used an experimental procedure analogous to that of Roese and Summerville's (2005) investigation of future opportunity effects in regret. Specifically, we compared domains that individuals identified as high or low in social importance, parallel to Roese and Summerville's (2005, Study 2b) comparison of domains identified by participants as high or low in future opportunity. Using this design, we predicted that individuals

would be more likely to have publicly expressed regrets relevant to social life domains than regrets relevant to less social or non-social life domains.

Method

Sixty-two participants (29 female; 47 white, 8 African-American, 5 Asian, 3 Native American, 1 Pacific Islander; 5 Hispanic; age $M = 30.8$) were recruited from Amazon's Mechanical Turk and paid \$0.20 for their participation. Participants were randomly assigned to the high or low social importance condition. Participants in these two conditions were presented with the 12 life domains from Roese and Summerville (2005; see Table). Participants then read instructions modified from Roese and Summerville's (2005) Study 2b:

Where in life do you feel your social relationships are the [MOST/LEAST] important? That is, [where you are MOST HIGHLY concerned about developing new relationships and/or maintaining and strengthening new relationships. /where is it LEAST IMPORTANT to you to develop new relationships and/or maintain and strengthen new relationships.] Please select indicate the area of life where you are [MOST/LEAST] concerned about your social relationships from the list below.

Participants were then presented with the regret elicitation from Roese and Summerville (2005; Study 2a) and were asked to recall a relevant regrettable situation about the area of life they had just selected, which the computer automatically inserted into the instructions. After writing about the situation, participants were asked whether they had ever shared this situation with (1) a close

friend, (2) a large group of friends, classmates, co-workers, teammates, etc., and/or (3) online on a blog, Facebook, Twitter, etc. The number of “yes” responses to these three questions were summed as a measure of public expression of regret.

Results

A total of 16 participants (6 in the low social importance and 10 in the high social importance condition) indicated having no regrets in this area of life or not believing in regret. Additionally, one participant in the high social motivation condition entered a nonsensical letter string instead of responding to the regret elicitation. Removing these participants from further analysis left 45 participants (25 in the low social motivation condition and 20 in the high social motivation condition).

As predicted, participants in the high social importance condition reported that they expressed more regrets about these areas than did participants in the low social importance condition ($M_s = 1.10$ vs. 0.56), $t(43) = 2.78$, $p = .008^1$.

Discussion

As predicted, individuals were more likely to share regrets about areas of life in which they were focused on improving and maintaining social relationships. This provided preliminary support for the proposed social closeness function. However, this study did not examine whether publically expressed regrets were also related to the learning and preparatory functions central to privately experienced regrets (Epstude & Roese, 2008). Study 3 experimentally compared both the differences between privately experienced and publically expressed regret and between the

social closeness function and the learning and preparation function of both forms of regret.

Study 3

Study 2 found preliminary evidence connecting the public expression of regret to a social closeness function, as individuals were more likely to express regret about areas of life in which social relationships were particularly important versus unimportant. However, we also wished to examine the relative importance of this function compared to the established learning and preparation functions of regret. Furthermore, we wished to test the predictions of the PEER model that learning and preparation are accomplished through private experience and that social closeness relies on an independent act of public expression. Study 3 therefore examined the functions of publically expressed versus privately experienced regrets. We hypothesized that individuals would endorse a social closeness function more than a learning and preparation function for expressing regret, whereas the converse would be true for privately experiencing regret.

Method

Participants. One hundred one individuals (49 female; 89 white, 6 Asian, 3 Native American, 1 African-American; 9 Hispanic; age $M = 30.79$) were recruited from Amazon's Mechanical Turk and paid \$0.50 for their participation.

Materials. Two sets of dependent rating items were adapted from Saffrey, Summerville, and Roese (2008; Study 2): a social closeness function rating ("...helped me improve my relationships with others" and "...helped me better understand what others are thinking and feeling"; $\alpha_s = .83$ for private experience

and .77 for public expression) and a learning and preparation function rating (“...helped stop me from doing dangerous or harmful things”; “...helped stop me from making the same mistakes again”; “...helped me know how to act in the future”; “...helped to prepare me for action”; α s = .75 for private experience and .67 for public expression). The stems for each item varied; see Procedure. The order of these 6 items was randomized by the computer. Additionally, a measure of regret strength (“How much regret did you feel about this situation?” and “How emotionally intense is the regret you just described?”; α = .86) was adapted from Roese & Summerville (2005). The order of these two items was randomized by the computer. All 8 items were rated on 7-point scales with labels “Strongly Disagree”, “Disagree”, “Somewhat Disagree”, “Neither Agree or Disagree”, “Somewhat Agree”, “Agree” and “Strongly Agree.”

Procedure. All participants read regret recall instructions (Roese & Summerville, 2005), in which they were asked to identify a thought of “what might have been” in a situation that could have turned out better. Participants were randomly assigned to recall a regret that they had “shared with others by talking about it in a fairly large group of people, posting on a blog or social media site, etc.” in the publically-expressed condition or to recall a regret that they had “kept private and not shared or discussed with others” in the privately-experienced condition.

As a manipulation check, participants indicated whether they had shared the regret with close friends, a large group, or online. Two participants in the publically-expressed condition reported that they had not shared the regret with a group or online. Twenty-two participants in the privately-experienced condition

reported that they had shared the regret with at least one of these groups of others. These participants were eliminated from further analysis, leaving 42 participants in the publically-expressed and 35 participants in the privately-experienced conditions. Participants in both conditions then completed the regret intensity measure.

Participants in the publically-expressed regret condition next focused on the functions of having *shared the regret publically* while completing the social closeness function and learning and preparation function ratings; the stem "Sharing this situation with others..." appeared for each item. They then rated the functions of *thinking about the regret privately, without sharing it* while completing the social closeness and learning & preparation function ratings; the stem "Thinking about this situation..." appeared for each item. Participants were instructed to skip these items if they had in fact never thought about the situation without sharing it.

Participants in the privately-experienced regret condition focused on the functions of *thinking about the regret privately, without sharing it* while completing the social closeness and learning and preparation function ratings. The stem "Thinking about this situation..." appeared for each item.

Results

Between-conditions analysis. We first wished to ensure that any differences between the publically-expressed and privately-experienced conditions were not due to differences in the extremity of the regrets recalled. This possibility was ruled out, as the two groups did not show a significant difference in the severity

of their regret ($M_s = 4.68$ vs. 5.06 for publically expressed vs. privately experienced regret), $t(72) = 1.00, p = .32$.

Overall, ratings of the two functions were modestly correlated: for ratings of public expression, $r = .35, p = .004$; for private experience, $r = .40, p < .001$. We expected that a 2 (condition: public vs. private) X 2 (function: social closeness vs. learning & preparation) mixed-model ANOVA would reveal an interaction, with the publically-expressed condition emphasizing the social closeness function rather than the learning and preparatory function, and the converse occurring in the privately-experienced condition. The predicted interaction was significant, $F(1, 72) = 4.48, p = .04$ (Figure 2). In the publically-expressed condition, the social closeness function was endorsed more than the learning and preparation function ($M_s = 5.02$ vs. 4.27 , respectively, $t(40) = 3.39, p = .002$), whereas the two functions were endorsed equally in the privately-experienced regret condition ($M_s = 4.71$ vs. 4.63 , respectively, $t(32) = 0.33, p = .75$).

Within-condition analysis. Because participants in the publically-expressed regret condition rated the functions of both sharing the regret and privately reflecting on it, we could also test for a 2 (behavior: publically expressing vs. privately reflecting) X 2 (function: social closeness vs. learning/preparation) interaction on a within-subjects basis for participants in this condition. As with the between-participants analysis, the predicted interaction was significant, $F(1, 35) = 19.93, p < .001$ (Figure 2). As noted above, participants in the publically-expressed regret condition emphasized social closeness relative to learning and preparation as a motivation for sharing their regret. However, participants in this condition, like

those in the privately-experienced condition, did not differ in their endorsement of these functions as a motivation for privately reflecting on the regret ($M_s = 4.64$ vs. 4.70 for social closeness vs. learning/preparation, $t(36) = 0.23, p = .82$).

We next compared ratings of each motive for publically expressed regrets versus privately experienced regrets. The PEER model predicts that the learning and planning function of regret is served by private reflection. Consistent with this prediction, the learning and preparatory function was endorsed more strongly for private experience than for public expression, $t(36) = 2.44, p = .02$. The model also predicts that social expression serves a social closeness function. Consistent with this prediction, the social closeness function was rated significantly higher for public expression than private experience, $t(35) = 2.49, p = .02$.

Discussion

Overall, the social expression of regret appears to be driven by a social closeness rather than a learning and preparatory function. Consistent with the PEER model, individuals endorsed the social-closeness function for publically expressed regrets more than the learning and preparatory function of learning from mistakes and improving future outcomes. In contrast, the social closeness and learning and preparatory functions were rated as equally important for both participants who recalled private, unshared regrets, and participants who rated motivations for privately reflecting on shared regrets. The differences in motivation appear to be driven by the context (public expression vs. private experience), rather than differences in the nature of the situations recalled. The combined findings rule out the possibility that the differing functions of publicly expressed and privately

experienced regrets are a result of contrast effects (as the effect occurs between conditions) or differences in the types of regrets recalled (as the effect occurs using the same regrets within-subjects).

Somewhat surprisingly, for both the between-subjects and within-participants conditions, both the learning and preparation function and the social-closeness function were endorsed equally as functions of privately reflecting on regret. Given that the highest endorsement of social closeness occurred for public expression and that the ratings of both motives differed across the private reflection versus public expression contexts, we believe that the data as a whole support the PEER model. However, it is clear that there is not an absolute delineation of the functions of regret (e.g., endorsements of the learning and preparation function were well above the scale midpoint in the socially expressed condition). Given that counterfactual mindset improves perspective taking and group decision-making (Galinsky & Kray, 2004; Kray & Galinsky, 2003), even unexpressed regrets may benefit social relationships by helping individuals better understand their interaction partners.

However, the results suggest that the social closeness function of expressed regret is not solely due to learning from one's mistakes and improving future interactions. The learning and preparatory functions were endorsed less when individuals were focused on the public expression of regret than when they focused on private experience; if the social closeness function was entirely a byproduct of learning and planning, we would expect this function to be endorsed equally

regardless of context. Although learning and preparation can serve social goals, this cannot account for the unique benefits of public expression here.

Studies 2 and 3 provided evidence that the public expression of regret has a social function, which differs from the function of the private experience of regret. However, these studies examined social relationships in a broad fashion. The PEER Model suggests that regret specifically offers a social closeness function. There are many other functions that emotional expression could serve: to gain attention from others, to obtain resources from others, to exert power over others, to receive reassurance or comfort from others, etc. Studies 4 and 5 examine whether the expression of regret has a relatively specific social function, rather than simply a broad social effect across all functions.

Study 4

To examine the specific social function of regret, we first examined the relation of individual differences to the expression of regret. Individuals differ in their chronic goals in interacting with others. To the extent that regret is better suited to some of these goals, it should be more likely to be expressed by individuals who have those goals chronically active. We therefore examined the relationship of the expression of regret to one set of trait-level motivations, the Interpersonal Orientation Scale (Hill, 1987). The IOS consists of 4 chronic goals for interactions with others: attention, social comparison, positive stimulation, and emotional support. Emotional support is most closely linked to our concept of social closeness, and we expected it to be significantly associated with the frequency with which individuals expressed regret. In contrast, attention-seeking is conceptually distinct

from social closeness, and should be unrelated to the expression of regret. Given the importance of both regret and social comparison in strategic behavior (see Epstude & Roese, 2008), we thought a chronic social comparison goal might be weakly related to the expression of regret. Likewise, since the expression of regret might occur as a means to elicit positive interactions, a chronic goal of positive stimulation might be related to expression of regret.

Method

40 participants were recruited from Amazon's Mechanical Turk website. Participants were paid \$0.40 for their participation.

After providing consent, participants first completed the Interpersonal Orientation Scale (Hill, 1987). This scale consists of 26 items composing 4 subscales measuring different chronic motives for interactions with others: attention (e.g., "I like to be around people when I can be the center of attention"; $\alpha = .80$), social comparison (e.g., "I find that I often look to certain other people to see how I compare to others"; $\alpha = .84$), positive stimulation ("Just being around others and finding out about them is one of the most interesting things I can think of doing"; $\alpha = .86$), and emotional support ("One of my greatest sources of comfort when things get rough is being with other people"; $\alpha = .87$). Items were assessed using 5-point Likert scales with anchors "Not at all true", "Slightly true", "Somewhat true", "Mostly true," and "Completely true." The order of items was randomized by the computer.

Participants were next asked how often they talked about their regrets with family, close friends, casual acquaintances, co-workers, on Facebook, on Twitter, on online forums, with support groups such as Alcoholics Anonymous or group

therapy, with a therapist, and with other groups. Participants indicated the frequency with which they expressed regret with each of the 10 audiences using 5 point Likert scales with anchors "Never", "Rarely", "Sometimes", "Frequently", and "Always" and the unscored option "Not Applicable." A composite expression score was calculated as the average of all groups for which the participant provided ratings.

Results

We first examined the simple relationships of each motive with expressed regret. As predicted, the goal of emotional support was significantly related to the frequency of expressing regret, $r = .37, p = .02$. Also as predicted, an attention goal was unrelated to the expression of regret, $r = -.002, p = .99$. Neither positive stimulation ($r = .27, p = .09$) nor social comparison ($r = .22, p = .16$) were significantly related to expressed regret. Comparing these correlations using Steiger's Z-test indicated that the relationship of regret expression to emotional support goals differed from its relationship to attention goals ($Z = 2.14, p = .03$), but not from its relationship to positive stimulation ($Z = 0.84, p = .40$) or social comparison ($Z = 0.96, p = .17$).

Discussion

By examining how chronic goals were related to the frequency of expressing regret, Study 4 provided initial evidence that social closeness, rather than an undifferentiated social function, motivates the expression of regret. Specifically, expression was associated more strongly with the goal of obtaining emotional support from others than with the goal of seeking attention from others.

Although the IOS is a well-validated measure of chronic goals in social interactions and provided an initial examination of the type of social function regret might offer, it was not perfectly suited to the goals of the current research. Positive stimulation in particular bears some similarity to our concept of social closeness, whereas motives that we considered to be clearly unrelated (e.g., seeking power) are not included. Moreover, Study 4 cannot rule out the possibility that the same pattern of results would hold for the expression of all emotions, not just regret. Study 5 therefore attempted to distinguish regret from other emotions by examining a set of motivations that were more conceptually relevant to the PEER model.

Study 5

We wished to distinguish between specific functions of expressing regret versus other negative emotions in general, using a list of 12 negative emotions that have previously been compared to regret (Saffrey, Summerville, & Roese, 2008). We also focused on distinguishing the proposed social closeness function from other clearly divergent functions: attention, power, and obtaining help.

Method

Sixty-one participants were recruited from Amazon's Mechanical Turk and paid \$0.50 for their participation. After providing consent, participants thought about different goals that people might have in interacting with others. Participants were prompted with 8 goals, 2 for each function: social closeness ("feel close to others"; "improve relationship with others"); attention ("gain attention from others"; "want others to focus on you"); power ("want other people to think you were important"; "want other people to see you had power or authority"); and help

("want other people to help or protect you"; "want other people to take care of you"). The order of the 8 goals was randomized by the computer.

For each goal, participants first imagined that goal for 15 seconds, and then indicated whether they had ever experienced that goal. If they had, they ranked 12 negative emotions in order from the most to least by how likely they would talk about them when they had that specific goal: anger, anxiety, boredom, disappointment, disgust, fear, frustration, guilt, jealousy, regret, sadness, and shame. Items were always presented in alphabetical order. A mean score for each function of each emotion was calculated by averaging together the rank positions of the emotion for the two goals of that function. These values were then subtracted from 13, meaning higher numeric values represent higher rankings.

Results

We eliminated one participant who had ranked the emotions in alphabetical order (their initial position) for every ranking, suggesting that this participant failed to perform the ranking task. Not all participants reported having experienced all functions: 1 participant reported having never experienced either closeness goal; 7 had never experienced either attention goal; 21 had never experienced either power goal; and 17 had never experienced either help/resources goal. Because the rank-ordering item only appeared for goals that the participant had experienced, 59 participants provided ratings for closeness, 53 for attention, 39 for power, and 43 for help.

As in Study 4, we wished to establish that expressing regret has a specific social closeness function. To test this prediction, we examined whether the rank for

regret was significantly higher on the social closeness items than the other three functions. Planned pairwise contrasts showed that the mean rank was significantly higher for closeness than the other three functions: attention versus closeness, $M_s = 5.05$ vs. 6.64 , $t(52) = 3.28$, $p = .002$; power versus closeness, $M_s = 5.00$ vs. 6.80 , $t(38) = 2.56$, $p = .02$; help versus closeness, $M_s = 5.23$ vs. 6.81 , $t(42) = 2.69$, $p = .01$.

We next wished to show that expressing regret had a different social function than expressing other negative emotions. To do this, we first conducted a simple contrast in a one-way ANOVA to identify the emotions that had a mean rank for social closeness significantly lower than did regret ($M = 5.73$): anger ($M = 5.22$, $F(1, 58) = 4.71$, $p = .03$), disgust ($M = 4.93$, $F(1, 58) = 9.88$, $p = .003$), jealousy ($M = 4.59$, $F(1, 58) = 15.48$, $p < .001$), and shame ($M = 4.56$, $F(1, 58) = 16.08$, $p < .001$).

To the extent that regret offers a different social function than other negative emotions, we would expect the relative rank scores of this set of emotions to change for the other social functions, so that one or more of these emotions would be ranked significantly higher than regret for one or more other functions. We therefore conducted multiple 2 (emotion: regret vs. other) X 2 (function: closeness vs. other) ANOVAs comparing regret to each of these other emotions for closeness and each alternative function. These analyses revealed that whereas regret was ranked higher for closeness than each of the other functions, the opposite was true for anger, disgust, and shame (see Table 2). Specifically, comparing regret and anger, the relative rankings for closeness versus each of the other 3 functions differed significantly (attention $F(1, 52) = 22.68$, $p < .001$; power $F(1, 38) = 25.33$, $p < .001$; help $F(1, 42) = 6.08$, $p = .02$). Regret and disgust also differed in rankings for

closeness versus attention ($F(1, 52) = 12.71, p = .001$), power ($F(1, 38) = 14.94, p < .001$), and help ($F(1, 42) = 9.60, p = .003$). Regret and shame had different ranking scores only for closeness versus help, which did not differ for shame but did for regret (attention $F(1, 52) = 12.03, p = .14$; power $F(1, 38) = 0.002, p = .96$; help $F(1, 42) = 4.95, p = .03$). These emotion by function interactions indicate that regret is not seen as a consistently more beneficial emotion to express across all functions. Instead, regret has a unique social closeness function, differing both from other functions of regret and from the rated functions of other negative emotions.

Discussion

Regret is seen as relatively better at serving a social closeness function than other functions, indicating that the expression of regret has a particular function rather than having a diffuse social benefit. Moreover, it is seen as significantly better than anger, disgust, jealousy, and shame at serving a social closeness function but worse than both anger and jealousy in obtaining attention and worse than both disgust and anger in displaying power.

Study 5 compared regret to 12 different emotions on four potential functions of negative emotion. Although rank-ordering creates dependencies in the data (i.e., 11 degrees of freedom in ranking 12 emotions), we concentrated analyses on the 4 emotions for which regret was ranked more highly on social closeness: anger, disgust, jealousy, and shame. Using only 5 of the 12 emotions helps minimize these potential dependencies. Our procedure also involved multiple independent comparisons, leading to an overall error rate potentially greater than the conventional $\alpha = .05$. However, only 2 of the 8 significant contrasts would not meet

a more conservative Bonferroni-corrected threshold of $\alpha = .004$, supporting the same substantive conclusion that the expression of regret has specific benefits to closeness rather than a broad and non-specific social benefit.

General Discussion

Many accounts of regret focus on its functional nature. Past work has focused heavily on a learning and preparatory function, and not examined the social functions of regret. In doing so, the field has largely overlooked the public expression of regret and instead focused on private experience. The current research investigated the proposed PEER model of regret's functionality: private experience serves a learning and preparatory function whereas public expression independently fulfils a social closeness function. The PEER model of regret's functions thus offers a deeper understanding of the functions of expressing rather than merely privately experiencing regret, using both observational and experimental data from diverse samples.

We examined the central hypothesis that expressing regret, both in the highly public context of social media and in the less exposed contexts of existing social relationships, is motivated by a social-closeness goal. Consistent with this hypothesis, Study 1 demonstrated that publically expressed regrets posted to Twitter exhibited a greater focus on social domains and a decreased emphasis on domains associated with learning and preparation (e.g. education, career, and finances) relative to prior research on privately experienced regrets (Morrison & Roese, 2011; Roese & Summerville, 2005). Moreover, the importance of social relationships within a domain predicted the likelihood of individuals publically

expressing a regret from that domain (Study 2). The social-closeness function was also rated as being more relevant to publically expressed regrets compared to privately experienced regrets (Study 3). Furthermore, in Study 3, individuals explicitly endorsed this function more than a learning and preparatory function as a benefit of publically expressing regret. Additionally, regret was related to a social closeness function more than other socially relevant functions (Studies 4 and 5). This pattern of social functions differed from other negative emotions (Study 5).

There are a number of possible reasons why maintaining and improving relationships may be particularly important in the social expression of regret. Sharing feelings of regret could be a form of apology if another person was negatively impacted by the regrettable situation (see Zeelenberg, van der Plight, and Manstead, 1998). Talking about regrets could bring people closer simply because one person is disclosing private information to another (Collins & Miller, 1994). Admitting mistakes and appearing humble could also strengthen social relationships (Hareli & Weiner, 2000). However, there may be non-social functions of publically expressing regret as well. Individuals may express regret as part of a larger desire to “vent” rather than keep emotions “bottled up,” so that the audience of the expressed regret is largely irrelevant. We certainly believe that the PEER model is not an exhaustive account of regret’s functions, particularly for expressed regret. Further research should examine both the functions of the expression of regret, and the circumstances that facilitate it.

One important caveat of the PEER is that expression and private experience are conceptually independent. Publically expressed regrets may not necessarily be

“true” regrets that the individual experiences privately. For instance, the common political apology “I regret if anyone was offended my remarks” may not actually reflect a sense of personal regret but rather be a strategic attempt to repair a damaged image. Furthermore, the motivation for a publicly expressed regret may differ based on whether it is also privately experienced. Future research should investigate the extent to which publically expressed regret does correspond to a privately experienced regret, and the contexts in which they diverge.

Furthermore, it is important to note that the PEER is a model of the possible functions that expressing regret may serve and the motivations that individuals attempt to serve by expressing regret. We have not examined the actual efficacy of regret in serving these goals. It is certainly possible that in actuality, expressing regret will not be universally effective in serving these goals. Such a discrepancy would not be unique to expressed regret. Although there is a substantial body of evidence that the counterfactual thoughts central experienced regret serve learning and preparatory functions (see Epstude & Roese, 2008), in certain contexts these thoughts can instead contribute to faulty reasoning and impair performance (e.g., Petrocelli & Harris, 2011; Sherman & McConnell, 1995). For example, at an extreme case, it seems likely that expressing regret when disclosing infidelity to a romantic partner will not be sufficient to offset the damage to the relationship done by the disclosure. Future work should investigate when the expression of regret is most effective at fostering social closeness, and the mechanisms by which it does so.

This research is thus a first step in understanding the expression of regret in everyday life, rather than an exhaustive account. It suggests that social closeness is

a particularly important function for expressing, rather than merely privately reflecting on, regret. We hope that the PEER model will offer a useful framework for continued exploration both of the social functions of regret and of other functions of expressed regret. Regret is a social emotion, not merely a strategic one, and discussions of its functions should consider this full range of functionality.

Note:

¹ A non-parametric Mann-Whitney U test had an equivalent result, $U = 144.5$, $p = .008$.

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Table 1

Life domains identified in expressed and experienced regret

	Study 1 (Expressed Regret)	Morrison & Roese (2011) US Survey (Privately Experienced Regret)	Roese & Summerville (2005) Meta-analysis (Privately Experienced Regret)
1	Romance (19.7%)	Romance (19.3%)	Education (32%)
2	Friendship (10.5%)	Family (16.9%)	Career (22%)
3	Self (9.8%)	Education (14.0%)	Romance (15%)
4	Leisure (9.0%)	Career (13.8%)	Parenting (10%)
5	Family (8.5%)	Finance (9.9%)	Self (5.5%)
6	Education (3.8%)	Parenting (9.0%)	Leisure (2.6%)
7	Health (2.5%)	Health (6.3%)	Finance (2.5%)
8	Finance (1.4%)	Friends (3.6%)	Family (2.3%)
9	Career (0.8%)	Spirituality (2.3%)	Health (1.5%)
10	Spirituality (0.5%)	Community (1.5%)	Friends (1.4%)
11	Community (0.4%)	Leisure (1.55)	Spirituality (1.3%)
12	Parenting (0.1%)	Self (1.0%)	Community (1.0%)

Note: This table presents the percentage of responses falling into the 12 domains identified in Roese & Summerville's 2005 meta-analysis, and presents data from that meta-analysis (Column 3) and a nationally representative survey (Column 2) for purposes of comparison to the current data in Study 1 (Column 1). Column 1 does not sum to 100% as not all tweets could be identified as being related to a specific domain (e.g., "no regrets", "too many to count", "last night").

Table 2

Mean ranking scores for four functions of negative emotions

	Attention vs. Closeness	Power vs. Closeness	Help vs. Closeness
Anger	7.22 (3.55) vs. 5.33 (3.15)	9.06 (3.04) vs. 5.10 (2.99)	5.81 (3.24) vs. 5.37 (2.92)
Disgust	5.83 (2.46) vs. 5.10 (2.00)	7.26 (2.68) vs. 4.94 (2.23)	5.17 (1.73) vs. 4.54 (1.88)
Shame	3.93 (2.73) vs. 4.57 (2.98)	3.01 (2.29) vs. 4.85 (3.12)	4.78 (2.90) vs. 4.70 (3.09)
Regret	5.05 (2.43) vs. 6.64 (3.19)	5.00 (2.18) vs. 6.80 (3.31)	5.23 (2.61) vs. 6.81 (3.07)

Note: Means (standard deviation) are presented for the mean ranking score (1-12 range) of each emotion for closeness versus each other potential function. Higher mean scores correspond to a higher average ranking. Because some participants did not rate one or more functions, the means represent the values for participants who provided ratings of both functions.

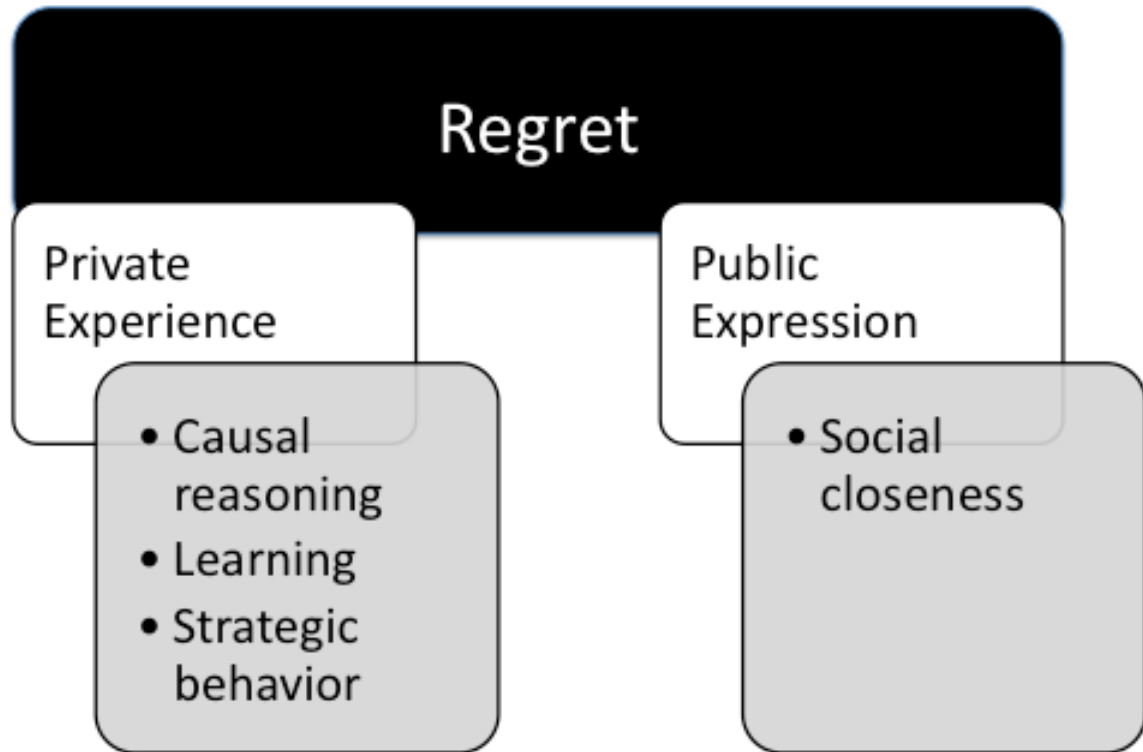


Figure 1. Schematic of the proposed PEER Model of functions of the private experience and public expression of regret.

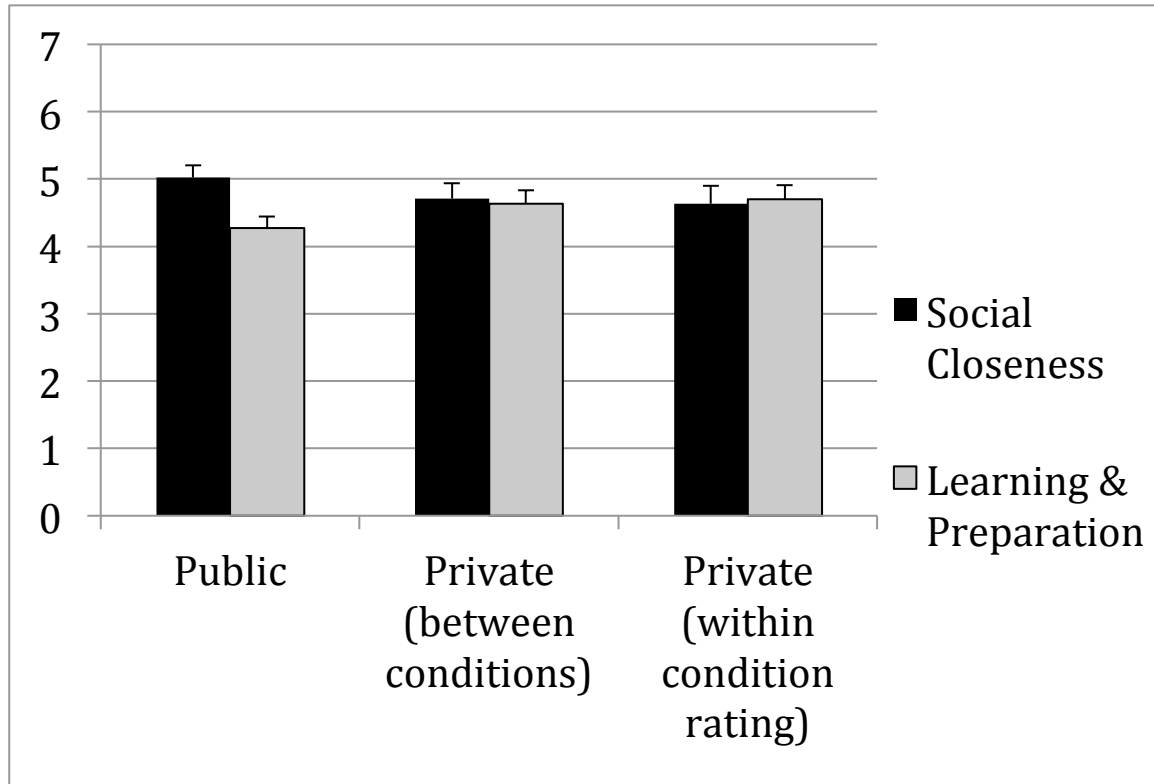


Figure 2. Mean ratings of social closeness and learning/preparation functions in Study 3, with standard errors. “Between conditions” ratings of privately experienced regret were made by participants who considered each function only in relation to a privately experienced regret. “Within condition” ratings of privately experienced regret were made by participants first asked to consider each function for a publically expressed regret (shown as “Public”), and then asked to consider each function in relation to the private experience of this publically expressed regret.