Interpersonal Emotion Regulation and Online Support for Depression: A Review

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Abstract

Online social interactions have become commonplace as social media sites like Facebook and Twitter have risen in popularity. People frequently share about life events, emotions, and even mental health concerns, and there is evidence to suggest that in many cases online sharing can be beneficial in decreasing negative emotions and widening peoples' social support networks. Research is increasingly focused on the relationship between social media and mental health concerns like depression, but findings are often mixed, or even contradictory, and many questions remain open for future research. Understanding how people with depression use social media and interact with others online to regulate their symptoms is important in guiding future research and developing online interventions. This literature review proposes that interpersonal emotion regulation can be applied as a framework by which to better understand how people with depression interact online and seek out social support, and addresses directions for future research.

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People experience a wide array of emotions, and sharing with others is one of the most commonly used means of emotion regulation (Brans, Van Mechelen, Rimé, & Verduyn, 2014). People tend to reach out to others in times of emotional distress rather than try to regulate negative emotions and events on their own (Levy-Gigi & Shamay-Tsoory, 2016), and this tendency stems from the belief that others will increase the support-seeker's ability to cope, lower stress, and provide the necessary resources (Cohen, 2004). The belief that others can provide relief and support in times of emotional distress promotes help-seeking behaviors, and influences us to view others as "social magnets," bringing us to seek out others to fulfill regulatory goals (Zaki & Williams, 2013). Such social sharing fosters empathy, and support within social networks (Zaki & Williams, 2013).

What used to be a largely in-person phenomenon can now be observed in online contexts, and as the internet has become more ingrained in society and everyday life, self-disclosure online has increased (Zhang, 2017). This online sharing trend is important because social media use has been increasing over time (Primack, Shensa, Escobar-Viera, Barrett, Sidani, Colditz, & James, 2017: Smith & Anderson, 2018); sites like Facebook and Twitter now tout user populations of 1.4 billion and 288 million respectively (Obar & Wildman, 2015). Online expressions of emotion are prevalent in online social network sites like Facebook and Twitter, and in other online platforms like blogs and forums (Rodríguez Hidalgo, Tan, & Verleigh, 2015). It is common to share and respond to posts about life events, both positive and negative, (Zhang, 2017); emotions; and symptoms of mental illness in online contexts (Guntuku, Yaden, Kern, Ungar, & Eichstaedt, 2017).

The research literature on social media and well-being has been largely inconclusive as to whether social media use can exacerbate depressive symptoms or, in some cases, help relieve them. Studies sometimes find a positive correlation between the frequency of social media use and depressive symptoms; for example, positive correlations have been found between symptoms of depression and factors such as negative interpersonal interactions online (Davila, Hershenberg, Feinstein, Gorman, Bhatia, & Starr, 2012), and the number of social media outlets used (Primack et al., 2017). Due to the correlational nature of these studies, however, it is unclear whether these variables are causally related. In addition, not all research finds a relationship between social media use and depression, which in part may be due to different operationalizations of the two variables. A recent review included the following somewhat contradictory statements:

> More depressive symptoms were associated with...time spent on Facebook. [...] Depression was not associated with the following types of Facebook use: time spent on Facebook. (Frost & Rickwood, 2017, p. 593)

To begin solving this contradictory literature, researchers have recently been paying more attention to variables like the users' experience and quality of interactions with individuals in their respective social networks (Davila et al., 2012; Gerson, Plagnol, & Corr, 2017), and individual characteristics of the users, such as personality (Steers, Quist, Bryan, Foster, Young, & Neighbors, 2016) rather than broad measures like "time spent". These more refined types of analysis provide greater depth to the research literature and are a step in the right direction, but the field still lacks a cohesive framework for understanding the impact of social media use on depression, and vice-versa. The primary goal of this literature review is to propose that viewing

social media use through the lens of *interpersonal emotion regulation* (Zaki & Williams, 2013) may provide such a framework.

Social Media: Definitions & Uses

Defining Social Media

Social media is a relatively new phenomena-two of the most popular social media sites, Facebook and Twitter, were founded in 2004 and 2006 respectively-and despite growing research on social media as a whole, there is a lack of theory that guides such research (Obar & Wildman, 2015; Ryan & Xenos, 2011). One difficulty in studying social media is that it is difficult to precisely define, largely due to ongoing changes and advances in technology, in addition to overlapping features between social media sites and technology such as cell phones (Obar & Wildman, 2015; Robinson, Cox, Bailey, Hetrick, Rodrigues, Fisher, & Herrman, 2016). Carr and Hayes (2015) define social media as "Internet-based, disentrained, and persistent channels of mass personal communication facilitating perceptions of interactions among users, deriving value primarily from user-generated content." While this definition is broad and describes a variety of online outlets and activities, it is nonetheless important to define for the sake of this review.

An important note about Carr and Hayes' definition is that it encapsulates not only popular social media sites like Facebook and Twitter, but also forums and blogs. While perhaps not thought often thought of as social media in the popular sense, they fit into Carr and Hayes' definition and are another context in which to study online sharing. One way that sharing on forums does differ from sharing on sites like Facebook and Twitter is that they are typically anonymous and can also be centered around specific concerns, such as depression (Horgan et al.,

2013). The "lifeblood" of social media is user-generated content; comments on others' posts, status updates, and posting pictures are just a few examples (Obar & Wildman, 2015).

Because "standard" social media outlets, forums, and blogs represent a variety of ways people might regulate their emotions through interpersonal sharing, for the purposes of this literature review, "social media" will refer to the popular sites Facebook, Twitter, and Instagram in addition to other forms of online sharing found on forums and blogs.

Uses of Social Media

Broadly speaking, the primary use of social media is to interact with others. For example, Whiting and Williams (2013) posit that social media use can be viewed through the lens of the uses and gratifications theory; this theory helps to explain the perceived benefits of using social media and why it is prevalent. They interviewed twenty-five social media users and identified ten uses and gratifications that were commonly reported. These were: social interaction, information seeking, passage of time, entertainment, relaxation, communicatory utility, convenience utility, expression of opinion, information sharing, and surveillance/knowledge about others. Social interaction was the most frequently reported use, with 88% of the sample mentioning this as a reason they used social media, suggesting that interpersonal interactions on between users are common, and an important part of why people use social media in the first place.

This social interaction can, however, come in different forms. One common way of characterizing interaction with social media is by contrasting passive vs. active use (e.g., Gerson et al., 2017). According to Gerson et al. (2017), Facebook users typically fall into one of three categories: Active Social, Active Non-Social, and Passive. Active Social users interact with friends regularly and write or share their own posts, in addition to responding to others' posts.

They are also more likely than other categories to use the social features of Facebook, such as commenting on or liking posts. Active Non-Social users write and share posts, but don't usually interact with friends like the former type. They are likely to engage in short bursts of Facebook use at a high frequency, and may use Facebook as a means of staying up-to-date with friends and current events. Finally, Passive users neither share nor interact with friends, and engage in passive activity such as scrolling through their news feed or viewing others' profiles, and do not engage with the social features such as commenting or posting.

Several lines of research have found that personality and motivational factors influence how people use social media and whether they are active or passive users. For example, Gerson et al. (2017) found that both types of active use (Active Social and Active Non-Social) were related to reward sensitivity and impulsivity, with higher levels of both predicting more engagement with Facebook features. Passive use, on the other hand, was associated with the "Flight-Freeze-Flight" system (Gerson et al., 2017); a system indicative of avoidance behaviors aimed at evading threat. In line with the Gerson et al. (2017) findings, other research has found that traits like extraversion predict greater frequency of use (Ryan & Xenos, 2011; Steers et al., 2016), particularly with the more "communicative features" of Facebook, such as the Wall and Messenger (Ryan & Xenos, 2011). In contrast, loneliness is positively correlated with more passive use of social media, such as scrolling without engaging in online activity (Ryan & Xenos, 2011).

While these personality factors play a role in how people engage with social media, the type of content people share depends on several factors. For example, in a study that looked at differences in self-disclosure of participants who were users of both Facebook and Twitter, Choi and Bazarova (2015) highlighted the importance of how the audience characteristics, such as a

desire for privacy, might influence self-disclosure. They suggest that differences in online sharing may be site-relevant, and that people often gauge sharing based on online "cues." They hypothesized that self-disclosure would be more prevalent on Facebook than Twitter, due to the more private nature of Facebook. They analyzed college-aged participants' five most recent Facebook updates, and five most recent Twitter posts. The posts were coded for the presence of self-disclosure statements, and participants were asked to rate the "intimacy level" of the information they shared in their posts. In line with their hypothesis, the authors found that students had more "intimate" self-disclosure on Facebook than on their public or private Twitter accounts. They claimed that self-disclosure can be influenced by a variety of factors including "interaction directedness and network visibility" (pg. 481), and that the underlying motive of disclosure online is related to expression of emotions and cultivating social networks. They acknowledge that social media offers an outlet for social validation and self-expression that can be exhibited to a wide "audience"

Even in more "public" type posts on Facebook, users do engage in self-disclosure of negative and positive emotional states. In a study that analyzed participants' Facebook status and comment data, Settanni and Marengo (2015) found that younger social media users (ages 18-25) used more emotion-related words and emoticons in their posts than older social media uses (ages 26-60). Moreover, the use of emotion words and emoticons was related to participants' scores on self-report measures of depression and anxiety, particularly among the younger group. Participants with more depressive symptoms used a greater amount of negative emotion indicators, and fewer positive ones, than participants with lower depression scores. These findings speak to the emotional nature of social sharing on Facebook: younger people,

particularly those with symptoms of mood disorders, express their negative emotions in their posts more than older people.

Sharing about negative emotions is common (Zhang, 2017) and while disclosing about negative emotions or events can result in increased support, responses to the sharer may be dependent on the content and the positivity or negativity of the post (Forest & Wood, 2012; Park, Lee, Shablack, Deldin, Ybarra, Verduyn, 2016). This finding is somewhat conflicting, as some research has shown that negative posts yield greater support (Rodriguez Hidalgo et al., 2015), highlighting that that there are many factors at play in how people benefit from sharing. As mentioned previously, sharing may be context-dependent, as different sites offer different audiences and modes of sharing (Choi & Bazaraova, 2015). Consistent with the model of interpersonal emotion regulation, which indicates that sharing about emotions may be, among other things, response-independent or response-dependent, the benefits that online sharers experience depend on a variety of these and similar factors.

Depression and Emotion Regulation

Globally, depression is a serious health concern and leading cause of disability and reduced functioning, which contributes to high economic costs and affects over 300 million people (Boerema et al., 2016; World Health Organization, 2018). Despite high rates of depression worldwide, it is underdiagnosed, and many people with depression do not receive adequate treatment (Guntuku et al., 2017). One reason that depression may be undertreated is that help-seeking behaviors among populations with high rates of depression, such as college students, are often low (Horgan et al., 2013). “Help-seeking” refers to using services such as primary care, psychologist, psychiatrist, or mental health specialist for symptoms of mental illness or other concerns (Boerema, Kleiboer, Beekman, van Zoonen, Dijkshoorn, & Cuijpers,

2016). Help-seeking behaviors are influenced by factors such as cost of treatment, availability of therapists or other professionals, and stigma (Richards & Timulak, 2012). For people that are reluctant to seek help in person, online behaviors such as sharing on social media and/or mental health forums may provide a cheap and potentially anonymous alternative. One difficulty with this alternative use, however, is that the emotion regulation strategies used by people with depression may impair their ability to benefit from this type of support.

Over the last decade, the role that emotion regulation plays in the onset and maintenance of depression has become of interest to researchers (Aldao, Nolen-Hoeksema, & Sweizer, 2010). Emotion regulation, as defined by James Gross, is a set of "processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998). Research on emotion regulation has long been influenced by Gross' process model. This model states that emotion regulation is a complex process consisting of 4 main steps: situation selection (choosing whether or not to be in a certain situation by "approach" or "avoidance"), situation modification (intentional efforts to reduce the stress of a situation, or "problem-focused coping"), attentional deployment (how much or little attention and thought is given to a stressor), and cognitive change (how a situation or stressor is interpreted, processed, and subsequently perceived) (Gross, 1998).

Major depression is characterized by emotion dysregulation and "aberrant" emotion regulation strategies. Emotion dysregulation refers to the selection of unhelpful or maladaptive coping strategies; the selection of these maladaptive coping strategies can exacerbate symptoms, and a lack of guidance on adaptive alternatives reinforces the "unskillful selection" of such strategies (Liu & Thompson, 2017). In addition, common symptoms of depression, such as feelings of sadness or hopelessness and reduced interest in previously enjoyed activities, often

impair social interactions and cause difficulty in functioning (American Psychiatric Association, 2013). Emotion dysregulation may play a role in this impairment of social interactions in people with depression.

Consider, for example, the use of rumination in people with depression. Rumination is an extensively researched maladaptive coping strategy in which the individual directs repeated attention to their emotions and what these emotions mean (Liu & Thompson, 2017), and is known to be strongly associated with depressive symptoms (Nolen-Hoeksema, 2000). Although much of the research on rumination has focused on its intrapersonal effects on the ruminator, it may have interpersonal consequences as well. For example, one study found that the relationship between depression and negative interpersonal interactions was strongest in people with high levels of rumination (Davila et al., 2012), suggesting that rumination might have a social cost.

People with major depressive disorder are also likely to use emotion regulation strategies that match their current emotional states. For example, a person with depression who is feeling sad may seek out sad stimuli over happy stimuli (Liu & Thompson, 2017). This "attentional bias" away from positive stimuli and towards stimuli that matches their negative emotional state is thought to be the result of the arduous process of disengaging from negative stimuli and re-directing one's attention (Marroquin, 2011). Attentional bias may be linked to withdrawal, another common maladaptive behavior that people with depression exhibit (Liu & Thompson, 2017). Like attentional bias, withdrawal can be detrimental and exacerbate depressive symptoms because depressed individuals may miss out on sources of positive emotion: for example, distraction from rumination, support from sharing with a close friend, and the cognitive problem

solving that can result from expressing emotions and thoughts with others (Liu & Thompson, 2017).

As mentioned previously, there are a great deal of inconclusive findings on the relationship between social media and depression. One thing that has been consistently shown in the literature, however, is that people with depression use the internet to share about life events and emotions (Zhang, 2017). Social support, or the lack thereof, plays an important role in the symptoms of major depressive disorder, and social media, forums, and blogs allow users to reach friends, family, and acquaintances all over the world (Facebook). The research on emotion regulation strategies used by people with depression, however, has thus far focused on internal coping strategies, while neglecting interpersonal ones (Liu & Thompson, 2017). Interpersonal emotion regulation is important to understand in the context of depression considering the strong effect that interactions with others can have on depressive symptoms (Liu & Thompson, 2017).

Interpersonal Emotion Regulation

Using social support through interpersonal emotional regulation is a way to reduce stress and negative affect, as well as increase positive affect, and can evoke empathy and understanding, increase behaviors that are considered prosocial, and help individuals to both give and receive support. To help unify prior research on how people use social interactions to influence mood, Zaki and Williams (2013) developed a model of interpersonal emotion regulation that may be useful for organizing the literature on social media and depression. As a framework, the model helps to explain how and why people share about emotional states or experiences in order to regulate their own mood (intrinsic) or the mood of others (extrinsic). It further posits that sharing with others in the context of a live social interaction can be response-dependent (when successful regulation depends on the listener's response) or response-

independent (when successful regulation occurs regardless of listener response), and fulfills regulatory goals of the people that use them.

The research literature on interpersonal emotion regulation has thus far been used to explain in-person interactions between two or more people, a sharer and a listener (Zaki & Williams, 2013; Levi-Gigi & Shamay-Tsoory, 2016). Online outlets provide a unique platform for studying social interactions and emotional sharing because they typically consist of a wide audience made up of individuals that the sharer may not interact with in everyday life (Choi & Bazarova, 2015). They offer people a chance to connect with others, fulfilling Zaki and Williams' stipulation that interpersonal emotion regulation occurs in social contexts (2013), and it has been shown that people utilize online outlets (social media, blogs, and forums) to share about negative events and emotions (Zhang, 2017).

Intrinsic Interpersonal Regulation

Zaki and Williams (2013) define intrinsic interpersonal regulation as "episodes in which an individual initiates social contact in order to regulate his own experience." During intrinsic emotion regulation, a negative emotion acts as a "motive" for which someone seeks out another for support and to decrease negative affect. Most of the research on social sharing in depression can be categorized as intrinsic, in that it focuses on the depressed person's use of social media for sharing about their own mood.

The prevalence of intrinsic interpersonal sharing has been well-documented in both in-person (Brans et al., 2014; Levy-Gigi & Shamay-Tsoory, 2016) and online (Rodriguez Hidalgo et al., 2016; Forest & Wood, 2012; Park et al., 2015; Zhang, 2017) contexts. Emotion regulation during in-person sharing situations has been found to be dependent on factors such as "the nature of the emotion, the timing of possible sharing effects, and the multi-componential character of

emotion," and the effects of sharing negative emotions are complex (Brans et al., 2014). Park et al. (2016) posits that people with "latent social ties," or underdeveloped relationships with acquaintances, can benefit from Facebook because it allows these ties to be easily strengthened, and therefore increases their social support and gives them outlets they may not have in-person. Similarly, Zhang (2017) has described a "stress-buffering effect" for Facebook users who share online after a negative event in a study that examined self-disclosure in college students. The results of this study provided evidence for "enacted social support" in the wake of stressful life events.

The anonymity of forums and blogs allows perhaps allows for greater intrinsic interpersonal regulation for people who are uncomfortable sharing intense personal information on non-anonymous sites like Facebook and Twitter (Hidalgo et al., 2015). Online forums have been shown to be effective for "increased empowerment and self-efficacy, enhanced coping strategies, and reduced social isolation" (Horgan et al., 2013). Horgan et al. (2013) conducted a study in which they assessed online sharing on mental health forums, and found that two commonly reported concerns on online depression forums are loneliness and a lack of socialization skills. Online outlets can therefore provide social support for people experiencing negative emotions and life events, and reducing the impact of negative life events by connecting with others (Zhang, 2017). In addition to social and peer support, online outlets also offer a means of open access to important and mental-health relevant information (Melling & Houget-Pincham, 2011).

Response-Independent Intrinsic Regulation. Response-independent emotion regulation requires a listener, but does not require that the listener responds in a certain way. Certain regulative mechanisms, such as labeling of felt emotions, may occur during the sharing process

that helps the sharer to feel better despite the response, or lack of response, from the listener (Zaki & Williams, 2013). Labeling occurs when one identifies what emotion they are feeling and how it may be affecting them; this mechanism helps make meaning of an emotional experience (Greenburg et al., 2017).

Labeling can occur in online sharing situations. Facebook, for example, is one social media outlet in which a great deal of sharing occurs, and sharing is often centered on negative events (Zhang, 2017). Since Facebook enables users to write and post statuses, with no word limit like Twitter, a person with depression might use Facebook to write an emotional post that expresses negative emotions, and in the process of doing so, feel better because they sort through their thoughts in the process. After posting their status, their words and emotions are available for public viewing and for their Facebook network of friends, family, and acquaintances to react to, but someone attempting to regulate their emotions through response-independent intrinsic means would feel better even in the absence of responses. This benefit, however, requires the user to take an active, not passive, approach to using social media. There is also a possibility that non-depressed readers of the post may subsequently disengage from the depressed poster. In the previously discussed study by Davila et al., 2012, high rumination strengthened the relationship between negative interpersonal interactions and depression. It is possible that public labeling may help the depressed person feel better, but paradoxically lead to poor interpersonal interactions later on.

Response-Dependent Intrinsic Regulation. In comparison, response-dependent sharing requires that the listener respond in a certain way; this may include responding in a supportive or empathetic manner (Zaki & Williams, 2013). Supportive others can provide a “safety signal” by

which sharers feel that they are not alone (Zaki & Williams, 2013). The following quote from Rodriguez Hidalgo et al. (2015) illustrates this point:

> Affective feedback functions as a 'buffer' of the initiator's emotional experience, taking the shape of appeasement, comfort, love, care, availability, proximity, contact, support, esteem, validation, listening, understanding, unconditional support and integration (pg. 366).

Looking at the previous example of labeling, the same situation can be applied to response-dependent sharing. If the person's intention is to engage in labeling, the generation of the post and the thought that went into it was enough to regulate their emotions, at least for the time being. In contrast, someone engaging in response-dependent sharing is looking for affective feedback, and would require a particular type of response from someone in their social network.

For people with depression, if social sharing requires a particular type of response to be effective online sharing of emotions could backfire. For example, social media users with depression may experience deficits in their perception of how much support they actually receive (Park et al., 2016). In a study by Park et al. (2016), participants' Facebook data (status updates, comments) were collected from a one month period. In addition to this, perceptions of social support on Facebook were measured using Cutrona and Russell (1987) Social Provision Scale, adapted specifically for Facebook support. As hypothesized, they found that whereas greater disclosure of emotions revealing depressive symptoms resulted in greater social support (feedback from social networks), perception of the amount of social support received was negatively correlated with depressive symptoms. That is, although people with depression were receiving a high amount of social support online, they did not perceive that they were. This concerning finding highlights the importance of understanding the ways in which people with

depression interact online, and how their interactions might differ from non-depressed users. It also brings up questions about what kind of response people with depression are looking for.

Considering the interactive nature of social media and online outlets, users have many options for posting something online that invites feedback. If they share about a negative event and want a response that elicits comforting words or advice from others, feedback could come in the form of a supportive comment from a friend, family member, or acquaintance. Topic-specific mental health forums offer an outlet for sharers to receive advice or feedback from others with similar concerns and can be a sounding-board of sorts for those seeking advice; these forums can be used to give and receive both "emotional" and "informational support" (Horgan et al., 2011). Zhang (2017) labeled the positive benefits that come with sharing stressful life events with social networks"stress-buffering" and conducted a study that found evidence to support that sharing "intimate and intentional" information resulted in higher social support.

Hidalgo et al. (2015) conducted a case study that looked at social sharing of emotion (SSE) in an online blogging site called Live Journal. They hypothesized that for SSE online, affective feedback occurs more often than cognitive feedback, emotional and empathic support is more intense for negative posts, and admiration is more intense for positive posts. Researchers coded blog posts for the extent of emotional sharing, categorized by partial initiation or full initiation and type of event shared (situational or feelings-based). They then rated audience feedback for "emotional support intensity", "empathy intensity", and "admiration intensity." Their hypotheses were supported by the results. Despite the fact that this study looked solely at blogging, a largely personal form of sharing, some of the results may translate to other online forms of sharing such as social networking. The "full initiation" of SSE in a large percentage of analyzed posts indicate that sharers were expressing themselves in a way that invited feedback.

This suggests that one of the goals of emotional sharing is a supportive response, which would constitute response-dependent sharing.

Extrinsic Interpersonal Regulation

Zaki and Williams (2013) define extrinsic emotion regulation as "episodes in which a person attempts to regulate another person's emotion." A major component of extrinsic emotion regulation is empathy, and includes the goal of regulating a sharer's emotion (Zaki & Williams, 2013). This type of emotion regulation has not been as well documented in research literature as has intrinsic interpersonal regulation. While it does not speak as much to how people with depression utilize social networking for regulation of their own emotions, it does offer insight into social networking as a whole. It is also important to understand how people respond to depressed users when they share about negative events and emotions; while research on emotion regulation and depression often focuses on the intrinsic piece, understanding extrinsic regulation gives a more holistic view of interpersonal emotion regulation (Zaki & Williams, 2013).

As mentioned previously, sharing can often yield increased empathy and social support from within the users' social networks. This is not always the case, however, as there is evidence to suggest that people with specific traits, such as low self-esteem, use Facebook in a way that discourages social support and pushes people away; this may be due to especially high negativity within their posts, and decreased likability by people within their social networks (Forest & Wood, 2012). This finding demonstrates another example of how personality and other personal factors influence people's experiences on social media. It is also another example of one of the somewhat contradictory findings on social media use; some people, but not everyone, benefits from sharing about negative events.

As mentioned previously, online forums, sometimes centered specifically on mental health topics such as depression, may provide a unique space for people to access emotional, social, and practical support (Houston et al., 2002). One study in which the effect of positive social interactions on emotion regulation has been documented online was conducted by Dore et al. (2017). In this experiment, participants aged 18-35 interacted in an online platform, and were randomly assigned to one of two conditions: a social regulation condition or a non-social regulation condition. Each condition had participants first write about a distressing experience, and they subsequently received encouraging feedback in the form of messages from other users. Participants were then required to complete an online training module on how to respond effectively and empathetically to posts that other users had generated about their own distressing experiences. Following the training, they were given the opportunity to freely interact with others online in a variety of ways and respond to others' messages. The structure of the forum instructed users in reappraisal strategies and common "cognitive distortions" that they could bring up in their response posts.

The results of the previous study showed that participants in the social regulation condition who interacted and generated more helping posts were more engaged with the online forum; showed fewer depressive symptoms and greater use of the reappraisal strategies; and had increased psychological benefits, such as greater positive affect, than the non-social control group (Dore et al., 2017). This study demonstrates that people within a depressed users' social network may be motivated by personal emotion regulation factors to offer support or advice; they may reap benefits from it as well.

Response-Independent Extrinsic Regulation. As demonstrated by the previous study, responding supportively to a sharer who expresses negative emotions may make a listener feel

better, subsequently up-regulating their emotions. This can occur even in the absence of cues, such as a thankful response, that their response made them feel better or that they said the right thing; the mere act of engaging in this type of "prosocial behavior" is often enough to increase positive affect, also called "warm glow" (Zaki & Williams, 2013).

· One example of response-independent extrinsic regulation that may occur on social media is that a person could see a friend, family member, or acquaintance's post that conveys their distress or negative emotion. For example, a college student may disclose about stressful life events such as friend or family troubles, academic stress, or sleep problems (Zhang, 2017). If the viewer of the post feels unsettled when reading the post and feels that they should take action somehow, they may comment something positive. Responding to the post with a positive message might produce positive feelings and make the responder feel as though they did a good deed, reducing their discomfort and negative feelings and producing the "warm glow" that Zaki and Williams (2013) discuss.

Response-Dependent Extrinsic Regulation. A listener may require cues from a sharer that their feedback has helped them; this need for feedback constitutes response-dependent sharing. Satisfactory cues may be inferred from things like reduced negative affect; this may result in vicarious affect, in which the listener's affect mirrors the sharer's (Zaki & Williams, 2013). Clearly this type of regulation may be more difficult to discern online, as there is (generally) no face-to-face contact on social media. Therefore, feedback can come in the form of responding to a post, liking a post, or messaging someone.

· One example of response-dependent sharing that could occur on social media is that a person may be scrolling through their newsfeed or in an online forum and see a post in which someone is struggling and shares about their depressive symptoms. In an effort to reduce the

negative emotions that may arise from reading such a post (Zaki & Williams, 2013), the reader may comment on or respond to the post in a supportive manner. For example, they may write "I'm here for you" if someone says they feel alone. Contrary to response-independent extrinsic regulation, response-dependent extrinsic regulation requires a response in order for the supporter's negative affect to be reduced (Zaki & Williams, 2013). For example, the person who wrote the original post may like the person's comment or respond in a grateful manner for the supporter to feel better.

One question that arises for this type of regulation is whether it is made difficult by the nature of online contexts. For example, one important aspect of in-person social interactions that is not present online is social expression, such as facial cues (Zaki & Williams, 2013). Since the supporter cannot see the sharer's face, it is important to understand whether the supporter's affect can be sufficiently regulated. Are features of social media such as "reactions" on Facebook (emojis that convey emotion) acting as a replacement for this type of observable feedback? Another question that arises is whether this type of regulation is at all dependent on the "audience" of the post (Choi & Bazarova, 2015). Social networking enables people to connect all over the world (Facebook), and the relationship between the sharer and supporter may or may not carry over into real life. This raises the question of how the relationship in question influences emotion regulation.

Interpersonal Emotion Regulation Applied

In addition to the importance of understanding the regulatory strategies that people with depression use online, it is important to understand that other factors of online sharing, such as words used, can indicate mental health status; these characteristics of online posts can help to predict mental health concerns, both by users who view the content and by technology (Al-

Mosaiwi & Johnstone, 2017; Settanni & Maraengo, 2015). Identification of depressive symptoms through the monitoring of social media presents an interesting and potentially useful means of intervention and diagnosis. Guntuku et al. (2017) conducted a literature review on studies that have assessed detection methods for assessing mental illness online, and found five studies that have utilized clinical depression screening surveys in addition to participants' social media data (posts, comments, etc.) that they found mostly on Facebook and Twitter.

One program called Linguistic Inquiry and Word Count assesses online text data and identifies target words from a dictionary database; categories of language include self-references, social words, emotions, and overall cognitive words. They also found that current studies use a variety of means to measure depressive symptoms, ranging from programs like the previously mentioned LIWC software, depression inventories, and "self-declared mental health status" based on statements that directly state the presence of a mental disorder (Guntuku et al., 2017). Al-Mosaiwai and Johnstone (2017) conducted a study in which they analyzed forum posts using Linguistic Inquiry and Word Count Software. They used this program to look for "absolutist words," or "words, phrases, and ideas that denote totality, either of magnitude or probability." They hypothesized that absolutist words are found in greatest frequency on suicidal ideation forums, followed by forums for anxiety and depression, borderline personality disorder and eating disorders, and a forum for those in recovery. They found evidence to support these hypotheses, indicating that identifying absolutist words as markers of these disorders was effective. They also found that absolutist words used in a recovery forum were the best indicators of relapse among users.

Future Directions

As technology continues to grow and evolve, research on social media and its effects on depression, and well-being in general, should do the same. With few studies that have explored the longitudinal effects of sustained social media use (Zhang, 2017), it is difficult to tell what effects sustained use will have, and what problems may arise in the future. Despite this, it is clear that social media is becoming an increasingly common form of interaction and that, for better or for worse, it is here to stay.

One positive aspect of social media is that it enables users to engage with each other, and sites can provide an "anonymous, accessible and non-judgmental forum for sharing experiences" (Robinson et al., 2015). Research on online behaviors, such as passive versus active use of social media (Gerson et al., 2017), would benefit from studies that further investigate how passive use plays a role in interpersonal emotion regulation. Even though passive users are not sharing or engaging with others in the literal sense, since even reminders of social media can cause people to feel more socially connected (Knausenberger & Echterhoff, 2018), it is likely that being online would too. Are depressed passive users engaging in a type of interpersonal regulation by being on social network sites, attempting to be in presence of others? (Zaki & Williams, 2013).

Interestingly, a study by Knausenberger and Echterhoff, (2018) found evidence to support that reminders, in the form of icons, of Facebook decreased feelings of loneliness and increased feelings of belonging in participants who were ostracized in the online game Cyberball. These effects were especially high in participants who reported higher levels of "horizontal collectivism," which encapsulates the degree of importance placed on interpersonal interactions. The fact that subtle reminders of social media decrease negative emotions suggests that even checking Facebook, or other sites, is a way that people may regulate their emotions.

An important way that sharing on social media differs from sharing in person is the lack of a physical presence, which is something that Zaki and Williams (2013) cite as important in emotion regulation motivation.

Another aspect of social media that may affect how people interact is the "like." Liking can take somewhat different forms on different sites, but it always results in a notification for the poster, who can see who has "liked" their content. A direction for future research is how this phenomenon affects interpersonal interactions. Liking can presumably be a form of both intrinsic and extrinsic motivation, as someone with depression who posts about negative emotions in the hope that someone will respond (response-dependent intrinsic regulation) may benefit from seeing that someone has acknowledged their post and feel validated, which Zaki and Williams cite as an important piece of intrinsic regulation. Similarly, someone who is seeking to regulate someone else's emotions and needs a response for their negative emotions to be decreased (response-dependent extrinsic regulation) may benefit from seeing that the poster has liked their *response* to a post. Hong, Chen and Li (2017) found evidence to suggest that liking behavior on Facebook can be correlated to the personality traits "interpersonal generosity" and "public self-consciousness," and posit that liking behavior represents a kind of exchange that is similar to gift giving and also manages impressions of other users.

There are certainly positives to online sharing and social networking, such as the enactment of social connections that would otherwise remain dormant (Zhang, 2017). Importantly, it is not that online interactions provide a viable alternative to in-person interactions, but rather that they can complement and strengthen ties with in-person social networks.

As evidenced in research by Al-Mosaiwai and Johnstone (2017), software like LIWC can help to detect many different mental health concerns. It is apparent that people often rely on interpersonal influences to regulate their emotions (Levy-Gigi & Shamay-Tsoory, 2016), but some have highlighted that this may not be a good thing in all cases. Some "drawbacks" of interpersonal emotion regulation include a greater dependence on others, and may "foster passivity, decrease self-efficacy, or prevent the development of freestanding intrapersonal regulation in the individual" (Marroquin, 2011). In light of this, it is important to ask if these same negative effects are concerning in online sharing. Could an "overdependence" of support in online contexts be detrimental to users?

In addition to detecting symptoms of mental illness, social media platforms are a promising avenue of suicide prevention interventions (Robinson et al., 2015). Various characteristics of online forum posts may help to predict suicidal ideation; these include "heightened self-focus, poor linguistic style matching with the community, reduced social engagement, and expressions of hopelessness, anxiety, impulsiveness, and loneliness" (Guntuku et al., 2017). Modes of automatic detection employ algorithms to detect variables such as frequency of keywords, time of day the user posts, and the tone of the post (Guntuku et al., 2017). While more research is certainly needed in this area, online outlets may be able to appropriately supplement or act as an alternative for in-person psychotherapy sessions (Houston et al., 2002). A study by Richards and Timulak, (2012) identified features of online cognitive behavioral therapy (CBT) that depressed clients reported as helpful. Among the features that clients identified, among the most helpful was a supportive and responsive therapist. Multimedia online content also significantly contributed to client satisfaction with the online experience.

Finally, the present review has focused on the observability of online posts and social networking interaction. However, not everyone that utilizes online outlets shares or interacts with others online (Gerson et. al., 2017), and it can reasonably be assumed that many people with depression who experience difficulty in social interactions may not be reaping the benefits of in-person (Marroquin, 2011) or online sharing. As mentioned previously, the mere act of logging onto social media may be enough to down-regulate some negative emotions, such as feelings of loneliness (Knausenberger and Echterhoff, 2018). However, this represents a passive form of social media use and is not an observable phenomenon, nor is it something that fosters interactions with other users. Future research on how best to reach social media users with mental health concerns would benefit from reaching not only those who are active sharers, but also those who may utilize social media often but may not interact often.

Conclusion

In order to make online intervention strategies as effective as possible, it is important to understand how people with depression interact online, both on social media and in more anonymous settings like mental health forums (Park et al., 2015). As technology becomes more advanced and software like Linguistic Inquiry and Word Count software is becoming increasingly adept at detecting symptoms of depression (Al-Mosaiwai & Johnstone, 2017; Guntuku et al., 2017), further research can hopefully identify increasingly effective methods of doing so. One concern for greater utilization of online support is that people with depression may leave or neglect to utilize in-person support, both with friends and family and with professionals. A study by Houston et al. (2002) counters this with evidence from their study which found that some participants who utilized online outlets for social support found themselves more motivated to take an active role in seeking out treatment for their depression; some examples of this

included asking their primary care doctor questions or seeking out a change in medication. Their sample also did not appear to abandon in-person care, but rather used online support as a supplement (Houston et al., 2002). This speaks to the concept of social media contributing to "enacted social support" (Zhang, 2017) and shows that the support that someone with depression receives online may also carry over into in-person situations.

Another area of online sharing that is important to understand is how distress is conveyed and responded to online. Research has shown that people, especially young people, are likely to express suicidal ideation online, and social media is therefore a promising means of suicide prevention strategies (Robinson et al., 2016). While technology is continuing to be developed to detect suicidal language (Al-Mosaiwai & Johnstone, 2017), questions about ethicality in using such technology (Mikal, Hurst, & Conway, 2016), the risk contagion caused by suicidal language, and questions about safety and efficacy (Robinson et al., 2016) remain. With the ability to intervene in such situations, both on the part of computer-mediated interventions and user interventions, certain ethical issues arise such as concerns about privacy and user expectations (Mikal et al., 2016) certainly arise. Views on such issues differ among users, and further research is needed to determine what kind of ethical dilemmas may arise. In a study that examined user attitudes towards "mental health monitoring" on Twitter, Mikal et al (2016) found a range of attitudes and opinions among participants. Many participants endorsed the idea that users should accept conditions of Twitter use, which includes stipulations on privacy considering the sites' public nature. Others still thought that the benefits outweighed the risks, and that Twitter would likely monitor users anyways.

The relatively young age of social media also leaves open many questions about the long-term effects on users (Steers et al., 2017). Research literature suggests that online outlets are an

increasingly popular and prominent means of sharing about negative emotions and events (Zhang, 2017), and are an important target for intervention strategies for depression (Guntuku et al., 2017). While various studies have shown that social media affects people in different ways depending on factors like personality (Steers et al., 2016), self-esteem (Forest & Wood, 2012), mental health status (Park et al., 2015), and age (Zhang, 2017), social media and online sharing is a growing phenomenon with many different areas that require attention (Obar & Wildman, 2015; Robinson et al., 2016).

This review has focused on interpersonal emotion regulation as proposed by Zaki and Williams (2013) and the ways in which people with depression use social media to share and regulate their emotions. As evidenced by the research discussed in this paper, there are interesting parallels between interpersonal sharing in-person and online, as well as important differences, and there are many questions that remain open for future research. As social media continues to grow in scope and user population, it is increasingly important to study how it affects people with mental disorders like depression. Interpersonal emotion regulation is a framework that helps to explain the extent to which people with depression benefit from seeking social support online.

References

Amanda L., F., & Joanne V., W. (2012). When Social Networking Is Not Working: Individuals With Low Self-Esteem Recognize but Do Not Reap the Benefits of Self-Disclosure on Facebook. *Psychological Science*, (3), 295. doi:10.1177/0956797611429709

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review*, *30*217-237. doi:10.1016/j.cpr.2009.11.004

Boerema, A. M., Kleiboer, A., Beekman, A. F., van Zoonen, K., Dijkshoorn, H., & Cuijpers, P. (2016). Determinants of help-seeking behavior in depression: A cross-sectional study. *BMC Psychiatry*, *16*

Brans, K., Van Mechelen, I., Rimé, B., & Verduyn, P. (2014). To share, or not to share? Examining the emotional consequences of social sharing in the case of anger and sadness. *Emotion*, *14*(6), 1062-1071. doi:10.1037/a0037604

Carr, C. T., & Hayes, R. A. (2015). Social Media: Defining, Developing, and Divining. *Atlantic Journal Of Communication*, *23*(1), 46-65. doi:10.1080/15456870.2015.972282

Davila, J., Hershenberg, R., Feinstein, B. A., Gorman, K., Bhatia, V., & Starr, L. R. (2012). Frequency and quality of social networking among young adults: Associations with depressive symptoms, rumination, and corumination. *Psychology of Popular Media Culture*, *1*(2), 72-86. doi:10.1037/a0027512

Doré, B. P., Morris, R. R., Burr, D. A., Picard, R. W., & Ochsner, K. N. (2017). Helping others regulate emotion predicts increased regulation of one's own emotions and decreased symptoms of

depression. *Personality and Social Psychology Bulletin*, *43*(5), 729-739. doi:10.1177/0146167217695558

Gerson, J., Plagnol, A. C., & Corr, P. J. (2017). Passive and Active Facebook Use Measure (PAUM): Validation and relationship to the Reinforcement Sensitivity Theory. *Personality and Individual Differences*, *117*81-90. doi:10.1016/j.paid.2017.05.034

Greenberg, D. M., Kolasi, J., Hegsted, C. P., Berkowitz, Y., & Jurist, E. L. (2017). Mentalized affectivity: A new model and assessment of emotion regulation. *Plos ONE*, *12*(10), 1. doi:10.1371/journal.pone.0185264

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, *2*(3), 271-299. doi:10.1037/1089-2680.2.3.271

Guntuku, S. C., Yaden, D. B., Kern, M. L., Ungar, L. H., & Eichstaedt, J. C. (2017). Detecting depression and mental illness on social media: An integrative review. *Current Opinion In Behavioral Sciences*, *18*43-49. doi:10.1016/j.cobeha.2017.07.005

Hong, C., Chen, Z. (., & Li, C. (2017). 'Liking' and being 'liked': How are personality traits and demographics associated with giving and receiving 'likes' on Facebook?. *Computers In Human Behavior*, *68*292-299. doi:10.1016/j.chb.2016.11.048

Horgan, A., McCarthy, G., & Sweeney, J. (2013). An evaluation of an online peer support forum for university students with depressive symptoms. *Archives Of Psychiatric Nursing*, *27*(2), 84-89. doi:10.1016/j.apnu.2012.12.005

Housten, T. K., Cooper, L. A., & Ford, D. E. (2002). Internet support groups for depression: A 1-year prospective cohort study. American Journal of Psychiatry, 159(12), 2062–2068

Knausenberger, J., & Echterhoff, G. (2018). Recovering from social exclusion: The interplay of subtle Facebook reminders and collectivistic orientation. *Computers in Human Behavior*, *78*298-305. doi:10.1016/j.chb.2017.10.012

Levy-Gigi, E., & Shamay-Tsoory, S. G. (2017). Help me if you can: Evaluating the effectiveness of interpersonal compared to intrapersonal emotion regulation in reducing distress. *Journal Of Behavior Therapy And Experimental Psychiatry*, *55*33-40. doi:10.1016/j.jbtep.2016.11.008

Liu, D. Y., & Thompson, R. J. (2017). Selection and implementation of emotion regulation strategies in major depressive disorder: An integrative review. *Clinical Psychology Review*, *57*183-194. doi:10.1016/j.cpr.2017.07.004

Marroquín, B. (2011). Interpersonal emotion regulation as a mechanism of social support in depression. *Clinical Psychology Review*, *31*1276-1290. doi:10.1016/j.cpr.2011.09.005

Melling, B., & Houguet-Pincham, T. (2011). Online peer support for individuals with depression: a summary of current research and future considerations. *Psychiatric Rehabilitation Journal*, *34*(3), 252-254. doi:10.2975/34.3.2011.252.254

Mikal, J., Hurst, S., & Conway, M. (2016). Ethical issues in using Twitter for population-level depression monitoring: A qualitative study. *BMC Medical Ethics*, *17*. doi:10.1186/s12910-016-0105-5

Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology, 109,* 504-511. doi: 10 I037//0021-843X.1093.504

Obar, J. A., & Wildman, S. Social media definition and the governance challenge: An introduction to the special issue. *Telecommunications Policy*, *39*(9), 745-750.

Park, J., Lee, D. S., Shablack, H., Deldin, P., Ybarra, O., Jonides, J., Kross, E., Verduyn, P. (n.d). When perceptions defy reality: The relationships between depression and actual and perceived Facebook social support. *Journal of Affective Disorders*, *200*37-44.

Primack, B. A., Shensa, A., Escobar-Viera, C. G., Barrett, E. L., Sidani, J. E., Colditz, J. B., & James, A. E. (2017). Use of multiple social media platforms and symptoms of depression and anxiety: A nationally-representative study among U.S. young adults. *Computers in Human Behavior*, *69*1-9. doi:10.1016/j.chb.2016.11.013

Richards, D., & Timulak, L. (2012). Client-identified helpful and hindering events in therapist-delivered vs. self-administered online cognitive-behavioural treatments for depression in college students. *Counselling Psychology Quarterly*, *25*(3), 251-262. doi:10.1080/09515070.2012.703129

Robinson, J., Cox, G., Bailey, E., Hetrick, S., Rodrigues, M., Fisher, S., & Herrman, H. (2016). Social media and suicide prevention: A systematic review. *Early Intervention in Psychiatry*, *10*(2), 103-121. doi:10.1111/eip.12229

Rodríguez Hidalgo, C., Tan, E., & Verlegh, P. (2015). The social sharing of emotion (SSE) in online social networks: A case study in Live Journal. *Computers in Human Behavior*, *52*364-372. doi:10.1016/j.chb.2015.05.009

Ryan, T., & Xenos, S. s. (2011). Who uses Facebook? An investigation into the relationship between the Big Five, shyness, narcissism, loneliness, and Facebook usage. *Computers in Human Behavior*, *27*(5), 1658-1664. doi:10.1016/j.chb.2011.02.004

Settanni, M., & Marengo, D. (2015). Sharing feelings online: Studying emotional well-being via automated text analysis of Facebook posts. *Frontiers in Psychology*, *6*

Smith, A., & Anderson, M. (2018, March 01). Social Media Use in 2018. Retrieved from http://www.pewinternet.org/2018/03/01/social-media-use-in-2018/

Steers, M. N., Quist, M. C., Bryan, J. L., Foster, D. W., Young, C. M., & Neighbors, C. (2016). I want you to like me: Extraversion, need for approval, and time on Facebook as predictors of anxiety. *Translational Issues In Psychological Science*, *2*(3), 283-293. doi:10.1037/tps0000082

Whiting, A., & Williams, D. (2013). Why people use social media: a uses and gratifications approach. *Qualitative Market Research: An International Journal*, (4), 362. doi:10.1108/QMR-06-2013-0041

World Health Organization (2018) Depression. Retrieved from http://www.who.int/en/news-room/fact-sheets/detail/depression

Zaki, J., & Williams, W. C. (2013). Interpersonal emotion regulation. *Emotion*, *13*(5), 803-810. doi:10.1037/a0033839

Zhang, R. a. (2017). The stress-buffering effect of self-disclosure on Facebook: An examination of stressful life events, social support, and mental health among college students. *Computers in Human Behavior*, *75*527-537. doi:10.1016/j.chb.2017.05.043