Social Media Behavior, Toxic Masculinity, and Depression

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Abstract

Social media/social networks (SM/SNs), while ubiquitous in their use, have not been well integrated into psychological theory or practice. Most research addressing SM/SNs has examined frequency and modality of SM/SN use, rather than the valence of online interactions or potential mental health consequences of use. Further, SM/SN use has also not been well integrated with relevant paradigms from the psychology of men and masculinities paradigms. The present study contributes to both of these research need areas by testing the associations among SM/SN use, toxic masculinity, positive or negative SM/SN interactions, and depression among a sample of 402 men. Results of a structural equation modeling analysis indicated that SM/SN use and toxic masculinity were associated with depression. Positive and negative SM/SN interactions mediated the relationship between SM/SN use and depression indicators, and negative SM/SN interactions mediated the relationship between toxic masculinity and depression. Implications for future research directions and for working with men who use SM/SNs are discussed.

Keywords

toxic masculinity; social media; depression

Social media/social network (SM/SN) use is increasingly a predominant means of communication and interaction. Facebook, for example, is used by 68% of adults in the United States for information seeking and social exchange (Greenwood, Perrin, & Duggan, 2016), including communicating with other users, maintaining relationships, and exchanging news (Gottfried & Shearer, 2016; Nadkarni & Hofmann, 2012). Youtube has more than one billion users, and 80% of adults aged 18–49 watch Youtube at least once a month (Donchev, 2016). Reddit, a forum site with subforums devoted to thousands of topics, has an estimated 16 million users in the United States (Barthel, Stocking, Holcomb, & Mitchell, 2010). Instagram, used to post photos and videos, is used by 32% of online adults in the United States (Greenwood et al., 2016). The ubiquity of SM/SNs to modern life and their integration with an enormous range of human behaviors speaks to the need to better integrate SM/SN use with theories of human behavior. Specific domains of SM/SN use may be especially relevant to men. Online interactions may be a fertile ground for

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the enactment of toxic masculinity due to the anonymity, asynchronous interaction, and impersonal interactions that characterize SM/SN use. The present study sought to explore relations among SM/SN use, toxic masculinity, and depression.

SM/SN Use and Depression

There is a growing body of research exploring the relationship between Internet use in general, and SM/SN use in particular, and depression. However, explorations of the relationship between Internet use and depression have yielded mixed results. One study examined rates of depression among 312 Internet users seeking help for Internet addiction. Depression was higher among those seeking information about Internet addiction, compared with norms for the depression measure (Young & Rogers, 1998). In another study of 1,319 residents of the United Kingdom between the ages of 16 and 59, individuals who were heavy Internet users reported more symptoms of depression ($d = 1.92$) compared with matched nonheavy users (Morrison & Gore, 2010). At the same time, other studies have found no relationship between Internet use and depression symptoms (Sanders, Field, Diego, & Kaplan, 2000).

Regarding use of SM/SNs in particular, several studies have reported a positive association between SM/SN use and depression. One investigation of SM/SN use and depression among a sample of 1,787 U.S. adults compared those within the highest and lowest quartiles of SM/SN use (defined as self-reported minutes on SM/SN sites per day). Participants in the highest quartile had increased odds of having depression (adjusted odds ratio = 1.66) compared with those in the lowest quartile of SM/SN use (Lin et al., 2016). However, as with general Internet use, findings of a link between SM/SN use and depression are not consistently supported. A study on SM/SN use and depression among 200 Filipino young adults found no link between SM/SN use and depression ($r = .04$; Datu, Valdez, & Datu, 2012).

The mixed findings on the association between Internet use, or SM/SN use, and depression have prompted the undertaking of more nuanced examinations of depression and SM/SN use. One study of U.S. college students examined depression and SM/SN use by assessing whether individuals who experience a feeling of subordination in response to viewing SM/SN posts from others (called "Facebook envy") had higher rates of depression. Facebook envy was hypothesized to arise from viewing others' posts and photos and comparing idealized portrayals of friends' lives to one's own, resulting in a sense of inferiority. This study found no direct relationship between SM/SN use frequency and depression ($r = .01$). However, Facebook envy did mediate the relationship between SM/SN use frequency and depression. In addition, both the relationships from Facebook use to Facebook envy, and from Facebook envy to depression, were positive (Tandoc, Ferrucci, & Duffy, 2015).

Another study assessed the sense of loss of control over SM/SN use, dubbed "Facebook intrusion," among a sample of 672 Polish Facebook users. Facebook intrusion was operationalized as problematic engagement in Facebook that disrupted daily activities and relationships. There was a positive association between self-reported time spent using the

Internet and Facebook intrusion ($r = .24$), and Facebook intrusion was positively associated with symptoms of depression ($r = .24$). Men were more likely than women to experience Facebook intrusion (effect sizes not reported). However, there was no direct relationship between time on the Internet in general and depression ($r = .08$), suggesting that the affective valance of SM/SN behaviors influences the relationship between frequency of daily Internet use and depression (Błachnio, Przepiórka, & Pantic, 2015).

Based on these findings, we hypothesized that the manner in which one engages with SM/SN would mediate the relationship between SM/SN use frequency and depression. Two paradigms that may be relevant to understanding the relationship between SM/SN use and depression are toxic masculinity and affect-biased attention.

Toxic Masculinity

Hegemonic masculinity is a manifestation of masculinities that is characterized by the enforcement of restrictions in behavior based on gender roles that serves to reinforce existing power structures that favor the dominance of men (Connell & Messerschmidt, 2005; Courtenay, 2000). A subset of hegemonic masculinity is toxic masculinity. Similar to hegemonic masculinity, toxic masculinity is characterized by the enforcement of rigid gender roles, but also involves the "need to aggressively compete [with others] and dominate others" (Kupers, 2005, p. 713). Although toxic masculinity has been the subject of considerable theoretical work, quantitative studies in this area have been limited. Arguably, toxic masculinity has been insufficiently integrated into models of behaviors related to health.

Toxic masculinity is characterized by a drive to dominate and by endorsement of misogynistic and homophobic views. A large body of literature has linked endorsement of misogynistic and homophobic attitudes with scores on measures of masculinity ideology and adherence to masculine gender role conformity (Parent & Moradi, 2011; Wade & Brittan-Powell, 2001). However, limited tools exist with which to measure toxic masculinity. Nevertheless, some aspects of masculinities assessed with existing measures map onto the concept of toxic masculinity. In particular, during the development of the Conformity to Masculine Norms Inventory–46 (CMNI-46), the subscales Winning, Power Over Women, and Heterosexual Self-Presentation, as a set, displayed higher subscale intercorrelations than other pairs of subscales (Parent & Moradi, 2009). This finding has been replicated in other samples of men (Iwamoto, Corbin, Lejuez, & MacPherson, 2014; Parent, Moradi, Rummell, & Tokar, 2011; Parent, Torrey, & Michaels, 2012; Wong, Owen, & Shea, 2012). Parent and Moradi (2011) posited that this triad of aspects of masculinities are united in their emphasis on dominance over others—a particularly harmful aspect of hegemonic masculinity and the basis of toxic masculinity.

Online interactions are a potential fertile ground for the proliferation of toxic masculinity. Many online environments are anonymous, with user names taking the place of actual names and users themselves being generally unidentifiable (Christopherson, 2007; Santana, 2014). Even when online interactions are not anonymous, such as on Facebook, asynchronous and non-face-to-face interactions may be more disinhibited, more volatile, and more prone

to toxicity than live, in-person communication (Lapidot-Lefler & Barak, 2012). Such disinhibition toward negative interactions may be further exacerbated by the accessibility of a wide range of online opinions and the ease with which one may be exposed to opposing opinions. For example: Were an individual to be anti-feminist, enacting those attitudes in person would require finding a feminist group, being available during the time it meets to travel to it, and directly interacting negatively with members of the group.

Online, groups with which one disagrees are readily available. Some persons may easily seek out such material to engage with, or "troll," an individual for expressing opinions contrary to their own (Buckels, Trapnell, & Paulhus, 2014; Herring, Job-Sluder, Scheckler, & Barab, 2002). Even if one does not seek out material with which one disagrees, such material could easily be encountered online. Adherence to toxic masculinity may promote engagement with, and dwelling upon, such negative interactions, as one component of toxic masculinity is a need to dominate interactions. Such negative interactions constitute a form of affect-based attention, and may promote the occurrence of depressive symptoms (Robinson & Alloy, 2003).

Affect-Biased Attention in Emotion Regulation

Cognitive–behavioral therapies have increasingly framed emotion regulation as a key component to handling stressful moments (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Berking et al., 2011). Within such frameworks an important aspect of emotional regulation is affect-biased attention, a process by which "sensory systems are tuned to favor certain categories of affectively salient stimuli before they are encountered" (Todd, Cunningham, Anderson, & Thompson, 2012, p. 365). That is, individuals may be attuned to, initially attend to, and maintain attention to, stimuli that elicit a specific emotional response. Affect-biased attention promotes the maintenance of maladaptive behaviors and cognitions by attuning one to stimuli in the environment that would support the bias. This attunement promotes attentional tracking toward objects known to cause extreme affect, for example, hypervigilance in posttraumatic stress disorder, or anticipatory fear of contact with a particular stimulus in specific phobias.

Morales, Fu, and Pérez-Edgar (2016) proposed a developmental neuroscience model to explain the basis of affect-biased attention. This model focuses on the development of affect-biased attention as a response to threats or rewards. In the context of toxic masculinity, a pervasive need to dominate and control may promote negative engagement with online materials (e.g., reading, responding to, and ruminating over SM/SN content with which one disagrees); successfully enacting toxic masculinity, then, may result in greater negative affect-biased attention, greater negative interactions online, and, ultimately, greater mood disturbances for men. Indeed, in an eye-tracking study of 57 depressed adults, participants who spent more time visually attending to negative words showed worse symptoms of depression during a 5-week longitudinal study (Disner, Shumake, & Beevers, 2017). Toxic masculinity, due to a focus on dominance, may promote attending to material with which one disagrees. As such, we expect a positive association between toxic masculinity and negative online interactions.

Pursuant to the present study, affect-biased cognitions may mediate the relationship between SM/SN use and depression. In particular, individuals may encounter both positive and negative material in various online contexts. Greater attending to negative material (e.g., seeking out material that one will find aggravating or ruminating about a negative interaction online) may be associated with greater levels of distress. At the same time, bias toward positive interactions (e.g., actively seeking out affirming material or reminding oneself of a positive interaction online) may help to buffer against negative emotions. Thus, time spent online may not be an adequate means by which to assess quality of SM/SN interactions. Rather, engagement in self-enhancing SM/SN use (e.g., seeking out supportive interactions) may be associated with lower levels of psychological distress. In contrast, engagement in antagonistic or confrontational SM/SN use (e.g., seeking out confrontation and discord) may be associated with higher levels of psychological distress.

Some aspects of masculinities may also influence engagement in greater attending to negative material online. Although no research has explored the relationship between masculinities and negative interactions online, there is evidence that adherence to masculine gender roles is associated with more hostile or antagonistic interpersonal attitudes toward others, particularly women (Gallagher & Parrott, 2011; Murnen, Wright, & Kaluzny, 2002). Subsequently, it is probable that specific aspects of masculine gender role conformity are associated with greater proclivity toward interpersonal hostility. One such aspect may be toxic masculinity.

Masculinity and Depression

Endorsement of traditional masculine norms and depression have been associated positively in myriad studies (Nadeau, Balsan, & Rochlen, 2016; Rice, Fallon, Aucote, & Möller-Leimkühler, 2013; Rice, Fallon, & Bambling, 2011). However, many investigations of the link between masculinity and depression have focused on examining masculinity broadly, rather than examining theoretically relevant, specific aspects of masculinity. This is inconsistent with more nuanced assessments of masculinity as composed of multiple components. Toxic masculinity is one such form of expression of masculinity, and focuses on a drive to win, homophobia, and misogyny. Adherence to this constellation of masculine norms may increase the frequency or intensity of maladaptive or hostile behaviors, and ultimately men's experiences of depression. For example, in previous studies, scores on the CMNI-46 Winning subscale, which assesses a need to succeed and dominate, have been associated with a variety of negative outcomes, including depression (Wong, Ho, Wang, & Miller, 2017). Scores on the CMNI-46 Heterosexual Self-Presentations subscale, which assesses a desire to present oneself as heterosexual, have been associated with homophobia, restricted affect, and restriction of expression of friendship between men (Parent & Moradi, 2011; Rankin, 2013). Scores on the CMNI-46 Power Over Women subscale, which assesses a desire to maintain patriarchal power structures within one's own life, have been associated with perpetrating unwanted sexual advances (Kupers, 2005; Mikorski & Szymanski, 2017). The relationship between masculinity and depression may be particularly relevant when applied to masculine variations of depression symptoms.

Masculine variations of typical presentations of depression have been termed *masculine depression*. Masculine depression is characterized by pressures felt by men to limit certain emotional expressions. Expressions of vulnerability and introspection are avoided to adhere more closely to masculine norms (Magovcevic & Addis, 2008). The restriction of the expression of depression to stay within the confines of masculine norms can result in deviation from symptoms of prototypic depression (e.g., tearfulness, sadness). Such deviations may be internalizing or externalizing, with externalizing symptoms including behaviors such as outbursts of anger, increases in substance use, and isolation, whereas internalizing symptoms might include feeling numbness, feeling as though one is a failure, or reporting somatic symptoms (Magovcevic & Addis, 2008). Because endorsement of toxic masculinity norms may also be linked to emotional inhibition, assessment of masculine depression as well as traditional expressions of depression is important to capture the range of potential consequences of toxic masculinity and online behaviors. Men who endorse toxic masculinity may seek out negative interactions online, driven by affect-biased attention. Such exposure to negative online interactions may, in turn, encourage the development of both traditional and masculine forms of depression.

The Present Study

The aim of the present study was to undertake an initial exploration of the relations among SM/SN use, toxic masculinity, and depression among men. The theoretical model was primarily informed by research on affect-biased attention and toxic masculinity. Work on affect-biased attention and depression suggests that the relationship between SM/SN use and depression would be mediated by the valence of interactions online, such that positive interactions would be associated with lower depression and negative interactions would be associated with higher depression. Work on toxic masculinity would suggest that higher levels of toxic masculinity would be associated with greater levels of negative interactions online, which in turn would be associated with higher levels of depression. Figure 1 presents the hypothesized and tested direct relationships. Specifically, we anticipated the following hypotheses:

> *Hypothesis 1:* Time spent on SM/SNs would be associated positively with positive and negative online behaviors.

> *Hypothesis 2:* Toxic masculinity would be associated positively with negative online behaviors.

> *Hypothesis 3:* Positive online behaviors would be associated negatively with typical and masculine depression.

> *Hypothesis 4:* Negative online behaviors would be associated positively with typical and masculine depression.

> *Hypothesis 5:* Positive and negative online behaviors would mediate the relationships between time spent on SM/SNs, and typical and masculine depression.

Method

Participants

Participants were recruited via Mturk, a resource for crowd-sourced task completion. Mturk contains numerous opportunities for paid task completion and is a commonly used source of data for research (Buhrmester, Kwang, & Gosling, 2011). Mturk workers complete tasks online, including marketing surveys, research, or text or image evaluation, and are compensated for completed tasks. Although some concerns have been raised about issues such as participant attentiveness during task completion, these concerns can be minimized through the use of attention check items, restriction of access to the task to individuals in the United States, and setting a high threshold for Mturk worker's previous task completions (Goodman, Cryder, & Cheema, 2013; Ipeirotis, Provost, & Wang, 2010; Rouse, 2015), all of which were undertaken in this study.

Participants were a sample of 402 men who ranged in age from 18 to 74 ($M = 33.36$, $SD = 10.98$). Participants identified as White (71%), Asian American (10%), Hispanic/Latino (8%), Black or African American (6%), multiracial (4%), Native American (1%), or another identity (<1%). Most participants identified as heterosexual (89%), gay (5%), bisexual (4%), or another identity (<1%). On a 101-point Subjective Socioeconomic Status scale, participants rated themselves on average 44.90 ($SD = 19.44$; range = 0–93).

Measures

Toxic masculinity.—Toxic masculinity was assessed using three subscales of the CMNI-46 (Parent & Moradi, 2011) that reflect the core aspects of toxic masculinity: sexism, heterosexism, and competitiveness. These subscales were Winning (six items; sample item: "In general, I will do anything to win"), Heterosexual Self-Presentation (six items; sample item: "I would be furious if someone thought I was gay"), and Power Over Women (four items; sample item: "In general, I control the women in my life"). Responses were made on a 4-point scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Validity of the three subscales has been demonstrated through correlations with relevant constructs. For example, in previous research using samples of U.S. college men, the Winning subscale demonstrated positive correlations with measures of masculinity as agency (Bogaert & McCreary, 2011; Parent & Moradi, 2011); the Heterosexual Self-Presentation subscale demonstrated positive correlations with measures of homophobia (Keiller, 2010; Parent et al., 2011); and the Power Over Women subscale demonstrated positive correlation with measures of sexism (Levant, Rankin, Williams, Hasan, & Smalley, 2010; Parent et al., 2011). In the present study, Cronbach's αs for responses to items on each of the subscales were .78 for Winning, .90 for Heterosexual Self-Presentation, and .81 for Power Over Women.

Affect-biased attention in online interactions.—Because no measures exist to assess affect-biased attention in online interactions, we developed a short assessment of positive and negative online behaviors. Positive and negative behaviors were each assessed with four items pertaining specifically to SM/SN use (Item stem: "How often do you …"; Item: "See and read [positive/negative] comments posted in response to things you post online?"; "Respond to [positive/negative] comments posted in response to things you post

online?"; "Think about [positive/negative] things people have said to you online, after you go offline?"; and "Watch videos or listen to audio shows about topics you [like and agree with/don't like and disagree with]"?"). Responses were made on a 5-point scale, ranging from 1 (*never*) to 5 (*very often*). We verified the intended factor structure using a principal axis factor analysis, using direct oblimin rotation. The scree plot suggested two factors, and all items loaded primarily onto their intended factor (i.e., all positive-valence items onto one factor, and all negative-valence items onto the other). Cronbach's αs for responses to the positive and negative item sets were .78 and .77, respectively.

Depression symptoms.—The Patient Health Questionnaire–9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001) was used to assess depressive symptoms (sample item: "Poor appetite or overeating"). Responses were made reflecting the past 2 weeks for the respondent, on a 4-point scale, ranging from 1 (*not at all*) to 4 (*almost every day*). In previous research using samples of college students, adolescents, adult populations, and participants seeking mental health services, the PHQ-9 demonstrated validity via positive correlations with established depression screening tools and clinical interviews (Gilbody, Richards, Brealey, & Hewitt, 2007; Kroenke et al., 2001; Martin, Rief, Klaiberg, & Braehler, 2006). In the current study, the Cronbach's α for responses to items on the PHQ-9 was .91.

Internalizing and externalizing masculine depression.—The Masculine Depression Scale (MDS; Magovcevic & Addis, 2008) was used to measure internalizing cognitions and symptoms, and externalizing behaviors, characteristic of masculine depression. The 44-item scale (sample item: "I've felt trapped.") measures occurrence of symptoms during a 2-week period. Responses were made on a 4-point response scale, ranging from 1 (*none or little of the time*) to 4 (*all of the time*). In previous research using a sample collected from Mturk, total scale scores on the MDS were correlated with scores on measures of depression and masculine gender role conformity (Nadeau et al., 2016). In this study, the Cronbach's α was .87 for the MDS-Externalizing scale, and .97 for the MDS-Internalizing scale.

Procedure

This study was approved by the institutional review board at the first author's institution. Participants were recruited via Mturk. Mturk participants were eligible to participate if they identified as male in their Mturk profile, were located in the United States, and had a previous Mturk task approval rating of at least 95%. All measures were completed online. The survey contained two validity check items (e.g., "Please check strongly disagree"); participants who failed the validity check items were removed from the data set before analyses and are not included in any reporting in the present study. Participants were compensated with $1.50 to their Mturk accounts.

Results

Data Analysis

Data were inspected for univariate and multivariate normality. All variables used in the structural equation modeling analysis met guidelines for univariate normality (Tabachnick & Fidell, 2007); highest skew = 1.48, highest kurtosis = 1.84. To assess multivariate

normality, we used DeCarlo's implementation of Mardia's test (DeCarlo, 1997). This test was significant, and five participants were identified as multivariate outliers with Mahalanobis distances significant at $p < .001$. Removing these five participants had no effect on the results of the analysis. Subsequently, their responses were retained in the data set, and maximum likelihood estimation with robust standard errors was used to estimate the model. Missing data were minimal; a total of seven data points of 10,050 were missing, representing a missing data rate of 0.07%. We used full information maximum likelihood estimation in Mplus to handle missing data in the structural equation modeling and available item analysis (Parent, 2013) to handle missing data in the calculation of descriptive statistics and Cronbach's α coefficients.

Primary Analyses

Table 1 displays the correlations among the variables, means, and standard deviations. Most correlations fell within the moderate range (i.e., near .30). Higher correlations were present for the associations between the three depression indices, consistent with those three measures assessing different aspects of depression. Before conducting the primary analysis in Mplus (Muthén & Muthén, 2012), we constructed item parcels using methods consistent with recommended practices (Little, Cunningham, Shahar, & Widaman, 2002). Specifically, for hegemonic masculinity, we used mean scores on the three CMNI-46 subscales as indicators of the latent variable. For positive and negative interactions, we used all four individual items for each of the two latent variables as indicators of the latent variables. For the PHQ-9 and the two subscales of the MDS, we entered all items into individual principal axis factoring factor analyses, constraining the solution to one factor. We examined factor loading values, and assigned items to parcels in countervailing order.

Primary analyses were run using Mplus. We assessed fit using the confirmatory fit index (CFI), root mean square error of approximation (RMSEA), and standardized root-mean-square residual (SRMR). Adequate fit would be indicated by CFI > .90, RMSEA < .10, and SRMR < .10, and good fit by CFI > .95, RMSEA < .06, and SRMR < .08 (Weston & Gore, 2006). First, we assessed the measurement model, which fit the data very well; $\chi^2(170) = 354.73$, $p < .001$; CFI = .96; RMSEA = 0.05, 0.04, 0.06; SRMR = 0.05. All latent variable indicators loaded onto their intended latent variables at $p < .001$. Most of the covariances in the measurement model were significant at $p < .001$. Exceptions were the covariances between: positive interactions and depression as assessed with the PHQ-9 ($p = .73$), toxic masculinity and depression as assessed by the PHQ-9 ($p = .12$), and positive interactions and externalizing masculine depression ($p = .62$).

Next, we tested the structural model. This model also demonstrated good fit; $\chi^2(173) = 380.82$, $p < .001$; CFI = .96; RMSEA = 0.06, 0.05, 0.06; SRMR = 0.05. Direct path coefficients are displayed in Figure 1. Time spent on SM/SNs was associated positively with positive and negative online behaviors, supporting Hypothesis 1. Toxic masculinity was associated positively with negative online behaviors, consistent with Hypothesis 2. Positive online behaviors were associated negatively with typical and masculine depression, consistent with Hypothesis 3, and negative online behaviors were associated positively with typical and masculine depression, consistent with Hypothesis 4. Table 2 displays indirect

paths from hours of SM/SN use to each of the three dependent variables; all indirect paths were significant, indicating that all posited mediation hypotheses were supported, consistent with Hypothesis 5. R^2 values were .14 for masculine externalizing depression, .27 for masculine internalizing depression, and .09 for depression as assessed with the PHQ-9.

Discussion

The findings of the present study extend research on men's SM/SN use, toxic masculinity, and depression. Relationships between SM/SN use and toxic masculinity to depression, via quality of SM/SN interactions, were consistent with theories of affect-biased attention and toxic masculinity as applied to models of depression. Overall, the results emphasized the mediating roles of positive and negative SM/SN interactions in the relations between SM/SN use/toxic masculinity and depressive symptoms. These findings, outlined in the following text, can be used to advance research and practice with men in the digital age.

First, consistent with some of the past research on SM/SN use, more frequent SM/SN use was associated with higher levels of depression. In addition, SM/SN use was associated directly with traditional depression and masculine externalizing depression, and indirectly associated with both of those forms of depression and masculine internalizing depression via positive and negative interactions on SM/SN sites. Regarding the indirect relations, more frequent SM/SN use was indirectly associated with all three indicators of depression via negative and positive online interactions (i.e., the affect-biased attention measures mediated the relationship between SM/SN use and depression). The affect-biased attention variables mediated the SM/SN use/depression relationships in different directions, such that positive online behaviors appeared to buffer the relationship, whereas negative online behaviors exacerbated it. These results suggest that simple evaluation of time spent on SM/SN sites, without assessment of the valence of interactions, is likely insufficient to understand the role SM/SN use has in men's mood disturbances. Rather, it appears important to understand the ways in which men interact online.

As anticipated, toxic masculinity was directly associated with affect-biased attention, here defined as negative online behaviors. That is, men who more strongly endorsed the dominance–heterosexism–misogyny triad of aspects of conformity to masculine norms were more likely to report negative online interactions. This finding is consistent with past research and theoretical work on toxic masculinity that suggests that adherence to traditional masculinity is associated with maladaptive communication and interaction styles (Burn & Ward, 2005; Coughlin & Wade, 2012; Jakupcak, Lisak, & Roemer, 2002; Rochlen, McKelley, Suizzo, & Scaringi, 2008). The relation between toxic masculinity and affect-biased attention is one of the most notable aspects of this study. In essence, this finding suggests that men who adhere to toxic masculinity may engage in reliably more negative SM/SN behaviors. For example, toxic masculinity may be associated with increased propensity to seek out and read content with which one disagrees, ruminate about disagreements or arguments on SM/SN sites, or make hostile responses to such disagreements. Toxic masculinity is characterized by a need to dominate, antifemininity, and homophobia (Kupers, 2005, 2010; Lorde, 1984; Parent & Moradi, 2011), which were three aspects of masculinity assessed in the present study. It is possible that these three

aspects of masculinity interact in online SM/SN behavior to engender mood disturbances. SM/SN sites are often an outlet for expressing political or ideological positions (Kushin & Yamamoto, 2010; Rainie, Smith, Schlozman, Brady, & Verba, 2012; Shah et al., 2012), sometimes anonymously, generating a limitless stream of stimuli for affect-biased attention to fixate on. A position of antifeminism and homophobia, combined with a hyperfocus on a need to dominate or win interactions, may promote engagement with SM/SN material with which one disagrees, leading to negative SM/SN interactions (Herring et al., 2002; Shaw, 2014).

The indirect relationships from toxic masculinity to the three indicators of depression were also significant, suggesting that negative online interactions mediate the relationship between toxic masculinity and symptoms of depression. This finding is consistent with previous research on affect-biased attention and depression, in that attunement to messages perceived to be negative is associated with mood disturbance (Todd et al., 2012). It is notable that negative online behaviors were associated uniquely and positively with traditional depression, masculinized internalizing depression, and masculinizing externalizing depression. This robust association suggests the need to further assess the role of affect-biased attention in SM/SN involvement as it relates to mood disturbances. In contrast, positive online behaviors, suggestive of a more adaptive affect-biased attention attunement, were associated negatively with all three facets of depression assessed here. This occurred despite the strong positive correlation between negative and positive online behaviors, and suggests that the cultivation of a more positive affect-biased attention may help individuals to reduce mood disturbances.

Implications for Practice

The present results also have tentative clinical implications. First, our hypothesis that toxic masculinity would be associated with higher levels of depression via affect-biased attention (i.e., negative online interactions) was supported. That is, men who more strongly endorse the aspects of toxic masculinity assessed in this study may be more likely to engage with and ruminate on negative interactions online, and may benefit from examination of the purpose and implications of such behavior. Efforts have been made to address affect-biased attention through clinical interventions for a range of topics, including anxiety, pain, obesity, and substance use (Castellanos et al., 2009; McGeary, Meadows, Amir, & Gibb, 2014; Roy, Dennis, & Warner, 2015). Such interventions have principally involved direct practice in shifting attention away from stimuli seen as anxiety provoking, and has shown promise as a novel behavioral treatment approach.

Yet, endorsement of masculine norms is associated with more negative attitudes toward help seeking (Galdas, Cheater, & Marshall, 2005; Möller-Leimkühler, 2002; Shepherd & Rickard, 2012), and as such men high in these norms would be unlikely to seek psychological help for mood disturbances. It may be more effective to engage in outreach either in person or via SM/SNs to address toxic masculinity in online contexts. On college campuses, psychologists might work with student groups involved in either online activities (e.g., gaming student groups) or political groups whose members may be active in online forums. As well, SM/SNs themselves may be harnessed to conduct broad public health

interventions aimed to raise the level of online discourse and discourage negative rumination over material viewed online, using models of successful online public health or awareness interventions (Guo & Saxton, 2014; Obar, Zube, & Lampe, 2012).

Research on SM/SN interaction and depression has led to mixed results over numerous studies. The present study suggests that quality of interactions rather than raw amount of time on SM/SN sites is associated with depression among men. At the same time, our findings are more nuanced with the moderate positive correlation that emerged between positive and negative online interactions. Rather than individuals being divisible into groups of those who primarily interact positively and those who react negatively online, there may be underlying individual personality or circumstance characteristics that promote fixation on online interactions, both positive and negative. Online interactions can be helpful to a range of presenting concerns, including depression (Griffiths et al., 2012; Houston, Cooper, & Ford, 2002), and simply recommending reduced SM/SN time may not be beneficial to patients with depressive symptoms.

Recommendations that patients reduce SM/SN use are unlikely to be successful. Terminating SM/SN use may be highly negatively reinforcing, as such disconnect may inhibit the development and maintenance of real-world friendships (e.g., missing social events that are posted on SM/SNs with the assumption that everyone who might be interested is on a SM/SN site). Further, SM/SN sites do allow for unique social connections and maintenance of relationships, for example, with distant relatives or geographically dispersed friends (Coyne, Padilla-Walker, Day, Harper, & Stockdale, 2014; Dekker & Engbersen, 2014; Shklovski, Barkhuus, Bornoe, & Kaye, 2015; Sosik & Bazarova, 2014). Given the ubiquity of SM/SN sites in modern life, abstaining from their use may not be a reasonable goal for most patients.

Given the integration of SM/SN use into everyday life, it may be reasonable to assess the frequency and valence of SM/SN behaviors at intake with patients. SM/SN use can be assessed as a source of support, connection, or personal development (e.g., using SM/SN sites to maintain connections with family and friends, as a bridge to engage in real-world activities with friends, or to learn about new topics). SM/SN use can also be assessed as a source of negative interactions (e.g., regularly commenting negatively on others' postings or having one's own postings be negatively commented upon, engaging in anonymous online behavior that is antagonistic toward others, regularly choosing to view media that one finds aggravating and frustrating). Modifications to SM/SN use can be implemented in the context of empirically supported interventions. For example, if patients find that they engage in rapid, angered responses to SM/SN posts with which they disagree, they might turn on a mobile device in session, seek out such a post, and go over their reactions in real time with the therapist (akin to an exposure and response prevention paradigm; Abramowitz, 1996).

In another circumstance, a patient may find themselves ruminating over online posts, or being distracted from daily activities by mentally composing responses in their mind while away from a computer. Such behaviors may be amenable to thought-stopping from cognitive–behavioral intervention paradigms (Bakker, 2009), or mindfulness/present-focus interventions from acceptance and commitment therapy (McCracken & Vowles, 2014). As

well, SM/SNs can be leveraged for social support (Merolli, Gray, & Martin-Sanchez, 2013; Oh, Ozkaya, & LaRose, 2014), particularly among individuals who may have limited access to real-world networks (e.g., rural men; Stern & Adams, 2010). Anonymity may also be useful to reducing barriers to help seeking, such as in the use of anonymous support forums for various issues (Powell, Inglis, Ronnie, & Large, 2011; Tsui, Cheung, & Leung, 2010). Providers might encourage patients to leverage such positive aspects of SM/SN use to bolster treatment.

Negative online interactions may also be incorporated into treatment planning. For example, individuals who regularly engage in negative or antagonistic behaviors online could explore the motivation for such behaviors from developmental, dynamic, or social learning paradigms. Such behaviors could also be altered cognitively and behaviorally. For example, if a patient regularly gets into heated discussions online (sometimes called "flame wars") over various issues, these could be addressed in a therapeutic setting. The nature of such postings would allow for the patient to open their SM/SN program and view the material that prompted their reaction in session, and process through how they reacted to it in the moment rather than rely completely on recall and reconstruction of events. Individuals prone to antagonistic interactions online may view stimuli that would provoke such reactions in session, and use in-session opportunities to engage in response prevention and practice emotional regulation.

Given the negative association between conformity to traditional masculinity and attitudes toward psychological help seeking, men high in toxic masculinity are unlikely to present in therapy (Berger, Levant, McMillan, Kelleher, & Sellers, 2005; Galdas et al., 2005; Hammer, Vogel, & Heimerdinger-Edwards, 2013; Möller-Leimkühler, 2002; Vogel, Heimerdinger-Edwards, Hammer, & Hubbard, 2011). However, patients who endorse toxic masculinity and high levels of SM/SN use may also be encouraged to explore their motivations for maladaptive SM/SN use and how such use may negatively influence them or others. Consistent with modern approaches to treating affect-biased attention, patients may be helped to learn to intentionally alter their attentional focus. As well, mental energy and time devoted to antagonistic or aggressive online behaviors might be worked on in therapy to be funneled toward more adaptive or growth-oriented outlets (Jennings & Apsche, 2014).

Limitations and Future Directions

The results of the present study must be interpreted in light of its limitations. First, the data are cross-sectional and thus causality cannot be inferred. There are likely reciprocal relationships present among these variables. For example, externalizing depression may be linked to greater propensity to seek out and respond to aggravating material on SM/SN sites. Longitudinal and experimental research could be used to further explore causality among the variables in the study. Second, we used data collected online from Mturk. Although this allows us to avoid concerns that may be raised with convenience samples of undergraduate men, sampling from Mturk does have limitations. Although extant research on Mturk has suggested that with protocols such as those included in this study (e.g., restricting participation to people from the United States, including validity check items) data integrity can be improved (Rouse, 2015), there is still a risk that participants are paying

minimal attention to items as they complete a study or are engaged in other behaviors (e.g., watching TV) while completing a study. Third, we assessed SM/SN involvement broadly. We made this decision consciously, as SM/SN sites are broad interactive mediums and no validated measures exist of nuanced interactions on SM/SN. Further, assessing the type of social network used (e.g., Facebook, Reddit, Instagram, etc.) may not itself be meaningful. For example, some individuals may use Reddit's active and often volatile political forums, whereas others may use other forums dedicated to funny pictures, science, world news, music, video games, or photographs of baby animals (all subforums with more than 10 million subscribers worldwide). Thus, the medium is not the manner in Internet interaction. The present study would have been augmented by, and speaks to the need for, modern measures of social interaction that address Internet and SM/SN behaviors. Fourth, we relied on use of subscales of the CMNI-46 to assess toxic masculinity; the present study speaks to the need to develop a dedicated measure of toxic masculinity. Finally, our broad assessment of the affective bias in attention in SM/SN use also suggests the need for a dedicated measure that more clearly delineates the use of SM/SN. For example, reactive and hostile responding to online material may have different antecedents and consequences than ruminating carefully for hours over a response. Further, affect-biased attention research often includes behavioral components, such as eye movement tracking. Extension of the current research to such methodologies could be informative. For example, research may assess whether individuals who endorse toxic masculinity also attend visually to stimuli that is perceived as a threat (e.g., to a fake SM/SN post with which they disagree, compared with one with which they agree).

The current research suggests a host of potential future research endeavors. Research on men's online interactions, and the relationships between those behaviors and mental and physical health, is lacking. Further research may explore differences among SM/SN sites, such as relationships between toxic masculinity and interactions on anonymous versus nonanonymous Internet sites, or how toxic masculinity relates to different forms of negative interactions. For example, are individuals who endorse toxic masculinity more likely to "invade" forums or sites with ideologies separate from their own and post antagonistic content (what are called "raids" or "brigading")? Are they more likely to respond antagonistically to, rather than ignore, individuals intentionally trying to antagonize others (i.e., "trolls")? When others disagree with them online, are they more likely to engage in heated and antagonistic discussions ("flame wars")? Given the ubiquity of SM/SN in everyday life, and the anonymity of SM/SN that provides fertile ground for the enactment of toxic masculinity, further investigation of men's online behaviors can be informative to research, clinical work, and advocacy with men.

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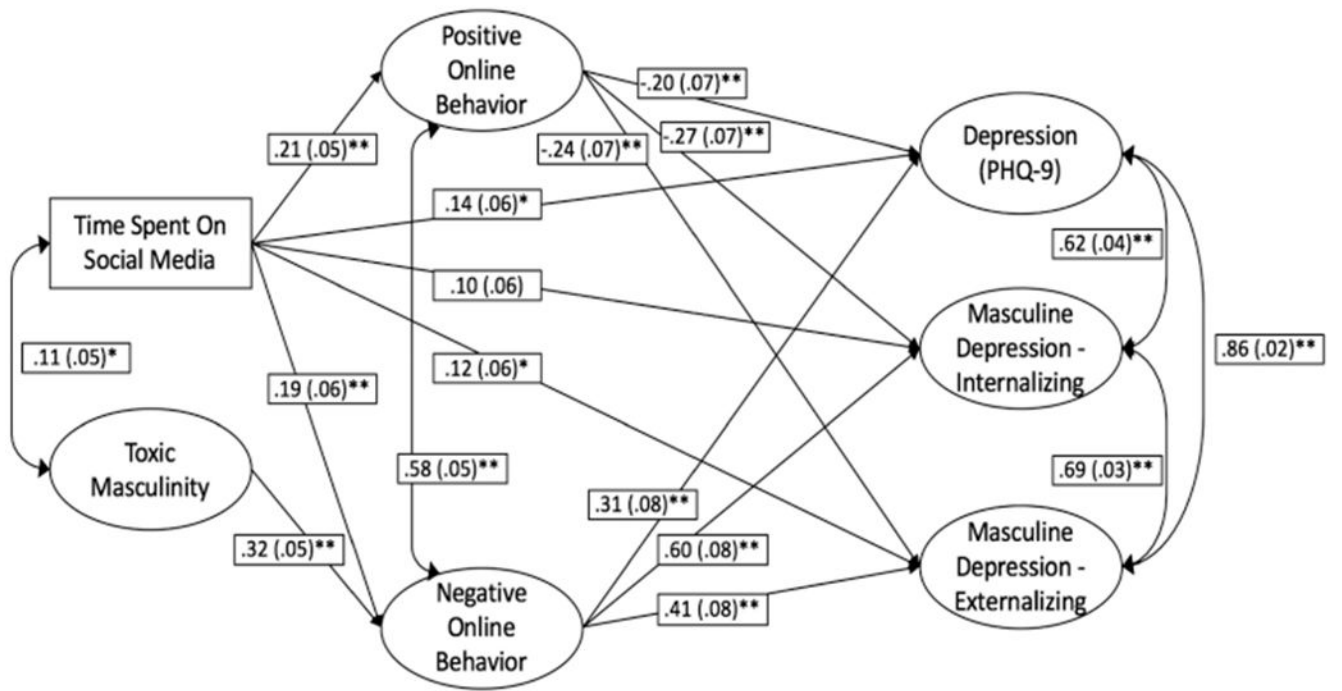
Figure 1.
Standardized path coefficients and standard errors.

Table 1

Construct Intercorrelations

Variable	2	3	4	5	6	7	8	9	M	SD
1. Hours on social media	.06	.11*	−.03	.19**	.21**	.16**	.16**	.17**	2.16	1.03
2. CMNI—Winning		.21**	.25**	.10	.02	−.01	.09	.00	2.52	0.54
3. CMNI—Power Over Women			.42**	.11*	.34**	.10*	.36**	.19**	1.91	0.63
4. CMNI—Heterosexual Self-Presentation				.03	.09	.06	.17**	.10*	2.28	0.76
5. Online behaviors—positive					.47**	.04	.11*	.00	2.88	0.87
6. Online behaviors—negative						.21**	.40**	.27**	2.15	0.81
7. Depression symptoms (PHQ-9)							.59**	.83**	1.79	0.72
8. Masculine depression—internalizing								.68**	1.65	0.56
9. Masculine depression—externalizing									1.81	0.66

Note. CMNI = Conformity to Masculine Norms Inventory-46; PHQ-9 = Patient Health Questionnaire—9.

*
$p < .05$.

**
$p < .01$.

Table 2

Indirect Effects From Hours of Social Media and Toxic Masculinity to Depression

Independent variables	Mediator	Criterion variable	Standardized indirect effect		95% CI	
			β	SE	Lower bound	Upper bound
Hours on social media	Positive interactions	Depression (PHQ-9)	−.04	.02	−.077	−.005
Hours on social media	Positive interactions	Internalizing (MDS)	−.06	.02	−.097	−.016
Hours on social media	Positive interactions	Externalizing (MDS)	−.05	.02	−.089	−.013
Hours on social media	Negative interactions	Depression (PHQ-9)	.06	.02	.014	.108
Hours on social media	Negative interactions	Internalizing (MDS)	.12	.04	.040	.192
Hours on social media	Negative interactions	Externalizing (MDS)	.08	.03	.022	.135
Toxic masculinity	Negative interactions	Depression (PHQ-9)	.10	.03	.042	.159
Toxic masculinity	Negative interactions	Internalizing (MDS)	.19	.05	.103	.280
Toxic masculinity	Negative interactions	Externalizing (MDS)	.13	.03	.064	.196

Note. PHQ-9 = Patient Health Questionnaire−9; MDS = Masculine Depression Scale; CI = confidence interval. All 95% CIs do not cross 1, and as such all paths are significant at $p < .05$.