A content analysis of an online pro-eating disorder community on Reddit

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Abstract

Pro-eating disorder communities provide a refuge for individuals with eating disorders (EDs) who are ambivalent about seeking treatment. We investigated a pro-ED community on Reddit, an anonymous social networking platform with topical forums, to identify expression of behaviors aligned with ED symptoms and support for these behaviors. A content analysis on four weeks of topic-specific discussion threads ($N = 125$ comments, 115 replies to comments) was conducted to identify behaviors consistent with ED psychopathology and support for these behaviors (informational, tangible assistance, esteem/emotional support). Results indicated that the content aligned with expressions of clinically relevant ED psychopathology, with eating concerns (49/125) and shape concerns (47/125) being most prevalent. The majority (92/115) of replies provided esteem/emotional support to the comment author. Online interventions and/or recovery programs are needed to counteract reinforcing dialogue that occurs on social media sites, like Reddit, and promote ED recovery through supportive messages on these platforms.

Keywords

disordered eating; social media; Reddit; content analysis; social support; eating disorder symptoms

Introduction

Eating disorders (EDs) are complex psychiatric disorders with a range of associated mental and physical health symptoms (Wade et al., 2011). Up to 70 million people worldwide suffer from an ED (i.e., anorexia nervosa, bulimia nervosa, binge eating disorder, or other specified

feeding or eating disorder; Compan et al., 2015), and most (95%) individuals with EDs are between the ages of 12 and 25 (Arseniev-Koehler et al., 2016; Swanson et al., 2011). The estimated lifetime prevalence of EDs in females is 4.2 times the prevalence in males (Qian et al., 2013). Girls aged 15 – 19 years, often considered the "highest risk" group for EDs, have seen an increased incidence of anorexia nervosa over the past decade, which is particularly concerning because this disorder has the highest mortality rate of all mental disorders (Smink, Van Hoeken, & Hoek, 2012). Despite these alarming figures, less than 20% of individuals with EDs receive treatment (e.g., Swanson et al., 2011).

Low treatment utilization could be attributable to such factors as denial of eating problems by the individual, lack of problem recognition by professionals, and stigma (Swanson et al., 2011). In lieu of traditional ED treatment (e.g., psychotherapy, residential treatment programs, pharmacotherapy), many individuals with EDs gravitate to anonymous Internet-based forums where they have an opportunity to seek camaraderie while maintaining their offline secrecy and isolation (Gavin, Rodham, & Poyer, 2008; Tong et al., 2013). As sociologist Erving Goffman (1959) writes, people need "sympathetic others": those who share the same social stigma and help to normalize behavior and experiences in spite of appearances and self-doubt. Studies have shown that females exposed to thin or anorexic content on various media platforms have significantly higher negative body image (Bardone-Cone & Cass, 2007; Groesz, Levine, & Murnen, 2002). The Internet has been shown to use such content in order to reinforce unrealistic beauty standards, such as the thin ideal, which can negatively affect body image (Irving, 2001; Slater et al., 2012).

Of particular concern is the widespread existence of online pro-eating disorder (pro-ED) communities that promote and sometimes even encourage disordered eating behaviors (e.g., harmful weight loss or eating control practices) and often shun recovery. Evidence from multiple studies examining pro-ED content online has shown that viewers of pro-ED websites have increased body dissatisfaction, increased eating disturbance, lower self-esteem, poorer ED-related quality of life and perceive themselves as heavier than they are (Bardone-Cone & Cass, 2007; Harper, Sperry, & Thompson, 2008; Juarascio, Shoaib, & Timko, 2010; Peebles et al., 2012; Steakley-Freeman, Jarvis-Creasey, & Wesselmann, 2015). Moreover, systematic content analyses have found that pro-ED websites tend to display "thinspiration" material and explicitly discuss how to engage in ED behaviors, while few websites provide recovery-oriented information (Borzekowski, Schenk, Wilson, & Peebles, 2010). Previous research has analyzed the content and nature of pro-ED communities on various social media platforms including blogs, Facebook, and Twitter (Arseniev-Koehler et al., 2016; Ghaznavi & Taylor, 2015; Juarascio et al., 2010). One study in particular sampled 45 pro-ED Twitter profiles and identified that their networks tended to be saturated with followers who similarly tweeted content that promoted ED-related behaviors, which signals a potential to encourage a pro-ED identity (Arseniev-Koehler et al., 2016). According to a 2006 survey of ED patients, 35.5% reported visiting pro-ED websites; of those, 96.0% learned new weight loss or purging methods from such sites (Wilson et al., 2006).

The risks of unfettered pro-ED content online may be best understood through the lens of behavior change and communication theories. Bandura's (1989) social cognitive theory, for example, purports that modeled behaviors are more likely to be adopted when message

receivers can relate to the model and perceive rewards with the communicated behavior. Vulnerable users may adopt conveyed behaviors not only when they admire online peers but also if they are repeatedly exposed to images of successful models, celebrities, and even real people with life-threatening and dangerously low body weights. Cultivation theory, developed by communication scholar George Gerbner, posits that when messages are pervasive and repeated, individuals with higher exposure levels are more likely to accept the conveyed messages as normative (Heath & Bryant, 2000). Therefore, frequenters of pro-ED online groups may perceive extreme dieting and exercise as normal rather than symptomatic of a dangerous disease. Engagement with pro-ED sites has been shown to negatively influence self-esteem and self-efficacy (Bardone-Cone & Cass, 2007), as well as encourage adoption of high-risk behaviors (Ransom et al., 2010). Further, interacting with pro-ED content online may put vulnerable individuals at risk for developing EDs (Rodgers et al., 2016).

According to the Media Practice Model (MPM), individuals with stigmatized conditions, such as EDs, often turn to social media for guidance on life choices and accordingly disclose information on social media that reflects actual behaviors and traits or behavioral intent (Moreno & Whitehill, 2012). Increasingly popular with young adults (see Reddit, 2016), Reddit differentiates itself from other social media sites by promoting "throwaway accounts" and pseudonyms to facilitate anonymous discourse (van der Nagel & Frith, 2015). Prior analysis of mental-health related discourse on Reddit suggests that posts from "throwaway" accounts are more disinhibited, and are associated with increased negativity, lowered self-esteem, cognitive bias, and self-attentional focus compared to other social networking platforms. Additionally, online disinhibition of this nature has been shown to draw more emotional and instrumental feedback through commentary, with lowered inhibition and self-attention focused posts receiving greater support (De Choudhury & De, 2014). Reddit now hosts more than 10,000 anonymous online communities (known as "subreddits") pertaining to user-generated topics and interests. Each subreddit has a moderator who engages regularly with subscribers and/or posts content that stimulates engagement (e.g., posting a "check-in" that asks subscribers to post about how they are feeling). Group members may also anonymously reply to posts. The open yet anonymous discourse uniquely facilitated by Reddit provides a natural refuge for individuals with stigmatized conditions.

To our knowledge, there has been no prior research analyzing pro-ED content on Reddit. In this study, we conduct a content analysis of a relatively large subreddit (> 5,000 subscribers) that describes itself as an online community for *"people who engage in disordered eating behaviors but are not interested in working toward recovery."* Themed conversations, initiated by the community moderators, are posted with a new theme for every weekday. These themes do not vary from week to week and are primarily intended to stimulate and focus discussions among subscribers of this online community on topics that are related to pro-ED beliefs and behaviors. In recognition of the unique structure of this pro-ED online community and in order to make a contribution to existing social media studies examining ED discussions, we dissected the responses of individuals to moderators' themed topics and honed in on the ED symptoms being discussed to examine the extent to which they aligned with symptomatology that could meet criteria for an ED diagnosis if it were professed within a clinical interview. The examination of ED psychopathology within a pro-ED social

media community has not yet been accomplished and is a unique contribution to the social media content analyses of this nature. Moreover, we subsequently analyzed the reactions to comments containing ED psychopathology that came from other subscribers within this online community to delineate the specific types of social support offered back to the individual who posted the comment. In this way, we are able to comprehensively examine the social networking occurring between the individuals on a platform that has not yet been studied for pro-ED content and that differs in structure from other social media platforms because of the moderator who oversees discussions within this community and works to steer all posts to be interchanges that promote ED psychopathology. Despite what would seem to be prominent negative content and themes, research has also suggested that online communities are complex structures that frequently provide a supportive function (De Choudhury & De, 2014). It is unclear the degree to which participants in this online forum actively seek and receive support. By analyzing the content of this subreddit, we hypothesize that subscribers to this group will not only reflect ED psychopathology but also engage in validated support elements. Given that EDs have the highest mortality of any mental health disorder, analysis of online community interactions among those with ED pathology is timely and important for development of novel treatments and outreach.

Method

The discussion threads and comments from the subreddit under study were publicly available. As such, this study was classified by the University's Institutional Review Board as research not involving human subjects and was therefore not subject to institutional review board jurisdiction. Subscriber usernames as well as the name of the subreddit have been omitted from this report to protect the identity of these individuals and to maintain the ethical integrity of this study. Example quotes in the tables have likewise been slightly altered.

Data Collection

Moderators of the analyzed subreddit post a discussion thread on a specific topic every weekday (Figure 1). The topics of these threads are decided by the moderators and do not vary week to week. Monday threads prompt users to share updates on their current weight and weight goals. Tuesday threads encourage users to discuss anything relating to "self-care and beauty," including tips on harm reduction (e.g., how to avoid and/or improve from the physical consequences associated with engaging in ED behaviors). Wednesday threads, titled "Way to go Wednesday," allow users to share their weekly accomplishments both related and unrelated to EDs. Thursday threads encourage users to post about/seek advice for any struggles with emotional problems. Friday threads are specifically for posting about the user's progress towards their ED and/or weight loss goals, including selfies and other progress pictures. All comments responding to these threads (hereafter "comments") and the accompanying replies to these comments (hereafter "responses") were collected retrospectively for posts over the prior 4 weeks, dated May 23 - June 17, 2016; one month's worth of social media data has similarly been investigated in existing research (Cavazos-Rehg et al., 2015a, 2015b, 2016a, 2016b, 2017; Krauss et al., 2015a, 2015b; Sowles et al., 2016). Screenshots of the discussion threads were saved using NCapture, a web browser

extension that captures webpage content, which was then uploaded as PDFs into NVivo 10 qualitative analytic software for coding. The 16 Tuesday-Friday threads resulted in a total of 125 comments and 115 responses that were qualitatively coded for themes developed by the research team as described below. Comments and responses to the four Monday threads were not qualitatively analyzed because these posts, in particular, tended to consist primarily of quantitative data; however, the information provided by users was recorded.

Code Development

For our content analysis, codes were derived using a combination of deductive and inductive approaches (Elo & Kyngäs, 2008; Hsieh & Shannon, 2005; Vaismoradi, Turunen, & Bondas, 2013). Using a deductive approach, we generated initial codes based on known psychopathology of EDs and prior research on ED-focused blogs (Fairburn & Beglin, 1994, Tong et al., 2013). An inductive approach was also used to develop additional codes revealed in the data. Two research team members, including the principal investigator (a licensed psychologist) and a graduate student trained in public health, developed the codebook; separate codes were identified for the comments and the response to the comments.

Comments—Four major themes were based on Eating Disorder Examination (EDE) 16.0 subscales, a psychometrically validated assessment tool that measures the core psychopathology of EDs (Berg, Peterson, Frazier, & Crow, 2012; Mond, Hay, Rodgers, Owen, & Beumont, 2004; Peterson et al., 2007). These themes, reflecting the four EDE subscales, included: (a) shape concern; preoccupation with body image/shape; (b) eating concern, preoccupation with food intake (e.g., food journaling, purging, removing food from the household); (c) weight concern, preoccupation with weight; and (d) restraint, restriction of food intake and/or food avoidance.

Members of the research team reviewed a subsample of approximately a month's worth of posts and inductively developed the following additional themes: (a) self-disclosure about successes related to maintaining ED behaviors (e.g., reaching weight/body mass index [BMI] goals, personal experiences of triumph), (b) environmental/social barriers to maintaining ED behaviors, (c) personal struggles with other mental health issues (e.g., depression/anxiety), (d) physical side effects of EDs, (e) use of exercise as a tool for ED maintenance, (f) support seeking from other subreddit members (including asking for advice/information), (g) mention of receiving/seeking medical help, and (h) use of other illicit drugs, tobacco, or medications to maintain an ED-related behavior. Multiple themes could appear in each comment (e.g., weight loss could be coded as both a success and a weight concern).

Responses—Only responses replying directly to the original comment were coded (i.e., first layer of social networking). Continuous layers of dialogue (i.e., additional back-and-forth between people) could occur beyond the responses that replied directly to the original comment; however, coding all layers of social networking would be excessively burdensome, so only the first layer of responses was coded. Code development for the responses was guided by previous research conducted by Tong et al. (2013) on pro-anorexia blogs. Using their categories for types of social support, we coded the responses for the

following: (a) information support (e.g., advice, teaching), (b) tangible assistance (e.g., willingness to help or to perform a direct task), and (c) esteem/emotional support (e.g., statements of validation, compliments, encouragement, sympathy, understanding). We also coded when the esteem/emotional support was in reference to a specific body part or thinness ideal that represented when compliments for being thin and/or upward appearance comparisons were made (e.g., individual's post is an explicit compliment to one's photo or weight loss accomplishment). Responses were coded for reciprocal self-disclosure about ED behaviors as well (Tong et al., 2013). Any form of advice that could be perceived as potentially harmful was also recorded by the research team. Multiple themes could appear in each response.

Coding

There were three main coders who analyzed the data, all women ranging in age from 20 to 28: the first author, with a Master of Public Health (MPH); the second author, a second-year MPH student; and an undergraduate psychology student. All coding was supervised by the senior (i.e., last) author, a licensed clinical psychologist with a Ph.D. in psychology. As a training exercise, all three coders and the last author read and coded four complete discussion threads, which included 38 comments and 32 responses in total, using the initial codebook described above. Based on this training exercise, the codebook was refined and all coders felt confident in the definitions for each code. Then the remaining discussion threads were coded in weekly sets (Tuesday-Friday) by each coder independently. The discussions threads were coded in small batches per week to allow sufficient time for each coder to consider the viewpoint of the comment authors and how their own personal impressions might affect their code selection (Patton, 2002). After each set, and before moving on to code another week of discussion threads, coders met to discuss individual discrepancies among codes found for each comment and response. In the event that the three coders could not come to an agreement among themselves, the last author moderated the discussion until consensus was reached. Once all discrepancies were discussed and agreements were met, a master copy was created. This master copy was used to enter themes into NVivo for final code frequency reporting. This process continued until all four weeks (May 24 – June 17) were coded. We have used a similar process for content analysis in prior studies of discussions of substance use on Reddit (Sowles et al., 2017). Because some qualitative researchers view inter-rater reliability assessments as problematic (Braun & Clarke, 2013; Clarke & Braun, 2014), we instead focused on the process of coding, applying a thorough approach with frequent discussions among members of the coding team and with ample time to reflect on their own underlying biases that could impact their objectivity in analysis.

Results

Monday Posts: "Weekly Stats Update"

The 32 comments on the four Monday threads were posted by 28 unique authors. Age of comment authors ($n = 28$) ranged from 17-29 years with a median age of 22.5 years. Nearly all comment authors identified as female (25/28). Based on self-report, most (20/28) comment authors fell within the BMI range (18.5 – 24.9) classified as 'normal' by the CDC, six were considered underweight (BMI below 18.5), and two were overweight (25.0 – 29.9)

by the CDC criteria. In terms of goal weight, the majority (16/28) of individuals posting on this thread were striving to be underweight (i.e., goal weight resulting in BMI below 18.5).

Qualitative Analysis: Comments (Table 1)

EDE subscale themes—EDE subscale themes were the four most commonly observed themes in the comments responding to weekly discussion threads. Of these, eating concern was expressed most frequently (49/125; 39%), and over half of those (27/49) appeared on the "Way To Go Wednesday" discussion threads. Expressions of eating concern included fear of losing control, guilt about eating, social eating, and eating in secret (Peterson et al., 2007). For example:

> I'm so anxious about having to eat two meals today. I have a work lunch meeting and a family dinner. If I can't come up with something, I'll be purging this evening.

> I have a compulsive eating habit. I'm not obese, but I'm larger than I want to be. I tend to eat very healthy during the week, when I'm at work I'm distracted enough to not think about food so I'll just eat a steady three meals. But over the weekend I go crazy and over eat. I know that is unhealthy, but I somehow always manage to rationalize it. Any tips for curbing this behavior?

Comments expressing dissatisfaction with shape/body image, feelings of fatness, discomfort with viewing/exposure of body, and/or placing a high importance on shape/body parts were coded as "shape concern" (Peterson et al., 2007). Approximately 38% (47/125) of all comments expressed shape concern. Shape concerns appeared most frequently on Friday (Selfie and Progress Pics) and Wednesday discussion threads. Some examples include:

> I'm around 113-110 lbs and it's my first time sharing a selfie on here. How can my BMI be underweight but the person in the mirror still looks so fat/average. I hate it.

> Pretty close to my GW [goal weight] which is a good feeling but I also think I still have a lot of fat in weird places (like that random stomach bulge). Anyone know good exercises to help erase tummy fat? I'm losing literally everywhere else and it's pretty upsetting to see improvements in every area other than center stomach.

Shape concern comments typically included mention of specific body image/shape goals such as more defined arms or prominent collar bones. For example:

> I seriously can't wait for more bones! I really like how my muscles are starting to show, but bones would be nice. Still very insecure about my arms.

> Back progress has me feeling pretty decent this week and I think I see more definition in my collarbone.

Weight concern was described in 33% (41/125) of all comments. Weight concerns included any mention of dissatisfaction/preoccupation with weight and/or a desire to lose weight (Peterson et al., 2007). For example:

> I was under 97 pounds for about twelve hours! I'm trying not to go nuts about it, because I binged my way back up pretty quickly, but I am so damn close. I just want to maintain at 97 for a little while, take my time because I always binge my

way back up to 100 whenever I hit a new low weight. But I haven't been under 97 since high school.

I hit my goal weight of 100 lbs this morning, but I don't feel like I thought I would. I'm going to set a new goal of 95 lbs and see if that changes anything.

Restraint of food intake and/or food avoidance was mentioned in 18% (23/125) of comments, and most (14/23) were comments in response to the "Way to Go Wednesday" discussion thread. Examples include:

"Accidentally fasted for 7 hours and decided to go for 12, and I did it! With yoga (but no lifting)! I'm going to skip dinner and push it to 24, but if I feel okay in the morning I might skip breakfast too."

I'm doing my longest fast ever – day 3 of 5 with 0 calories cal. Even though my cravings are intense, I haven't eaten anything.

Other prominent themes (Table 2)—Self-disclosure about successes and positive encounters related to maintaining ED behaviors accounted for 38% of all comments (48/125). These typically appeared in response to the "Way to Go Wednesday" discussion threads (32/48). Environmental/social barriers and/or struggles with maintaining an ED-related behavior were described in 13% of comments (16/125). These were observed most frequently in response to the Thursday "Weekly Emotional Support" threads (9/16). The comment author mentioned struggling with a negative mental health issue as a result of or in addition to his/her ED in 11% of comments (14/125).

Members of the analyzed subreddit were seeking support from other subreddit members in nearly 9% of comments (11/125). A negative physical effect of an ED (8/125) and the use of exercise as a tool for maintaining an ED (7/125) each appeared in roughly 6% of comments. Other less commonly mentioned themes included seeking medical help (4/125) and using illicit drugs, tobacco, or medications to maintain an ED (2/125). Twenty-eight comments were unrelated to EDs (e.g., fashion, non-ED work/life problems/successes).

Qualitative Analysis: Responses (Table 3)

There were 115 responses to the 97 ED-related comments. Most (92/115; 80%) of the responses provided some form of esteem/emotional support to the comment author. Example responses include: "You're making great progress on your weight loss! I love when other people see the differences" and "I totally get what you're going through. I'm here and listening." Of these, 53% (49/92) referenced a specific body part or referred to the comment author as a body ideal such as "Your back and collar bones are perfect! Literally goals." and "Your arms are incredible! I mean all of you looks great, but I hate my arms and would love to have them look like yours!."

Personal stories and anecdotes that related to the original comment were shared in 31% of responses (36/115).

(Original comment) I'm living at my grandparents house for the next month and they are literally making sure I eat three solid meals a day. My grandma loooooves

cooking and feeding me CONSTANTLY, especially expensive foods, lots of sweets. At first I thought I would just try to maintain my (fat) current weight but I've just been getting more and more anxious about it :(I've at least pushed back against being made to drink whole milk, but constantly being pressured to eat is really stressing me out. Pure restriction is what I prefer but I think I'm just going to try to start running a lot so I can at least undo some of the damage.

(Response) I'm also living with my grandparents. The first couple months I gained a ton of weight, literally the most I've weighed in my life. Around November/ December I started really paying attention to what I was eating and making sure I was moving more. I started buying my own snacks and making dinner more, partly to help grandma and partly to have control over what I was eating.

Approximately 14% (16/115) of responses provided information or advice to the comment author such as "Maybe you can just order a salad with the dressing on the side? If anyone questions why you aren't eating it then you can just say you had a big breakfast and you are meeting up with your family for dinner later." Roughly 4% (5/115) expressed some form of tangible assistance (i.e., willingness to help). An example: "Feel free to message me and go easy on yourself. If you eat a little bit today it will be fine, especially if you are fasting tomorrow." Thirteen responses were not ED-related.

Discussion

The objective of the current study was to investigate an online community on Reddit that describes itself as a forum for individuals who want to socially network about the promotion of ED-related behaviors and attitudes. Our study adds to a growing body of literature examining pro-ED online communities, specifically assessing for core ED psychopathology and pro-ED supportive elements. Given that people with EDs often eschew recovery-oriented medical advice, the recent propagation of pro-ED online communities threatens to further deter ED patients from seeking and accepting medical help. In this study, we find a high degree of concordance between user content and validated markers of disordered eating behaviors as defined by the EDE 16.0 subscales (Berg et al., 2012; Mond et al., 2004; Peterson et al., 2007). Additionally, although only a minority of posters sought help or advice, user posts were often met with unsolicited pro-ED supportive comments.

Although the subreddit under study explicitly acknowledges that EDs are a "serious mental illness" and are "not a lifestyle choice," the themed discussion threads seem to champion the latter. Indeed, the moderator provides weekly opportunities for members of the subreddit to share their successes and/or progress toward maintaining disordered eating goals/behaviors. Of additional concern, no recovery-oriented comments—or even suggestions to seek medical help— were identified, likely because the moderator expressly bans this type of content. We observed that moderators posted topics for each day of the week that kept dialogue of this subreddit consistently structured around pro-ED attitudes and behaviors. Encouraging pro-ED online dialogue and thwarting potentially helpful conversations about recovery are worrisome traits of this online community that have the potential to be creating an "echo chamber" where members are exposed to only the encouragement of ED-related psychopathology (Chancellor et al., 2016; Pariser, 2012; Singer, 2011).

From a public health perspective, pro-ED content represents an increasing danger due to its potential to incite ED behaviors in vulnerable individuals. As touted by social cognitive theory, modeled behaviors online are more likely to be adopted when message receivers can relate to the model and perceive rewards with the communicated behavior (Bandura, 1989). In our sample, the majority of participants were of normal weight and "striving" to be underweight. Pro-ED comments were repeatedly validated and supported by peers in the setting of daily moderated discussion threads. According to cultivation theory, risks of adopting pro-ED behaviors are likely compounded by such repeated exposure to pro-ED content. Indeed, users were prompted each week to post pictures and updates about their disordered eating goals, and content was consistently met with supportive dialogue. We identified online compliments in response to individuals who posted images of themselves; on occasion, responders' compliments were expressions of online admiration for a particular body part (e.g., thin collar bones, noticeable ribcage). Additionally, we found responses to images or pro-ED behaviors (i.e., not eating or eating few calories) that stated "thinspiration" or "goals," suggesting an upward appearance comparison (i.e., to someone perceived as better off) was being made (e.g., O'Brien et al., 2009). Previous research has shown that group members with higher exposure levels to pro-ED behavior are more likely to accept the conveyed messages as normative (Tierney, 2006). Thus, in our sample, online social comparisons and glamorization of the thin ideal has potential for reinforcing and inciting ED pathology.

Limitations of this study should be considered. Content analyses are inherently biased due to self-report as well as the differing background and thus viewpoints of the individuals coding the data. Regarding the former, user-generated content on Reddit has added authenticity for individuals with stigmatized conditions due to the use of pseudonyms and "throwaway accounts" to promote anonymity (Caplan & Turner, 2007). Regarding the latter, our team attempted to mitigate this bias by discussing codes for sets of discussion threads as a group before moving on to code additional threads, as well as self-reflection to facilitate interpreting participants' views. Although the content analyzed only represents a small portion of the total dialogue from this subreddit, the themed discussion threads are the same every week and it appears that subscribers to this site follow the instructions of what the moderator wants within their posts. Therefore, we believe that an examination of one month's worth of data is likely an accurate snapshot of the activity within these threads. Still, our results may not be reflective of the subreddit as a whole. For example, very few comments in our sample were seeking advice/support from other members of the subreddit and this may have been observed more in posts outside of the daily themed moderator-generated threads. A thorough thematic analysis guided by Braun and Clarke (2006) of all types of posts on this subreddit, including those outside of the daily themed threads, would have provided a greater understanding of the exchanges on this subreddit. Finally, we are unable to discern if the subscribers to this subreddit would actually meet the criteria for an ED diagnosis; however, the comments display expressions of eating, weight, and shape concerns that are consistent with ED psychopathology according to validated EDE criteria.

This study adds to a growing body of research demonstrating the growth of pro-ED communities online (Arseniev-Koehler et al. 2016; Ghaznavi & Taylor, 2015; Juarascio et al., 2010). To our knowledge, this is the first study to evaluate pro-ED content on Reddit,

and the first to identify the key role of the moderator in facilitating pro-ED discourse. Online interventions and/or recovery programs are needed in order to counteract this reinforcing dialogue and promote ED recovery. Recent studies have shown that tailored use of social media sites can potentially be used to enhance the recovery process. Saffran et al. (2016), for example, identified lower reported ED symptoms among those engaging in pro-recovery dialogue on Facebook. Additionally, participants in social media-based ED recovery groups (e.g., Project HEAL, Proud2BMe) have reported psychological and physical benefits from feeling supported and understood within these groups (Csipke & Horne, 2007; Juarascio et al., 2010).

Future directions include providing more education to healthcare professionals, parents, and young people about the nature and prevalence of pro-ED content online. Indeed, according to Wilson et al. (2006), only half of parents of patients with EDs report knowing about pro-ED websites, and even fewer are aware of whether their child visits these sites. Social networking sites should also be encouraged to update their terms-of-use contracts and to work to effectively remove content that breaches contract. For example, Facebook specifically states that they consider material promoting self-harm, including EDs, as a violation of their terms of use and regularly remove this material (see Facebook, 2017). In conclusion, pro-ED content online reflects a growing public health problem, and we foresee that our results will stimulate useful discussions about leveraging social media to promote ED recovery.

Acknowledgments

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Highlights

- Eating and shape concerns were the most prevalent themes in the analyzed comments.

- Comments often disclosed guilt about eating, eating in secret, and feeling fat.

- Praising individuals who maintain their eating disordered behaviors was common.
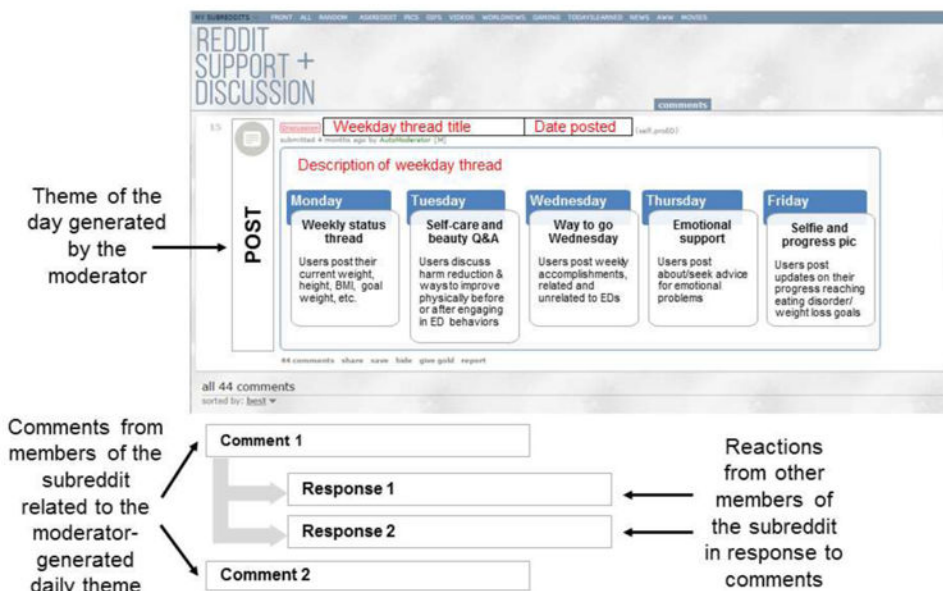
Figure 1.

Schematic of moderator-generated daily themed discussion thread post, comment, and responses. Each weekday, moderators post a different theme of the day (daily themes are shown). Members of the subreddit then post their comments related to the specific daily theme. Other members of the subreddit post their responses to those comments.

Table 1

Eating disorder psychopathology in comments (N = 125)

	Tuesday (n = 9)	Wednesday (n = 53)	Thursday (n = 22)	Friday (n = 41)
EDE subscale themes				
Eating concern	2 (22%)	27 (51%)	11 (50%)	9 (22%)
Shape concern	2 (22%)	13 (25%)	3 (14%)	29 (71%)
Weight concern	0	20 (38%)	5 (23%)	16 (39%)
Restraint	0	14 (26%)	6 (27%)	3 (7%)

Table 2

Other prominent themes in comments (*N* = 125)

	Tuesday (*n* = 9)	Wednesday (*n* = 53)	Thursday (*n* = 22)	Friday (*n* = 41)	Examples
Other prominent themes					
Successes/positive encounters relating to ED behaviors	0	32 (60%)	3 (14%)	13 (32%)	• *I'm SO happy! I lost the pound I needed to break my plateau and fit into jeans that haven't fit for 2 years.*
Environmental barriers, struggles, setbacks to maintaining ED	1 (11%)	5 (9%)	9 (41%)	1 (2%)	• *My family is going to make a big deal about me only eating a salad today at my grandmother's birthday dinner. We're going to a buffet place, so I know it will make everyone suspicious. I know they are going to just put food on my plate and get upset when I don't eat it.*
Struggles with other mental health issues or negative mental effect	1 (11%)	1 (2%)	9 (41%)	3 (7%)	• *I've always been the happy one among my family and friends, but I think I may actually have clinical depression. I'm sleeping a lot and feel hopeless and sad all the time. I've tried to keep up appearances, but on the inside I just feel like breaking down.*

Table 3

Types of support in responses to the comments ($N = 115$)

Theme	Number ($N = 115$)
Esteem/emotional support	92 (80%)
Mentions specific body part/body ideal	49/92 (53%)
Personal stories and anecdotes	36 (31%)
Information support	16 (14%)
Tangible assistance	5 (4%)