

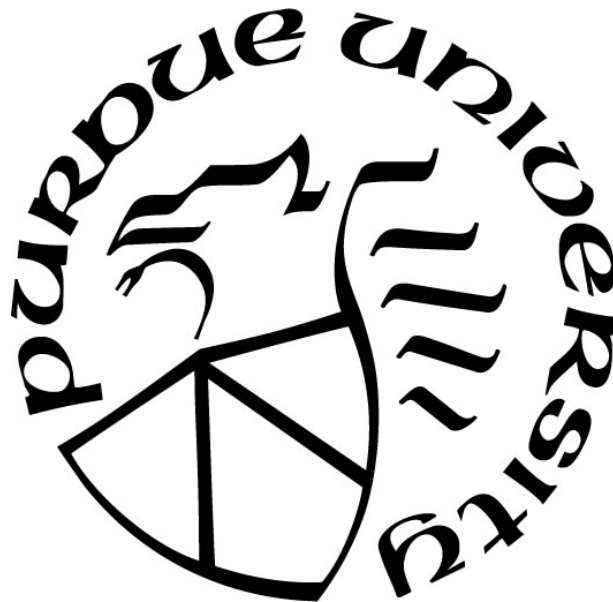
# **EMERGING ADULTS' ONLINE GENDER PERFORMANCE AND ASSOCIATIONS WITH PERSONALITY DISORDER FEATURES**

by  
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*In memory of my mother, Denise. Without her, I would not be here (literally and figuratively).*

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## TABLE OF CONTENTS

LIST OF TABLES .....	6
LIST OF FIGURES .....	7
ABSTRACT .....	8
INTRODUCTION .....	9
Emerging Adults' Gender Performance.....	9
Emerging Adults' Gender Performance Online.....	11
Gender Performance and Personality Disorder Features Off- and Online .....	14
The Current Study.....	16
METHODS .....	19
Participants.....	19
Procedures.....	19
Coding for Gender Performance on Facebook .....	20
Measures of Personality Disorder Features .....	21
Borderline Personality Disorder Features.....	21
Narcissistic Personality Disorder Features .....	23
Analytic Plan.....	23
Question 1. Masculine and Feminine Online Posting Behaviors .....	23
Question 2. Online Gender Performance and Personality Disorder Features .....	27
RESULTS .....	29
Question 1. Masculine and Feminine Online Posting Behaviors .....	29
Question 2. Online Gender Performance and Personality Disorder Features.....	40
DISCUSSION .....	46
Masculine and Feminine Online Posting Behaviors.....	46
Online Gender Performance and Personality Disorder Features .....	49
REFERENCES .....	52
APPENDIX.....	59

## LIST OF TABLES

Table 1. Coding Categories and Reliabilities for Potential Gender Performance-Related Facebook Posting Behaviors .....	22
Table 2. Means and Standard Deviations for Posting Behaviors and Summarized Gender Behavior Category Scores for the Overall Sample and <i>T</i> -Tests by Gender .....	30
Table 3. Correlations Among Facebook Posting Behaviors Separated by Theoretically Defined Gender Performance Categories .....	32
Table 4. Fit Statistics for Single-Factor and 2-Factor Confirmatory Factor Analysis (CFA) Models Testing an Online Presentation Factor and Online Masculinity/Online Femininity Factors .....	35
Table 5. Fit Statistics for Factorial Invariance of Single Online Presentation Factor Confirmatory Factor Analysis (CFA) Models by Gender .....	35
Table 6. Fit Statistics for 2-Factor Exploratory Factor Analysis (EFA) Model .....	35
Table 7. Factor Loadings for 2-Factor Exploratory Factor Analysis (EFA) Models, Conducted Separately for Coded Facebook Behaviors and for Gender Behavior Category Scores.....	38
Table 8. Correlations of Facebook Behaviors and Gender Behavior Category Scores with Personality Disorder Features .....	41
Table 9. Unstandardized and Standardized Regression Coefficients of Personality Disorder Features Regressed onto Facebook Posting Behaviors and Gender Behavior Category Summary Scores .....	43

## LIST OF FIGURES

Figure 1. Hypothesized 2-factor model. ....	25
Figure 2. Alternative single-factor model of online presentation. ....	26
Figure 3. A conceptual latent path model examining the relation between latent online feminine and masculine performance, their interaction and personality disorder features.....	28
Figure 4. Two-Factor Confirmatory Factor Analysis (CFA) Model with unstandardized loadings and factor variances. ....	36
Figure 5. Alternative Single-Factor Confirmatory Factor Analysis (CFA) Model with unstandardized factor loadings and factor variance.....	37

## **ABSTRACT**

Emerging adults, defined as ages 18-29, are tasked with continuing identity development as they transition from adolescence to adulthood. Central to identity development is gender identity development and expression, and engaging in this developmental task can relate to psychosocial functioning. One way to explore how emerging adults perform their gender is via digital communication, given that it is nearly ubiquitously used, provides unique affordances that could transform the ways that gender-stereotyped behaviors are performed, and can be naturalistically observed. Further, using co-construction and transformation theories, gender performance via digital communication can be examined in relation to offline experiences, specifically personality disorder features that may reflect gender-stereotyped psychosocial functioning difficulties.

The current study explored two questions: (1) Are masculine and feminine categories of posting behaviors, as defined by previous research, observable in emerging adults' Facebook posts? and (2) Do these highly stereotypical online gender performance behaviors relate to personality disorder features offline? It was hypothesized that the masculine-presenting behaviors would be more prevalent in male-identifying participants, feminine-presenting behaviors would be more prevalent in female-identifying participants, and two latent factors of online masculinity and femininity would emerge. Further, it was hypothesized that extreme scores of masculinity and femininity would relate to narcissistic personality disorder features and that extreme scores of femininity would relate to borderline personality disorder features.

Using content coding of observational Facebook profile data, several behavioral categories related to gender display and performance were explored, including emotion presentation, personal talk, impersonal talk, relationship building, relationship expanding, active display in photos, and passive display in photos. These behaviors were explored by gender and in relation to narcissistic and borderline personality disorder features. The results provided very limited support for the hypotheses, namely that some feminine behaviors were more prevalent in women and related to borderline personality disorder features. These results suggest that our current understanding of gender performance must be re-examined in order to make conclusions about how gender is performed online and what implications these may have for offline personality functioning.

## **INTRODUCTION**

Emerging adulthood, defined as ages 18-29, contains the period during which individuals are transitioning from adolescence to adulthood. This developmental period encompasses milestones, such as self and identity formation and presentation, as young adults gain independence (Arnett, 2000). Achieving these developmental milestones requires developing and expressing one's gender. Gender is central to social experience; it is often the first thing others interpret about a person and influences much of the ways in which individuals engage in various social behaviors (Egan & Perry, 2001). Gender has also been found to relate specifically to personality characteristics, defined as enduring patterns of psychological and behavioral characteristics. For example, in terms of the five factors of personality, women consistently tend to score slightly higher than men on average on Agreeableness, Extraversion, and Neuroticism, but not Openness nor Conscientiousness (Weisberg et al., 2011).

Furthermore, according to gender performativity theory, gender is not something that people "have" but is something that people "do" (Butler, 1990). Doing gender involves expressing gender when interacting within social contexts, by presenting a feminine, masculine, or androgynous appearance, style, or tone (Poggio, 2009; West & Zimmerman, 1987). A unique and ubiquitous social context in which to examine the pervasive and performative nature of gender is via social media, given that it provides an avenue for individuals to explore and perform gender in a way that both mirrors and transforms their offline gender performance (Subrahmanyam et al., 2006; Nesi et al., 2018). Further, because gender is an important social component and has been found to relate to broadly to personality, performing one's gender online may relate to personality features. Specifically, perhaps presenting in an extremely masculine or extremely feminine way may relate to extreme patterns of personality characteristics. The current study investigated gender performance in an online context and its association with narcissistic and borderline personality disorder features, given their gender-typed nature, within a group of emerging adults.

### **Emerging Adults' Gender Performance**

Engaging in gender-stereotyped behaviors can be considered a form of gender performance, or the process by which gender is constructed through rituals and social interaction

(Butler, 1988; Butler, 1990; Poggio, 2006; West & Zimmerman, 1987). Gender performance is central to identity formation and presentation because it is a focal way in which our bodies and selves are understood by others and how we interact with our environment (Butler, 1988). Therefore, investigating how gender performance operates in individuals' lives, especially those in a developmental transition such as emerging adulthood, can ultimately inform our understanding of the ways in which people present to and interact within their social contexts.

Traditionally, gender stereotyped behaviors are intended to maximize differences along the gender binary, or between men and women, and tend to externally express an internalized understanding of traditional gender roles (Goffman, 1976; Kang, 1997; Perry & Pauletti, 2011). There are individual classes of behaviors that have been socialized to be understood as either pertaining to men or to women and are conceptualized along separate dimensions of masculinity and femininity (Bem, 1974; Rudman & Glick, 2008). Masculine and feminine behaviors have also been classified, originally proposed by Bakan (1966) as “two fundamental ways” in which people interact, along the dimensions of agency or dominance and communion or interdependence. Agency refers to the ways in which an individual seeks to gain and demonstrate competence, mastery, and power. These behaviors align with stereotypically masculine characteristics, such as toughness, competitiveness, and assertiveness. In contrast, communion refers to the ways in which an individual seeks to connect and foster closeness with others. These behaviors align with stereotypically feminine characteristics, such as empathy, compassion, and kindness (see Rudman & Glick, 2008 for a thorough review).

Agency and communion can be understood through a social structural theory approach (Eagly, 1987; Rudman & Glick, 2008; Wood & Eagly, 2012), in which biologically driven proclivities toward strength and aggression for men, and toward caretaking for women, have been exacerbated by the sociocultural roles that men and women are expected to fulfill. These delineations are perpetuated by external and internalized pressures to conform to gender roles in order to maintain the current systemic functioning. Individuals receive constant messaging from others that breaking gender norms may reap negative consequences such as social exclusion and backlash, and therefore may display gender-conforming behaviors and characteristics to prevent this (Eagly, 1987; Rudman & Glick, 2008; Wood & Eagly, 2012). In such cases, behaviors tend to be driven by one's internalized sense of their gender identity (i.e., how masculine or feminine they

understand themselves to be) and the motivation to communicate to others how one identifies their gender or how one wants their gender to be perceived in a specific social structural context.

Because they are distinct dimensions that can interact or overlap, individuals can also play with mixing masculine, agentic behaviors with feminine, communal behaviors to heighten androgynous or non-binary presentation (Bem, 1974). Intersecting masculinity and femininity can prove to be challenging considering the social consequences for gender non-conformity (such as rejection and backlash; Rudman & Glick, 2008); however, some individuals do find success in a more androgynous or gender-fluid presentation (e.g., “gender vanguards” who both skillfully defy gender roles while maintaining social status; Rudman & Glick, 2008; Wood & Eagly, 2012). This presentation may also be advantageous to psychosocial adjustment as individuals learn to balance positive characteristics of both masculinity and femininity and overcome the negative social consequences (Bem, 1974; Rudman & Glick, 2008; Ward, 2000).

Nevertheless, gender performance behaviors appear to be driven by a “masculine” desire to gain power and a “feminine” desire to gain intimacy; masculinity and femininity are inextricably linked to these drives of agency and communion (Rudman & Glick, 2008). Investigating these behaviors across social contexts can allow a greater understanding of the way these behaviors manifest, and further, how they may relate to other aspects of emerging adults’ characteristics such as their personality features. One unique social context in which to examine gender performance behaviors is within online spaces such as social media.

### **Emerging Adults’ Gender Performance Online**

Emerging adults spend an increasing amount of time online; in fact, 88% of US emerging adults indicate using any form of social media (Pew Research Center, 2018). It is important to understand how such frequent social media use interacts with known developmental features of emerging adulthood. The associations between pure time spent online and wellbeing are contested or inconsistent (Best et al., 2014; Clark et al., 2018; Huang, 2017; Seabrook et al., 2016). Instead, it may be more important to understand the quality of the interactions and behaviors that emerging adults engage in online rather than how much time they spend online (Clark et al., 2018; Seabrook et al., 2016).

Two theoretical perspectives can inform what emerging adults do online: co-construction theory and transformation theory. Co-construction theory posits that that offline and online

identities are established in similar ways and that there is psychological continuity between offline and online behaviors. This suggests that individuals engage in similar self- and peer-related processes in both contexts (Subrahmanyam et al., 2006). Transformation theory suggests that not only do emerging adults' online lives mirror their offline lives, but that online spaces may transform the processes that individuals engage in given the unique affordances of online platforms, such as immediacy and asynchronicity of communication (Nesi et al., 2018). Both theories can be synthesized to understand the ways in which online behaviors co-occur and interact transactionally with offline characteristics. Specifically, these theories may provide the framework for understanding emerging adults' online gender performance and connections with offline patterns of interaction and communication.

Co-construction and transformation theories can help to translate gender performance offline into online spaces, given that they suggest that individuals' online and offline lives are co-constructed and interactive. Transformation theory, in particular, highlights the effects of different affordances of online spaces, such as the publicness of online platforms and the absence of physically present cues (e.g., tone of voice, facial expressions). Due to these unique affordances, individuals may present themselves online in highly gender-stereotypical ways (Doering et al., 2015; Rose et al., 2012; Smith & Cooley, 2012; Tifferet & Vilnai-Yavetz, 2014; Tortajada et al., 2013). Contrarily, individuals may play up their androgynous or gender-bending possible selves (Humphreys & Vered, 2014; Samp et al., 2003). These processes play out through a variety of behaviors, such as "selfies" (pictures taken of oneself and posted by oneself), using emoticons (picture or symbol-based depictions of emotions such as a smiling face or a frowning face), relationship-building intentions, and self-disclosing personal information.

One way to understand these gender-typed behaviors is based on Goffman's (1979) and Kang's (1997) gender display categories, which are ways to conceptualize how internalized gender roles are expressed externally, such as exhibiting feminine touch (e.g., using the fingers or hands to trace or caress and object or themselves) and the way in which the individual's body is displayed (e.g., the active or passive nature of their pose). These have been previously applied to online gender performance in relation to self-presentation in social media users' selfies, finding that selfies and other pictures that social media users post are often highly gender stereotyped, comparable to gender-stereotyped magazine advertisements and other established forms of

stereotypical gender performance (Doering et al., 2015; Rose et al., 2012; Tifferet & Vilnai-Yavetz, 2014; Tortajada et al., 2013).

Specifically, there are several online presentation behaviors that are to be considered more masculine or agentic. As described above, agency encompasses a drive for power, competence, and mastery, and is represented by traditionally masculine features such as toughness, competitiveness, and assertiveness. In alignment with agentic traits, men tend to present themselves online in ways that demonstrate power and status. Though women tend to post more selfies overall (Dhir et al., 2016; Sorokowski et al., 2015), men tend to share more selfies displaying active, aggressive, muscle-focused poses, or highlighting their clothes or objects to signal social status (Doering et al., 2015; Rose et al., 2012; Tifferet & Vilnai-Yavetz, 2014; Tortajada et al., 2013). Men also tend to use social networking to form and expand new relationships (Muscanell & Guadagno, 2011), further establishing greater social status. Further, men tend to focus less on emotions and self-disclose less than women (Bond, 2009); they tend to highlight facts such as sports-related information and opinions, especially related to sociopolitical topics (Stern, 2004; Tannen, 1990; Webb & Temple, 2015). This suggests that there may be masculine or male-typed online performance behaviors that reflect agency, such as posting more aggressive, active-presenting selfies, more expansive relationship-building, and less personal self-disclosure.

Similarly, several online presentation behaviors are considered to be more feminine or communal. As also explored above, communion entails fostering connection, closeness, and gentleness, and is demonstrated by stereotypically feminine behaviors such as emotionality, compassion, and passivity. In accordance with communion, women tend to present themselves online in ways that facilitate interpersonal connectivity and closeness. Not only do women post more selfies overall than men (Dhir et al., 2016; Sorokowski et al., 2015), women are specifically more likely to post selfies that present themselves in inactive poses or with expansive, overtaking smiles (Doering et al., 2015; Rose et al., 2012; Tortajada et al., 2013). Women are also more likely to use their social network to maintain existing relationships (Muscanell & Guadagno, 2011). Further, women tend to use more emoticons and reference emotions (Tannen, 1990; Webb & Temple, 2015) and self-disclose (Bond, 2009), specifically about their emotions, mental health, sex, religion, and relationships (Stern, 2004). Again, this suggests that there may be feminine or female-typed online performance behaviors that establish communion, such as posting more

passive, emotion-bearing selfies, more relationship maintenance, and more personal self-disclosure. Again, as masculinity and femininity are inextricable from agency and communion, respectively (Rudman & Glick, 2008), these dimensions of behavior will be henceforth referred to as masculinity and femininity.

Because gender performance may be important for understanding how individuals interact with their sociocultural contexts, studying observed gender performative behaviors online may be a particularly useful way to relate and predict individuals' patterns of behavior and interactions more broadly (e.g., both online and offline). In particular, gender is implicated in personality, which is broadly conceptualized as the extent to which an individual displays high or low levels of a certain trait, or a consistent pattern of thoughts, feelings, motives, and behaviors, across situations (including online or offline; Fleeson & Gallagher, 2009). Further, perhaps extreme levels of gender performance (e.g., extreme masculinity or extreme femininity) may also relate to extreme levels of various personality traits. Extreme patterns of personality traits are often key features of personality disorders; therefore, perhaps extreme gender performance may relate to personality disorder features.

### **Gender Performance and Personality Disorder Features Off- and Online**

Personality disorder features refer to stable, pervasive, and inflexible patterns of personality characteristics that, at their extremes, lead to distress and impairment in a given individual (American Psychological Association, 2013). Personality disorders themselves encompass a wide variety of classifications, such as narcissistic, borderline, or histrionic personality disorders; however, each is characterized by pervasive patterns of specific impairing cognitions and behaviors. Many of these characteristics and disorders can be considered gendered, or prototypical of masculinity or femininity, in their criteria and features (Boysen et al., 2014; Braamhorst et al., 2015; Jane et al., 2007; Samuel & Widiger, 2009; Viljoen et al., 2015).

Some personality disorders are diagnosed more in men (e.g., antisocial, narcissistic; Trull et al., 2010; Waxman et al., 2014) and some more in women (e.g., histrionic, borderline; Trull et al., 2010; Waxman et al., 2014). Perhaps prevalence rates are due to biases in diagnostic criteria or stereotypical perceptions of the diagnoses (Boysen et al., 2014; Braamhorst et al., 2015; Samuel & Widiger, 2009). Specifically, some personality disorder features seem gendered, in that some involve exaggerations of masculinity or agency and others involve exaggerations of femininity or

communion. For example, current investigations of narcissism are concerned with two dimensions: grandiose, in which the predominant features are of self-aggrandizement and aggressive social dominance, and vulnerable, in which the features are more related to self-esteem issues and difficult interpersonal relationships (Dickinson & Pincus, 2003; Miller & Maples, 2011; Wink, 1991). These dimensions relate directly to agentic and communal characteristics, suggesting that these are integral components of narcissistic personality disorder features (Gebauer et al., 2012). Likewise, a hallmark of borderline personality disorder features is a preoccupation with interpersonal relations, particularly problems, aligning with difficulties in communal characteristics (Adler et al., 2012; Russell et al., 2007).

Many previous investigations of gender and personality disorders focus on prevalence differences; fewer investigations of gender performance and personality disorders exist. The few exceptions suggest mixed associations. Perhaps masculine or feminine behaviors at their extreme may increase the likelihood of displaying any personality disorder features (Morey et al., 2002) because this may be a less-adaptive or less-accepted way of interacting with one's sociocultural environment. Contrarily, perhaps different combinations of gender identity and performance have differing relations with personality disorder features. For example, both self-identified men and women who perform their gender in a manner highly consistent with their identity have been found to display higher levels of narcissistic personality features, whereas only men who were more feminine-performing (inconsistent with their identity) were found to display higher levels of borderline personality features (Klonsky et al., 2002).

In accord with co-construction and transformation theories, these personality disorder features may relate to digital communication behaviors. For example, narcissistic personality features in particular have been linked to increased social networking behavior (Liu & Baumeister, 2016), especially more frequent selfie posting (Sung et al., 2016) and posting of photos related to travel, sports, food, achievements (Kim & Chock, 2016; Scott et al., 2018). Narcissistic features have also been associated with online sexual behaviors (Liu & Zheng, 2020), longer and more frequent posts (Bogolyubova et al., 2018; Wu & Atkin 2017), and more personal information disclosure (Liu et al., 2013). When considering only mean-level differences in gender, the relations differ such that narcissism is related more strongly to selfie posting for men compared to women (Liu & Baumeister, 2016; Sorokowski et al., 2015; Weiser, 2015). To the author's knowledge, no studies exist that investigate gender performance or levels of masculinity/femininity online in

relation to personality disorder features. According to co-construction and transformation theories, online gender performance may relate to personality disorder features in similar ways to offline gender performance. For example, perhaps high levels of masculinity and femininity online relate to narcissistic personality disorder features given that these presentations and personality disorder features are related in offline contexts.

Further, given that much of online behavior has been investigated related to narcissism, which has been conceptualized to be more male-typed, it is important to understand online behavior in regard to other gendered personality disorder features. For example, what relation with online behavior might be expected for borderline personality disorder features? Borderline personality disorder is more often considered as feminine pathology (Braamhorst et al., 2015) and is characterized by emotional lability and volatile social relationships (APA, 2013; Lieb et al., 2004). Perhaps extremely feminine gender performance behaviors online relate to borderline personality characteristics.

The current study focused on the two classifications of narcissistic and borderline personality disorder. There are several reasons for this. Methodologically speaking, narcissistic and borderline personality features have demonstrated the most valid and consistent measurement in a community child and adolescent sample (Barry et al., 2003; Zanarini et al., 2003), so these measures were selected for the longitudinal study from which these data originate. Further, narcissistic personality disorder in particular has been studied most extensively in relation to online behavior, so the focus on narcissistic features in the context of online gender behaviors provides a valuable extension to the literature examining these behaviors. Finally, narcissistic and borderline personality disorder are both some of the most highly gendered in their conceptualizations and features, as described above, so they are most likely to relate to gender performative behaviors and further confer meaningful implications for the relation between gender performance online and personality functioning offline.

### **The Current Study**

The current observational study was designed to investigate gender performance via Facebook, a social media site popular with emerging adults (Pew Research Center, 2018). Further, this study investigated gender performance on Facebook as it relates to personality disorder

features such as narcissistic and borderline personality features. Specifically, the study examined the following questions:

1. Are masculine and feminine categories of posting behaviors, as defined by previous research, observable in emerging adults' Facebook posts?
2. Do these highly stereotypical online gender performance behaviors relate to personality disorder features offline?

Based on previous research and theory, it was hypothesized for Question 1 that the masculine-presenting behaviors will be more prevalent in male-identifying participants. These behaviors will include using less emotion and emoticons, more impersonal talk (e.g., talk about politics, academics, entertainment/sports), relationship expanding (e.g., general social engagement), and self-focused photos that include more active, aggressive poses, display less emotion, and highlight objects. Likewise, the feminine-presenting behaviors will be more prevalent in female-identifying participants. These behaviors will include using more emotion and emoticons, more personal talk (e.g., talk about religion, self-disclosure of personal information, sexual talk), relationship building (e.g., specific social engagement), and self-focused photos that include more passive and emotion-displaying poses. Further, given that these behaviors should be related via their gender-stereotyped nature, two latent factors of online gender performance will emerge. Masculine behaviors, as described above, will form one online masculinity or agentic factor. Feminine behaviors, as described above, will form one online femininity or communion factor. The factors will be weakly correlated or uncorrelated, demonstrating separable dimensions of masculinity and femininity. These findings would further provide evidence that online gender performance behaviors are related through their connections to masculinity and femininity, and that they are distinct dimensions.

For Question 2, based on previous research on both online and offline gender performance and personality disorders, it is expected that extreme scores on either the masculine or feminine gender performance behaviors will relate to greater narcissistic personality features. It is similarly predicted that extreme scores on only the feminine gender presentation behaviors will relate to greater borderline personality features. Further, it is hypothesized that average scores on the masculine and feminine dimensions considered together, signifying a more “androgynous”

presentation, will be related to lower personality disorder features of each type. These findings would contribute a deeper understanding of the interplay of gender performance and personality disorder features. These hypothesized relations would support the notion that narcissistic and borderline personality features are highly gendered, and further, would present an alternative way to understand personality disorder features as related to gender-typed behaviors that are directly observable online.

## **METHODS**

The current study utilized existing data from the final waves of a large-scale longitudinal study of psychosocial development and digital communication running from 2003-2013; the data of interest in this project were collected in 2012. Participants were originally recruited in the third grade (age 8-9) from a suburban public-school district in the southwestern US.

### **Participants**

Participants were 132 emerging adults who had just completed high school at the time of data collection. The sample was ethnically diverse (54% White/Caucasian, 21% Black/African American, 16% Hispanic/Latino, 2% Asian/Asian American, and 7% Mixed Race/Other). Participants were included if they completed at least one of the self-reported personality disorder feature measures ( $n = 175$ ) and provided researcher access to their Facebook activity (140 agreed; 132 completed both).

### **Procedures**

During the summer after 12<sup>th</sup> grade, participants assented and parents consented to a series of in-person surveys broadly measuring various aspects of their academic, social, psychological, and physical health. In the fall following the 12<sup>th</sup> grade, participants consented to allow a software application to archive the entirety of their Facebook activity for two years. This software captured public posts, comments, and private messages, posted or sent by themselves or others. A team of graduate and undergraduate students coded two months of the Facebook activity and met weekly to discuss coding challenges. Twenty percent of the page data were double-coded to determine reliability.

The current study added coding procedures to the existing coded Facebook page data that will more specifically capture gender performance-related behaviors, based on previous literature. A team of five undergraduates were trained on the additional coding procedures and checked in weekly with a reliability coder about coding progress and questions. Twenty percent of the page data was double-coded to determine reliability. Reliability for each code is assessed using both

Cohen's kappa ( $\kappa$ ) and Krippendorff's alpha ( $\alpha$ ; Krippendorff, 2011) to account for the high number of posts that were not coded, which resulted in a high number of blank codes.

### **Coding for Gender Performance on Facebook**

The codes that were used from the previously coded data include a measure of the affect expressed in each post and the content areas represented in each post. Affect included separate indications of the presence or absence of positive affect ( $\kappa = .79$ ,  $\alpha = .74$ ) and negative affect ( $\kappa = .74$ ,  $\alpha = .76$ ), so both could be captured for the same post. The content area codes included the presence or absence of discussions of sexual behaviors ( $\kappa = .84$ ,  $\alpha = .70$ ), politics ( $\kappa = .89$ ,  $\alpha = .73$ ), and religion ( $\kappa = .88$ ,  $\alpha = .70$ ).

The new coding procedures were designed to specifically capture gender performance behaviors as established in previous literature. Facebook post content (text-based status updates, with user-posted photos considered for context when available or necessary) was coded for the presence or absence of content related to seven categories. *Personal information disclosures* captured posts that convey some information unique and personal to the participant, such as facts about their life (e.g., their birthday, where they go to school, etc.;  $\kappa = .72$ ,  $\alpha = .72$ ). *Specific social engagement* captured posts that involve other people in specific terms, such as posts that tag or mention a specific friend ( $\kappa = .83$ ,  $\alpha = .83$ ). *General social engagement* captured posts that involve other people in general terms, for example "everyone should come to this fundraiser!" ( $\kappa = .89$ ,  $\alpha = .89$ ). *Academic talk* captured posts that discuss some academic topic, like studying or taking an exam ( $\kappa = .93$ ,  $\alpha = .93$ ). *Entertainment talk* captured posts that discuss some aspect of popular culture, such as movies, television shows, music, video games, etc. ( $\kappa = .89$ ,  $\alpha = .89$ ). *Sports talk* captured posts that discuss sporting games or sporting teams, inclusive of both sporting activities that the participant is and is not involved in ( $\kappa = .91$ ,  $\alpha = .91$ ). Finally, *positive attention-seeking* captured posts that seek to gather positive attention or compliments, or persuade the reader to like the participant, such as posts that convey modesty, familiarity, and humor ( $\kappa = .80$ ,  $\alpha = .80$ ). Separately, emoticons (picture or symbol-based depictions of emotions) were quantified ( $\kappa = .86$ ,  $\alpha = .86$ ).

In addition to the text-based coding, pictures that include the participant were coded based on the presence of activity/passivity and emotionality of their expression or pose. Activity/passivity included touching their face ( $\kappa = .79$ ,  $\alpha = .79$ ), lying or sitting down ( $\kappa = .84$ ,  $\alpha$

= .84), posing off-balance ( $\kappa = .80$ ,  $\alpha = .80$ ), and showing off their muscles ( $\kappa = .88$ ,  $\alpha = .88$ ); emotionality included forming a kissy pout ( $\kappa = .88$ ,  $\alpha = .88$ ), withdrawing their gaze ( $\kappa = .85$ ,  $\alpha = .85$ ), showing overtaking emotion (e.g., expansive smiles, loud laughter;  $\kappa = .86$ ,  $\alpha = .86$ ), and hugging someone ( $\kappa = .88$ ,  $\alpha = .88$ ). The behaviors were separately coded as present or absent in each photograph. Participant-focused pictures were coded based on other features of the picture that are displayed. These features included if the participant is smiling ( $\kappa = .85$ ,  $\alpha = .85$ ) and if there are objects in the picture ( $\kappa = .79$ ,  $\alpha = .79$ ). These features were separately coded as present or absent in each photograph. Table 1 denotes how the codes will be categorized into the identified gender performance behaviors.

The complete codebook included other features such as the purpose of emoticon use; whether photographs had a pet; how much of the participant's body was shown in the photo; and who and how many people are in the photograph. However, these codes were not considered to be part of the central gender performance behaviors and therefore were not examined in the present analyses. The complete codebook is included in the appendix.

## **Measures of Personality Disorder Features**

### **Borderline Personality Disorder Features**

Participants completed the McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD; Zanarini et al., 2003) with items in yes/no format (10 items, e.g., "Have you been extremely moody?"). The items will be summed such that higher scores indicate more borderline personality disorder features.

Table 1. Coding Categories and Reliabilities for Potential Gender Performance-Related Facebook Posting Behaviors

Gender Behavior Categories	$\kappa$	$\alpha$	Post Content Codes
Emotion presentation	.79	.74	• Positive affect
	.74	.76	• Negative affect
	.86	.86	• Emoticon use frequency
			• Emotion in self photos
	.88	.88	o Forming a kissy pout
	.85	.85	o Withdrawing their gaze
	.86	.86	o Showing overtaking emotion
	.88	.88	o Smiling
	.85	.85	o Hugging someone
Personal talk	.72	.72	• Flagged Y on personal self-disclosure and
	.88	.70	• Religious talk
	.84	.70	• Sexual behavior talk
Impersonal talk	.72	.72	• Flagged N on personal self-disclosure and
	.89	.73	• Politics talk
	.89	.89	• Entertainment talk
	.91	.91	• Sports talk
Relationship building	.83	.83	• Specific social engagement
	.80	.80	• Positive attention-seeking
Relationship expanding	.89	.89	• General social engagement
	.80	.80	• Positive attention seeking
Active, status-emphasizing self-photos	.88	.88	• Showing off muscles
	.79	.79	• Highlighting objects
Passive self-photos	.79	.79	• Touching their face
	.84	.84	• Lying or sitting down
	.80	.80	• Posing off-balance

*Note.*  $\kappa$  = Cohen's kappa;  $\alpha$  = Krippendorff's alpha.

## **Narcissistic Personality Disorder Features**

Participants completed the 40-item Narcissistic Personality Inventory-Child Form (NPI-C; Barry et al., 2003). Participants were presented with items that contain two opposing statements, one endorsing and one negating a statement about themselves. Participants chose which statement best represented how they felt about themselves and select whether it is “Really true of me” or “Sort of true of me.” Example items include “I am good at getting other people to do what I want OR I am not good at getting other people to do what I want” and “I really like to be the center of attention OR I am not comfortable being the center of attention.” Responses were collapsed into a single item, so that higher scores indicate stronger endorsement of the statement. Items will be summed such that higher scores indicate more narcissistic personality disorder features.

## **Analytic Plan**

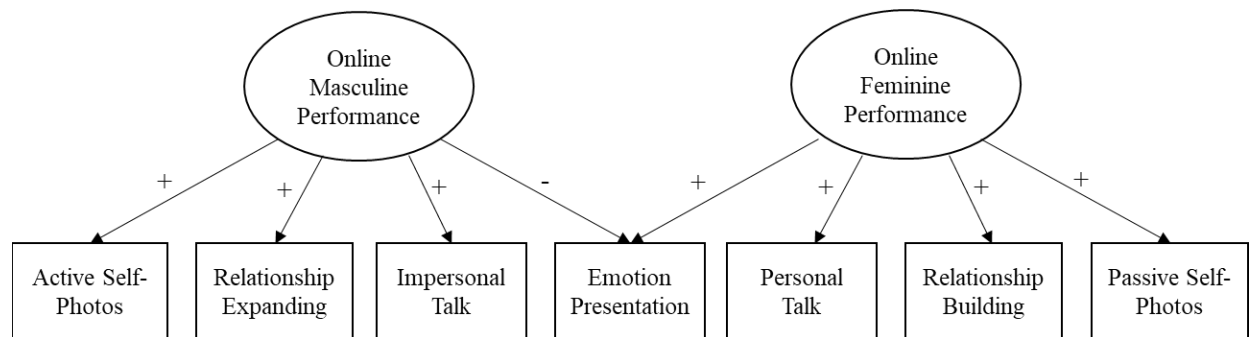
Data were cleaned and prepared in IBM SPSS version 26, and all statistical analyses were conducted in R version 4.0.2. Gender was dummy coded such that women were the reference group. Facebook post content codes were converted into proportions of posts or photos respectively, for example a proportion of positive affect in all the individual’s posts was calculated and a proportion of withdrawn gaze in all the individual’s photos was calculated. Descriptive and correlational analyses were run to explore the data and ensure approximate normality. The remaining analyses are separated by research question.

## **Question 1. Masculine and Feminine Online Posting Behaviors**

*T*-tests by gender were conducted for each online performance behavior to determine gender differences. Correlations among the Facebook post content codes were investigated to see if they were related within the theoretically defined gender performance categories. The individual Facebook post content codes were combined according to the theoretically defined gender performance behavior categories to create summary proportion scores that aggregate across all behaviors within each category (defined in Table 1). This was to simplify the coded data and organize the posting behaviors in a way that reflects theoretically gendered patterns of behavior.

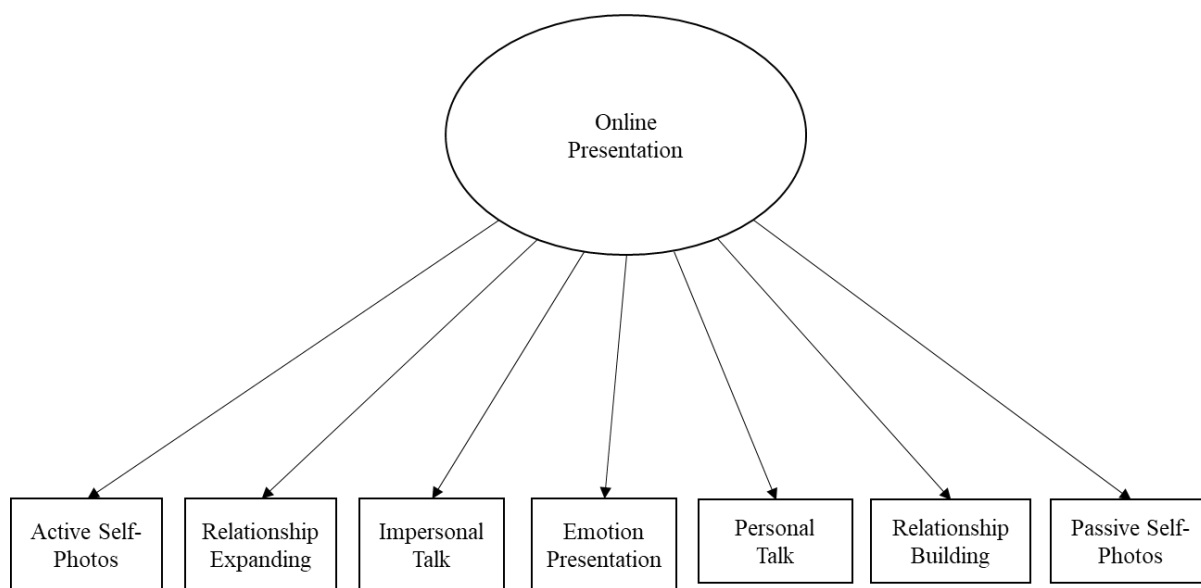
Next, confirmatory factor analyses (CFA) were conducted to identify a-priori hypothesized latent factors that may drive the gender performance behaviors (Brown, 2015). The hypothesized CFA tested a two-factor structure of online masculinity and online femininity using the gender performance behavior categories indicated in previous research as contributing to gender performance (Figure 1). Such a model is consistent with masculinity and femininity representing two independent dimensions of online gender performance. This CFA was evaluated against an alternative single-factor solution where all behaviors load onto one “online presentation” factor, which may not represent gender performance specifically but may simply be a general online posting factor (Figure 2). The two-factor CFA was estimated using active and passive display in photographs as the anchor variable, as that is likely to be the most differentiating variables for masculine and feminine posting behaviors. The single factor CFA was estimated by setting the variance of the latent variable to 1.0, as there is no theoretical justification to set any of the posting behavior variables as the anchor variable.

Both CFAs were estimated using full information maximum likelihood and evaluated using the recommended cutoff points on chi-square, RMSEA, SRMR, CFI, and TLI, along with evaluating and comparing AIC and BIC (Browne & Cudeck, 1993; Hu & Bentler, 1995). The models were also evaluated based on the factor loadings and their residual variance-covariance matrices. Due to factor convergence issues, the two-factor solution was uninterpretable and was subsequently not used to test for measurement invariance by gender, examine factor score distributions, or examine correlations between the factors to determine separability. However, the single-factor solution converged and demonstrated adequate fit, so this was used to examine factor score distributions by gender and investigate measurement invariance by gender. Factor scores were predicted and compared by gender using t-tests. Measurement invariance was examined in three steps: configural, metric, and scalar invariance (Milfont & Fischer, 2010). Configural invariance indicates that the overall factor structure is the same across groups and requires testing the structure in men and women. Next, metric invariance indicates that the factor loadings are the same across groups and requires constraining the loadings to be equal across men and women. Scalar invariance is the most strict of measurement invariance, indicating that the indicator intercepts (in this case, the gender behavior category score intercepts) are equivalent across groups. Each of these was tested in succession to examine levels of invariance by gender for the single-factor structure.



*Note.* Solid lines indicate hypothesized paths. + indicates positive loading and - indicates negative loading.

Figure 1. Hypothesized 2-factor model.



*Note.* Solid lines indicate hypothesized paths.

Figure 2. Alternative single-factor model of online presentation.

In order to explore whether two factors that could potentially reflect gender performance dimensions may emerge from the data that were not specified by the CFA, a two-factor exploratory factor analysis (EFA) using oblique geomin rotation was estimated using the Facebook post content scores. These two factors were explored by gender to determine whether the factors indicated any differences in mean level by gender.

## **Question 2. Online Gender Performance and Personality Disorder Features**

Personality disorder features were explored in relation to gender performance. First, as proposed, correlations were examined between each of the Facebook post content scores and the personality disorder features scores, to see whether the expected patterns emerged. In addition to what was previously proposed, the Facebook post content scores and the gender behavior category summary scores were entered into a series of linear regressions to examine their relative associations with either personality disorder features. All Facebook post content scores were entered simultaneously, and all gender behavior category scores were entered simultaneously, resulting in four total regression models. All models also included gender as a covariate.

It was proposed that latent path modeling would be used to explore the relations between the personality disorder features and the latent online masculinity/femininity factors, using the factors continuously, creating binary median-split variables, and interacting the factors to approximate androgynous presentation (see Figure 3 for the proposed model). However, because the two-factor CFA did not properly converge and the factors were uninterpretable, these analyses were not conducted.

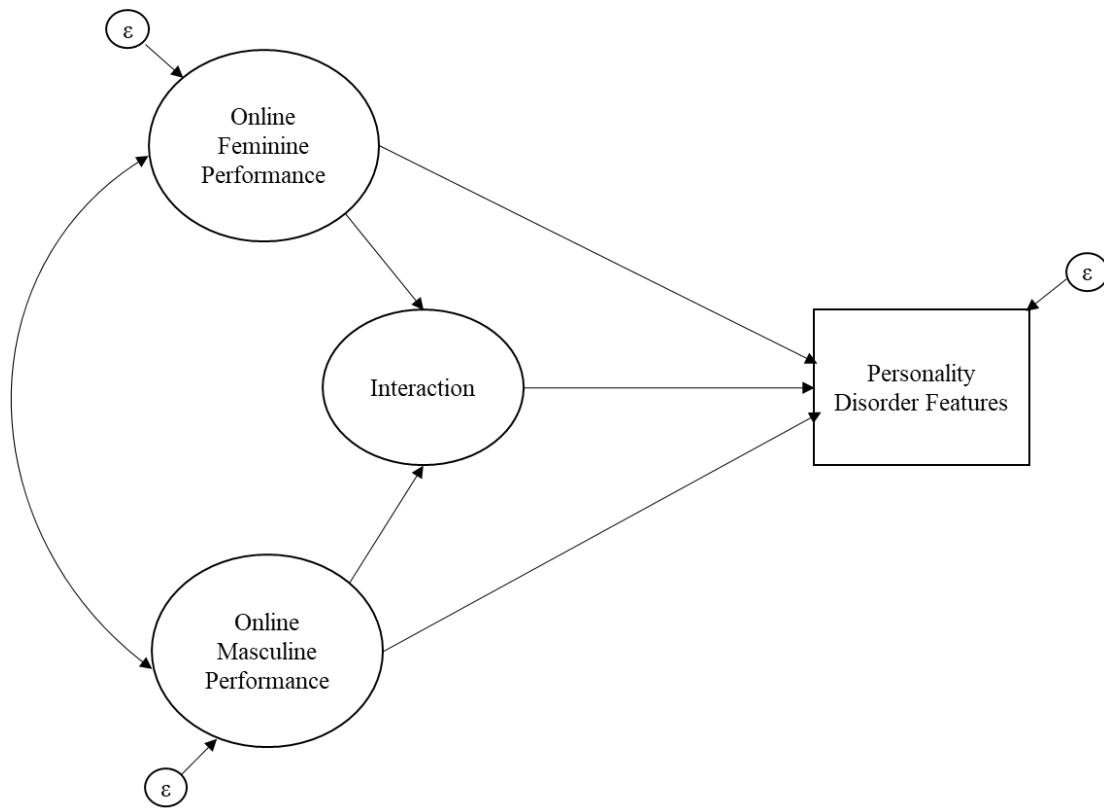


Figure 3. A conceptual latent path model examining the relation between latent online feminine and masculine performance, their interaction and personality disorder features.

## RESULTS

Table 2 shows the means and standard deviations of the total posts, total photographs, each of the Facebook post content scores and the gender behavior category summary scores. It is important to note that there was some evidence of skew within some of the post content scores (*skewness* > 2); however, given that these are predictor variables, the variables were not transformed.

Participants made 64 posts and uploaded 27 photographs on average. Some post content was clearly more prevalent than others: positive affect, personal self-disclosures, and specific social talk were most frequently observed, whereas sexual, political, and religious talk were least frequently observed. Similarly, in the photographs, smiling and highlighting objects were most frequently observed, whereas showing muscles or a kissing pout were least frequently observed.

### Question 1. Masculine and Feminine Online Posting Behaviors

Table 2 also presents means and standard deviations of Facebook post content codes by gender, along with t-tests to examine gender differences. Relative to men, women made significantly more posts and uploaded more photographs, posted using more positive affect and emoticons, posed in photos with a kissing pout, hugging someone, smiling, tilting the head or body, or highlighting objects (all  $p$ 's < .01). Relative to women, men only posted more entertainment-related content. Other content codes did not significantly differ between genders.

Table 3 shows the correlations among the Facebook post content codes. Overall, the pattern of correlations among proportion scores did not align with the expected gender performance categories. For example, the emotion display behaviors were expected to be moderately correlated with each other. However, only some of the posting content codes were significantly related, such as emoticon use with positive affect or hugging with smiling ( $p$ 's < .01). Even less related were post content codes theorized to relate to relationship building and expanding behaviors: specifically, there were no significant relations among positive attention seeking, specific social engagement, and mass social engagement ( $p$ 's > .19).

Table 2. Means and Standard Deviations for Posting Behaviors and Summarized Gender Behavior Category Scores for the Overall Sample and *T*-Tests by Gender

Variable	Total Sample		Men		Women		<i>t</i> -statistic ( <i>df</i> )	<i>p</i> -value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Total Posts	64.39	107.04	39.31	51.41	92.00	141.10	<b>2.77 (78.54)</b>	<b>0.007</b>
Total Photos	27.01	65.42	12.03	19.65	43.70	89.93	<b>2.74 (68.68)</b>	<b>0.008</b>
Posts (behaviors per total posts)								
Positive Affect	0.43	0.23	0.39	0.23	0.49	0.20	<b>2.71 (129.65)</b>	<b>0.008</b>
Negative Affect	0.19	0.17	0.21	0.19	0.17	0.15	-1.51 (126.55)	0.13
Emoticons	0.17	0.21	0.11	0.19	0.24	0.20	<b>3.87 (127.29)</b>	<b>&lt; .001</b>
Personal Disclosure	0.28	0.22	0.27	0.22	0.28	0.21	0.15 (130.00)	0.88
Sexual Talk	0.01	0.02	0.01	0.02	0.01	0.01	-0.80 (113.22)	0.42
Politics Talk	0.01	0.04	0.01	0.04	0.01	0.04	-0.58 (128.60)	0.56
Religion Talk	0.02	0.05	0.02	0.05	0.01	0.04	-1.13 (123.24)	0.26
School Talk	0.07	0.10	0.06	0.10	0.08	0.10	1.57 (128.41)	0.12
Entertainment Talk	0.07	0.09	0.09*	0.11	0.04	0.06	<b>-3.40 (105.66)</b>	<b>0.001</b>
Sports Talk	0.04	0.07	0.04	0.07	0.04	0.06	0.18 (129.54)	0.86
Positive Attention Seeking	0.05	0.09	0.05	0.09	0.05	0.10	-0.13 (124.97)	0.90
Specific Social	0.36	0.22	0.33	0.22	0.39	0.22	1.74 (128.83)	0.08
Mass Social	0.08	0.08	0.07	0.09	0.07	0.07	-0.11 (127.65)	0.91

Table 2 continues

Photos (behaviors per total photos)								
Withdraw Gaze	0.08	0.15	0.10	0.18	0.07	0.11	-0.95 (109.55)	0.34
Loss of Control	0.04	0.09	0.03	0.09	0.05	0.08	0.94 (129.95)	0.35
Kissing Pout	0.03	0.08	0.003	0.03	0.06	0.10	<b>4.15 (72.53)</b>	<b>&lt; .001</b>
Hugging	0.18	0.23	0.12	0.20	0.24	0.25	<b>2.94 (120.44)</b>	<b>0.004</b>
Smiling	0.38	0.31	0.27	0.21	0.51	0.36	<b>4.70 (129.24)</b>	<b>&lt; .001</b>
Touch	0.13	0.19	0.10	0.21	0.16	0.17	1.91 (128.63)	0.06
Posture	0.11	0.15	0.11	0.17	0.11	0.12	0.16 (121.45)	0.87
Imbalance	0.19	0.20	0.14	0.18	0.24	0.20	<b>2.78 (125.82)</b>	<b>0.006</b>
Muscles	0.01	0.04	0.01	0.05	0.00	0.01	-1.51 (69.51)	0.14
Objects	0.55	0.31	0.48	0.32	0.65	0.25	<b>3.23 (127.01)</b>	<b>0.002</b>
Gender Category Summary Scores (across post and photo)								
Emotion Display	1.52	0.62	1.24	0.58	1.83	0.51	<b>5.97 (129.72)</b>	<b>&lt; .001</b>
Personal Talk	0.08	0.09	0.08	0.11	0.08	0.08	-0.17 (122.38)	0.87
Impersonal Talk	0.10	0.11	0.11	0.13	0.08	0.08	-0.18 (117.44)	0.07
Relationship Building	0.02	0.06	0.02	0.04	0.03	0.08	1.49 (89.38)	0.14
Relationship Expanding	0.01	0.03	0.01	0.04	0.01	0.02	-1.28 (103.83)	0.21
Active Photos	0.56	0.31	0.49	0.34	0.65	0.25	<b>2.97 (125.44)</b>	<b>0.004</b>
Passive Photos	0.43	0.35	0.35	0.37	0.51	0.32	<b>2.68 (129.35)</b>	<b>0.008</b>

Table 3. Correlations Among Facebook Posting Behaviors Separated by Theoretically Defined Gender Performance Categories

Emotion Display							
	Positive Affect	Negative Affect	Emoticon Use	Withdraw Gaze	Loss of Control	Kissing Pout	Hugging
Negative Affect	0.05						
Emoticon Use	.46**	-0.07					
Withdraw Gaze	-0.07	-0.04	-0.09				
Loss of Control	0.08	0.02	0.05	.33**			
Kissing Pout	0.15	-0.02	0.1	0.12	0		
Hugging	-0.08	-.28**	-0.12	-0.01	0.09	-0.13	
Smiling	0.1	-.32**	0.03	-0.1	0.14	-0.02	.71**
Personal/Impersonal Talk							
	Personal Self-Disclosure	Sexual Talk	Political Talk	Religion Talk	School Talk	Entertainment Talk	
Sexual Talk	-0.09						
Political Talk	0.12	-0.06					
Religion Talk	0.12	-0.1	.26**				
School Talk	0.1	-0.08	0.10	-0.08			
Entertainment Talk	0.06	-0.04	0.09	0.14	-0.09		
Sports Talk	0.04	-0.1	.23**	-0.01	.61**	0.04	

Table 3 continues

Relationship Building/Expanding		
	<u>Pos. Attn-Seeking</u>	<u>Specific Social</u>
Specific Social	0.12	
Mass Social	0.01	0.12
Passive Photo Display		
	<u>Touch</u>	<u>Posture</u>
Posture	.23**	
Imbalance	0.07	0.15
Active Photo Display		
	<u>Objects</u>	
Muscles	0.11	

*Note.* \*\* $p < .01$ .

Confirmatory factor analyses were used to test a two-factor structure of online masculinity and femininity factors against a single-factor online presentation factor. The model fit indices for both CFA models are reported in Table 4 and the factor loadings are displayed in Figures 4 and 5 separately by model. The hypothesized two-factor CFA fit adequately, but not excellently. However, when running this two-factor CFA, a Heywood case emerged in that one of the factors' variance estimates was negative. This brings into question the validity of the factor solution, and this CFA is not used in further analyses.

The alternative single-factor CFA fit adequately but not excellently and converged normally. To explore gender differences in this single factor of online presentation, factor scores were examined and the model was tested for measurement invariance by gender. Factor scores by gender indicate that women's scores on the online presentation factor were higher than men's ( $M_{women} = .28, M_{men} = -.27, t(125.86) = 3.50, p < .001$ ). Measurement invariance tests revealed that the model was not invariant across groups. Table 5 displays the fit statistics for each of the measurement invariance models. None of the measurement invariance models demonstrated acceptable fit, suggesting that the factor structure, loadings, and indicator intercepts are not equivalent by gender.

The model fit indices from the two-factor exploratory factor analysis (EFA), used to explore whether two factors that could potentially reflect gender performance dimensions may emerge from the data that were not specified by the CFA, are reported in Table 6, and the factor loadings are reported in Table 7. The loadings do not indicate factors that appear to relate to gender as related to the pre-defined categories of behaviors. Factor 1 seems to relate to lack of detailed sharing in posts with positive presentation in photos, as evidenced by the negative loadings for negative affect, sexual talk, religion talk, entertainment talk, positive attention seeking, and mass social engagement, and the positive loadings for hugging, smiling, and feminine touch. Factor 2 seems to relate to more informational sharing in posts, as demonstrated by the positive loading for politics talk, school talk, and mass social engagement, but also contain an element of femininity as indicated by the positive loading for feminine touch. The factor scores were investigated by gender, suggesting that women scored higher on Factor 1 and no gender differences emerged in scores on Factor 2.

Table 4. Fit Statistics for Single-Factor and 2-Factor Confirmatory Factor Analysis (CFA) Models Testing an Online Presentation Factor and Online Masculinity/Online Femininity Factors

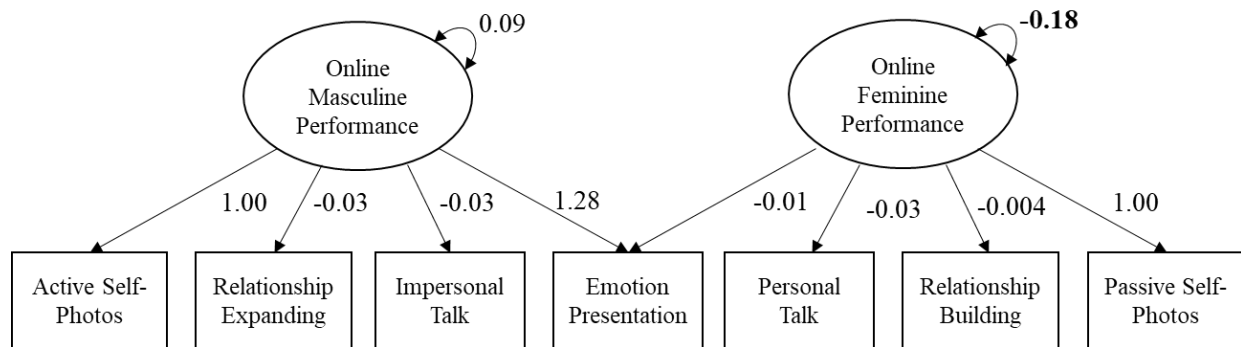
Tested Model	Fit Indices						
	Chi-Square ( <i>df</i> ), <i>p</i> -value	RMSEA [95% CI]	SRMR	CFI	TLI	AIC	BIC
1-factor	28.51 (14), 0.01	.09 [.04, .14]	0.07	0.87	0.81	-985.26	-924.73
2-factor	23.45 (12), .02	.09 [.03, .14]	0.07	0.90	0.82	-986.32	-920.02

Table 5. Fit Statistics for Factorial Invariance of Single Online Presentation Factor Confirmatory Factor Analysis (CFA) Models by Gender

Levels of Invariance	Fit Indices						
	Chi-Square ( <i>df</i> ), <i>p</i> -value	RMSEA [95% CI]	SRMR	CFI	TLI	AIC	BIC
Configural	50.36 (28), .006	0.11 [.06, .16]	0.09	0.76	0.66	-1065.15	-944.08
Metric	54.41 (34), .015	0.10 [.04, .14]	0.10	0.80	0.75	-1073.10	-969.32
Scalar	78.105 (40), < .001	0.12 [.08, .16]	0.12	0.62	0.60	-1061.41	-974.92

Table 6. Fit Statistics for 2-Factor Exploratory Factor Analysis (EFA) Model

Tested Model	Fit Indices					
	Chi-Square ( <i>df</i> ), <i>p</i> -value	RMSEA [95% CI]	SRMR	TLI	BIC	
2-factor	428.04 (208), <i>p</i> < .001	.09 [.08, .10]	0.11	0.48	-587.58	



*Note.* The Heywood case is bolded.

Figure 4. Two-Factor Confirmatory Factor Analysis (CFA) Model with unstandardized loadings and factor variances.

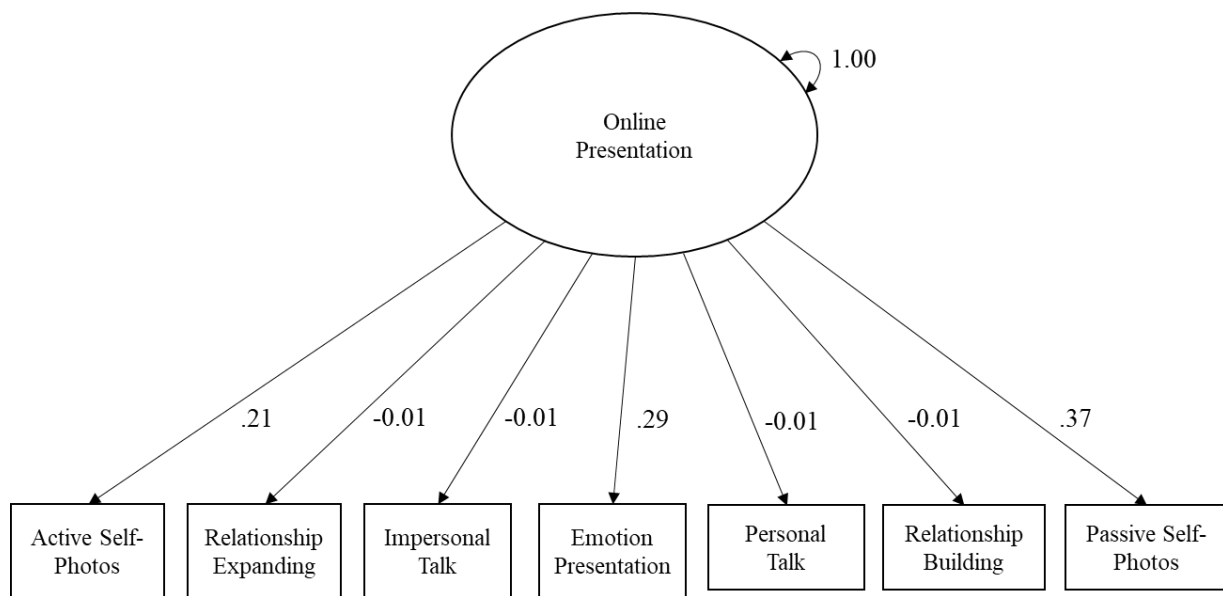


Figure 5. Alternative Single-Factor Confirmatory Factor Analysis (CFA) Model with unstandardized factor loadings and factor variance.

Table 7. Factor Loadings for 2-Factor Exploratory Factor Analysis (EFA) Models, Conducted Separately for Coded Facebook Behaviors and for Gender Behavior Category Scores

	Factor 1	Factor 2
Factor Loadings		
Posts (behaviors per total posts)		
Positive Affect	0.04	0.0003
Negative Affect	<b>-0.37</b>	0.11
Emoticons	0.03	-0.08
Personal Disclosure	-0.16	0.11
Sexual Talk	<b>-0.21</b>	-0.07
Politics Talk	-0.16	<b>0.29</b>
Religion Talk	<b>-0.28</b>	0.07
School Talk	0.16	<b>0.64</b>
Entertainment Talk	<b>-0.35</b>	0.12
Sports Talk	-0.02	<b>0.89</b>
Positive Attention Seeking	<b>-0.25</b>	-0.08
Specific Social	-0.17	-0.11
Mass Social	<b>-0.23</b>	<b>0.32</b>
Photos (behaviors per total photos)		
Withdraw Gaze	0.002	-0.08
Loss of Control	0.19	-0.14
Kissing Pout	-0.04	0.02
Hugging	<b>0.75</b>	0.05
Smiling	<b>0.92</b>	-0.03
Touch	<b>0.35</b>	<b>0.27</b>
Posture	0.06	0.14
Imbalance	0.18	0.18
Muscles	0.01	0.12

Table 7 continues

Objects	<b>0.73</b>	0.05
Factor Scores		
Men	-0.34	-0.04
Women	0.36	0.04
<i>t</i> -statistic	4.59	0.52
<i>p</i> -value	< .001	0.60

*Note.* Loadings greater than .2 are bolded.

## Question 2. Online Gender Performance and Personality Disorder Features

Table 8 contains the correlations of the Facebook post content code and gender behavior category scores with the personality disorder feature variables. Using a conservative  $p < .01$  considering multiple correlations, narcissistic personality features were not related to any of the Facebook post content codes or gender behavior category scores. Borderline personality features were only negatively related to hugging ( $r = -.32, p < .001$ ) and smiling ( $r = -.28, p < .001$ ) in photographs.

Results of the linear regressions, which controlled for gender, included all Facebook post content codes in one model and the gender behavior summary scores in a separate model, are presented in Table 9. Negative affect ( $b = 2.97, \beta = 0.21, p = 0.04$ ) and use of emoticons ( $b = 3.13, \beta = 0.27, p = 0.02$ ) were positively associated with borderline personality disorder features, and loss of control was negatively associated with borderline personality disorder features ( $b = -6.34, \beta = -0.23, p = 0.02$ ). Within the summary proportions cores, relationship expanding was positively related to borderline personality disorder features ( $b = 16.15, \beta = 0.22, p = 0.02$ ). None of the posting behaviors or summary proportion scores were related to narcissistic personality disorder features.

Table 8. Correlations of Facebook Behaviors and Gender Behavior Category Scores with Personality Disorder Features

	Narcissistic PD Features	Borderline PD Features
Posts (behaviors per total posts)		
Positive Affect	-0.10	-0.05**
Negative Affect	0.02	.22
Emoticons	-.19	.17
Personal Disclosure	-0.05	0.06
Sexual Talk	-0.02	0.08
Politics Talk	0.14	-0.03
Religion Talk	-0.09	-0.03
School Talk	0.06	-0.16
Entertainment Talk	-0.06	0.03
Sports Talk	0.18	-0.02
Positive Attention Seeking	-.18	0.01
Specific Social	-0.07	0.12
Mass Social	0.02	0.03
Photos (behaviors per total photos)		
Withdraw Gaze	0.04	0.05
Loss of Control	-0.09	-0.15
Kissing Pout	0.04	0.06
Hugging	0.13	-.32**
Smiling	0.08	-.28**
Touch	0.09	-0.09
Posture	-0.03	0.00
Imbalance	0.06	0.04
Muscles	0.14	0.14
Objects	0.08	-0.14

Table 8 continues

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Gender Category Summary Scores (across post and photo)		
Emotion Display	-0.01	-0.16
Personal Talk	-0.01	-0.04
Impersonal Talk	0.00	-0.03
Relationship Building	-0.10	-0.07
Relationship Expanding	-0.10	.18
Active Photos	0.09	-0.13
Passive Photos	0.07	-0.02

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*Note.* PD = Personality Disorder.

**\*\*** $p < .01$ .

Table 9. Unstandardized and Standardized Regression Coefficients of Personality Disorder Features Regressed onto Facebook Posting Behaviors and Gender Behavior Category Summary Scores

	Borderline Personality Disorder Features				Narcissistic Personality Disorder Features			
	beta	Std. Error	<i>p</i> -value	<i>B</i>	beta	Std. Error	<i>p</i> -value	<i>B</i>
Posts (behaviors per total posts)								
Gender	-0.16	0.51	0.75	—	<b>9.15</b>	<b>2.35</b>	<b>&lt; .001</b>	—
Positive Affect	-2.06	1.12	0.07	-0.19	-1.13	5.11	0.82	-0.02
Negative Affect	<b>2.97</b>	<b>1.44</b>	<b>0.04</b>	<b>0.21</b>	5.43	6.60	0.41	0.08
Emoticons	<b>3.13</b>	<b>1.33</b>	<b>0.02</b>	<b>0.27</b>	-4.38	6.16	0.48	-0.08
Personal Disclosure	0.76	1.07	0.48	0.07	-1.00	4.88	0.84	-0.02
Sexual Talk	-8.31	11.54	0.47	-0.07	8.00	52.70	0.88	0.01
Politics Talk	-1.39	5.83	0.81	-0.02	33.83	26.67	0.21	0.12
Religion Talk	-2.88	5.26	0.59	-0.05	-18.46	24.02	0.44	-0.08
School Talk	-3.67	2.69	0.17	-0.15	-6.99	12.26	0.57	-0.06
Entertainment Talk	-0.54	2.60	0.84	-0.02	-17.57	11.87	0.14	-0.15
Sports Talk	3.12	4.07	0.44	0.09	17.35	18.60	0.35	0.11
Positive Attention Seeking	-3.45	2.66	0.20	-0.13	-17.15	12.16	0.16	-0.14
Specific Social	0.01	1.10	1.00	0.001	3.52	5.01	0.48	0.07
Mass Social	-1.01	2.89	0.73	-0.04	-0.54	13.26	0.97	-0.004

Table 9 continues

Photos (behaviors per total photos)								
Withdraw Gaze	1.66	1.66	0.32	0.10	4.57	7.60	0.55	0.06
Loss of Control	<b>-6.34</b>	<b>2.78</b>	<b>0.02</b>	<b>-0.23</b>	-12.21	12.71	0.34	-0.10
Kissing Pout	0.93	3.21	0.77	0.03	27.48	14.67	0.06	0.19
Hugging	-2.42	1.44	0.10	-0.23	6.84	6.65	0.31	0.14
Smiling	-0.13	1.38	0.93	-0.02	6.64	6.31	0.29	0.19
Touch	-1.18	1.33	0.38	-0.09	2.76	6.24	0.66	0.05
Posture	0.16	1.74	0.93	0.01	-2.39	8.03	0.77	-0.03
Imbalance	1.30	1.24	0.30	0.11	10.49	5.68	0.07	0.19
Muscles	6.73	5.83	0.25	0.10	25.26	26.64	0.35	0.09
Objects	-0.11	1.33	0.93	-0.01	-5.98	6.09	0.33	-0.17
Gender Category Summary Scores (across post and photo)								
Gender	-0.32	0.48	0.51	—	<b>7.31</b>	<b>2.17</b>	<b>0.001</b>	—
Emotion Display	-0.66	0.43	0.12	-0.17	1.09	1.95	0.58	0.06
Personal Talk	-2.68	2.39	0.26	-0.10	2.71	10.74	0.80	0.02
Impersonal Talk	-1.43	1.97	0.47	-0.06	-4.81	8.84	0.59	-0.05
Relationship Building	-2.68	2.39	0.26	-0.12	-5.32	15.23	0.73	-0.03
Relationship Expanding	<b>16.15</b>	<b>6.85</b>	<b>0.02</b>	<b>0.22</b>	-35.56	30.67	0.25	-0.11

Table 9 continues

Active Photos	-0.62	0.91	0.50	-0.08	2.74	4.10	0.51	0.08
Passive Photos	0.73	0.73	0.32	0.11	1.98	3.29	0.55	0.06

*Note.* All Facebook posting behaviors were entered simultaneously, and all gender behavior category scores were entered simultaneously, resulting in four total tests. Bolded values indicate significance at  $p < .01$ .

## **DISCUSSION**

The current study explored whether (1) masculine and feminine categories of posting behaviors are observable in emerging adults' Facebook posts, and (2) these highly stereotypical online gender performance behaviors relate to offline personality disorder features. For question 1, it was hypothesized that the agentic/masculine behaviors would be more prevalent in men and communal/feminine behaviors will be more prevalent in women. Further, it was hypothesized that these behaviors would be driven by two underlying constructs of online masculinity and online femininity. For question 2, it was expected that the masculine and feminine behaviors would relate to narcissistic personality features, and that the feminine behaviors would relate to borderline personality features. Moreover, it was hypothesized that average and interacted scores of the masculine and feminine constructs would relate to lower personality disorder features.

The results suggested limited support for some hypotheses. Gender differences emerged in favor of women in some of the feminine behaviors, but also in one of the masculine behaviors (highlighting objects), and men only posted more entertainment-related content. Further, some of the gendered behaviors demonstrated significant relations with personality disorder features, but in ways that did not align with theoretically predicted gender-related patterns. Otherwise, the hypotheses were largely unsupported. Below, each research question and hypothesis are explored in the context of the current findings.

### **Masculine and Feminine Online Posting Behaviors**

The hypotheses that masculine behaviors, as defined from previous research, would be more prevalent in men, and feminine behaviors, as defined from previous research, would be more prevalent in women was not supported. Theoretically masculine or agentic behaviors, examined in previous research, were not more prevalent among men than women. Some theoretically feminine or communal behaviors, examined in previous research, were more prevalent among women than men, but so were other behaviors. Indeed, it appeared that in almost every case where there was a gender difference in posting behavior, the behavior was more prevalent in women. Perhaps this indicates more online expressivity overall in women, regardless of whether the behavior is conceptualized as male- or female-typed.

These findings are in contrast to previous research on gender display categories (Goffman, 1979; Kang, 1997) and performance related to agency and communion (Rudman & Glick, 2008), which suggests that social media users' online presentation is typically highly gender stereotyped (Doering et al., 2015; Muscanell & Guadagno, 2011; Rose et al., 2012; Tifferet & Vilnai-Yavetz, 2014; Tortajada et al., 2013; Webb & Temple, 2015). Specifically, men have been found to present themselves online in ways that demonstrate status and power, including posting selfies displaying active, aggressive, muscle-focused poses or highlighting objects to signal social status (Doering et al., 2015; Rose et al., 2012; Tortajada et al., 2013), and post content that contains facts or non-personal opinions (Webb & Temple, 2015). In contrast, women have been found to present themselves online in ways that demonstrate emotionality and foster interpersonal connectivity, including posting selfies that present themselves in inactive poses or with expansive, overtaking emotional expression (Doering et al., 2015; Rose et al., 2012; Tortajada et al., 2013), and post content that references emotions and personal disclosures (Webb & Temple, 2015).

The current study did not reveal these patterns. However, previous research has focused on user content that is publicly available (e.g., public selfies on Instagram, Doering et al., 2015; public "home pages", Stern, 2004) or relied on self-report methods (e.g., Bond, 2009), as opposed to directly observing individuals' personal (often private) profiles. Perhaps these methodological differences resulted in capturing different types of online posting behaviors. For example, perhaps public digital communication platforms prompt individuals to heighten their gender performance. If this is true, it could signal differential ways that individuals navigate and perform their gender depending on the context and their (imagined or actual) audience. Further, perhaps self-report methods that elicit or hone in on gender-stereotyped behaviors are better able to capture instances of these behaviors than are observational methods that capture emerging adults' overall social media posting behavior, which would potentially indicate that gender performance is only a small component of online posting behavior in general. It could have also been possible that the coding system was measuring the intended behaviors, but these behaviors were so infrequent that the signal was not strong or consistent enough to be detected by the statistical analyses. Alternatively, perhaps the coding system, although reliable, did not capture the intended behaviors and instead picked up on some other aspects of posting, like posting frequency or variety of topics shared. Therefore, much more research is needed to examine online behaviors that are thought to relate to

gender identity and performance, so that we can be confident in what these measures and methods are truly detecting.

The hypotheses that two latent factors of online masculinity and online femininity would emerge was also not supported. When conducting the confirmatory factor analysis (CFA) to investigate this potential factor structure, the two latent factors of online gender performance, masculine and feminine performance, did not converge and were uninterpretable. Perhaps this was due to a relatively small sample size, simple lack of signal, or model misspecification. Model misspecification may have been the most likely, as evidenced by the EFA: the factor loadings did not emerge in patterns that aligned with the theoretically defined gender-typed categories of behaviors and only one of the factors demonstrated mean-level gender differences. These findings from the two-factor analyses suggest that distinct styles of masculine and feminine online posting behaviors may not exist. In support of this hypothesis, the single-factor analysis indicated that there could be one single factor that underlies online posting behavior and does not relate to binary conceptions of gender. However, even this model only demonstrated adequate fit and did not appear to be invariant across gender; perhaps online posting behaviors may not be universally driven by a unifying factor at all. This further suggests that the behaviors thought to contribute to online gender performance may not be inherently related to underlying agentic/masculine and communal/feminine constructs, or underlying constructs at all. This might mean that the only meaningful aspects of online posting behaviors are those that are directly observable or reportable. Future research that investigates online posting behaviors, particularly as it relates to the individual's identity expression, should consider direct observations or measures related to these constructs as opposed to extracting underlying driving factors.

Additionally, perhaps the Facebook content codes only reflect behaviors thought to relate to gender performance, but these behaviors may not demonstrate gender differences or be related according to masculinity or femininity as theorized. Maybe a two-factor structure of gender performance does not reflect the true ways that gender operates within online contexts. It could be possible that there are no underlying factors that drive online gender performance. Future research could examine other online behaviors that could relate to gender performance, such as specific gender-related language use or interaction with gendered content (e.g., pages "for women," "for men," or even queer-specific online spaces). Investigating these associations could allow for a

clearer understanding of how gender operates in online spaces than was provided by the current study.

Moreover, it is possible that some key components of understanding gender were not assessed in these data. For example, we only had participants self-categorize their gender, or report whether they identify as a binary man or woman. We do not know the extent to which this identity is salient for them or how traditionally gendered they envisioned themselves to be. Maybe online gender performance is more directly related to one's own sense of masculinity and femininity (e.g., felt gender typicality; Egan & Perry, 2001; Perry & Pauletti, 2011) as opposed to whether they identify with a single, binary gender category. Indeed, current research on gender indicates that felt gender typicality may be more predictive of (offline) gender performative behavior than simple self-categorization (e.g., Nielson et al., 2020). Future research on gender performance in more general online posting behaviors may benefit from separately examining other related aspects of gender identity. These may include felt gender typicality, ideas of ambivalent sexism (the extent to which one holds hostile or benevolent sexist beliefs; Glick & Fiske, 2011), or felt pressure to conform to gender stereotypes (how obligated one feels to adhere to gender norms; Egan & Perry, 2001). Experiencing felt typicality or pressure to conform to gender at higher levels than others may increase the salience and impact of an individual's gender performance on their behavior and well-being (e.g., Andrews et al., 2019). Relative to binary man/woman self-categorization, these other dimensions of gender identity or experience may more strongly relate to engaging in gender-typed online posting behaviors.

### **Online Gender Performance and Personality Disorder Features**

Because the two-factor CFA was uninterpretable, extreme scores of online masculine and feminine performance were not examined and therefore hypotheses predicting the relation of these online gender performance factors with personality disorder features could not be tested. To examine relations between the specific Facebook content codes with personality disorder features, simple bivariate correlations were examined, and subsequent regression models were tested to examine whether specific Facebook posting behaviors related to narcissistic and borderline personality features. The results of these regression models indicated that there was no gender-typed pattern, in that the behaviors hypothesized to indicate online masculinity and femininity did not similarly relate to personality disorder features. For example, only negative affect and use of

emoticons were positively related to borderline personality disorder features, and displaying expansive, overtaking emotions in photos was negatively related to borderline personality disorder features. Perhaps these posting behaviors relate to borderline personality disorder features due to a shared focus on displaying emotion. This could be particular to displaying negative emotion, given that negative emotionality is a core component of borderline personality disorder (APA, 2013; Lieb et al., 2004). Future research should carefully explore the relation between negative emotion display online and borderline personality disorder.

The current study sample was also a community sample, which may have differed from a purposively recruited clinical sample in the measured levels of personality disorder features. This may affect our ability to relate the current findings to previous research. For instance, in individuals that display narcissistic personality features, previous research has demonstrated general online behavioral differences, such as greater total social networking site use (Liu & Baumeister, 2016), greater photograph and selfie posting (Kim & Chock, 2016; Scott et al., 2018), and longer, more frequent, and more personal posts (Bogolyubova et al., 2018; Liu et al., 2013; Wu & Atkin 2017). The current results did not demonstrate these patterns as related to narcissistic personality features, perhaps because of key differences in psychological well-being between clinical and community samples.

It is difficult to conclude from these results whether borderline and narcissistic personality disorder features are related to stereotypically gendered posting behaviors, given their gendered conceptualizations (Boysen et al., 2014; Braamhorst et al., 2015; Jane et al., 2007; Samuel & Widiger, 2009; Viljoen et al., 2015). Because it could be the case that the Facebook posting behaviors as observed are not gendered in the way that was hypothesized, the relations of these behaviors with borderline and narcissistic personality disorder features cannot be used to suggest a deeper understanding of how online gender performance could relate to offline personality functioning. For instance, although offline gender performance has been found to relate to personality disorder features depending on gender identity consistency or inconsistency (Klonsky et al., 2002; Morey et al., 2002), similar patterns of relations could not be examined in the present online context given the lack of evidence that masculine and feminine online posting behaviors were observed. Therefore, a potential association between online gender-stereotypical posting behavior and personality disorder features remains undetermined. Further, several other factors could be influencing the posting behaviors and how they relate to personality disorder features.

For example, the intent behind these posting behaviors or the expected engagement with others may be more important than gender-specific influences as it relates to personality disorder features.

Overall, these results suggest that components other than a pattern of behaviors postulated to demonstrate masculinity (or agency) and femininity (or community) may affect gender performance on social media. Further, although some of these behaviors demonstrated relations to personality disorder features, it cannot be concluded that these relations are indicative of associations with online masculine or feminine behavior specifically. Perhaps masculinity and femininity are not truly binary, or able to be separated into two factors. Perhaps other dimensions of gender identity, specific to how one feels about their own gender identity or experiences, more strongly influence gender performance online. These core theoretical questions about the nature of gender performance online have important implications for how gender performance then relates to well-being and personality functioning. For example, understanding how multidimensional components of gender identity relates to online posting behaviors may allow us to further examine how and why these online experiences could relate to mental health. Future research should first establish the ways that gender identity components (e.g., felt gender typicality) relate to gender performance online before conclusions can be made about how online gender performance behaviors may connect to personality disorder features. Further, perhaps broader conceptualizations of online behaviors, for example related to emotionality or expressiveness, are more important in determining how online behaviors are associated with personality disorder features. This may be especially true of borderline personality features, which are in part characterized by emotional lability (APA, 2013; Lieb et al., 2004). If further research can more specifically examine the function (e.g., intent, psychosocial impact) and form (e.g., types of interactions with social media) of emerging adults' online posting behaviors and subsequently, how gender might relate to these behaviors, then this knowledge can be used to examine the precise implications that online behaviors have on emerging adults' psychosocial functioning.

## REFERENCES

- Adler, J. M., Chin, E. D., Kolisetty, A. P., & Oltmanns, T. F. (2012). The distinguishing characteristics of narrative identity in adults with features of borderline personality disorder: An empirical investigation. *Journal of Personality Disorders*, 26(4), 498-512.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. Washington, DC: American Psychiatric Association.
- Andrews, N. C., Martin, C. L., Cook, R. E., Field, R. D., & England, D. E. (2019). Exploring dual gender typicality among young adults in the United States. *International Journal of Behavioral Development*, 43(4), 314-321.
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55(5), 469-480.
- Bakan, D. (1966). *The duality of human existence: Isolation and communion in Western man*. Boston, MA: Beacon Press.
- Barry, C. T., Frick, P. J., & Killian, A. L. (2003). The relation of narcissism and self-esteem to conduct problems in children: A preliminary investigation. *Journal of Clinical Child and Adolescent Psychology*, 32(1), 139-152.
- Bem, S. L. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology*, 42(2), 155-162.
- Best, P., Manktelow, R., & Taylor, B. (2014). Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children and Youth Services Review*, 41, 27-36.
- Bogolyubova, O., Panicheva, P., Tikhonov, R., Ivanov, V., & Ledovaya, Y. (2018). Dark personalities on Facebook: Harmful online behaviors and language. *Computers in Human Behavior*, 78, 151-159.
- Bond, B. J. (2009). He posted, she posted: Gender differences in self-disclosure on social network sites. *Rocky Mountain Communication Review*, 6, 29-37.
- Boysen, G., Ebersole, A., Casner, R., & Coston, N. (2014). Gendered mental disorders: Masculine and feminine stereotypes about mental disorders and their relation to stigma. *The Journal of Social Psychology*, 154(6), 546-565.

- Braamhorst, W., Lobbestael, J., Emons, W. H., Arntz, A., Witteman, C. L., & Bekker, M. H. (2015). Sex bias in classifying borderline and narcissistic personality disorder. *The Journal of Nervous and Mental Disease*, 203(10), 804-808.
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. New York, NY: Guilford Press.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp.111-135). Thousand Oaks, CA: Sage Publications, Inc.
- Butler, J. (1988). Performative acts and gender constitution: An essay in phenomenology and feminist theory. *Theatre Journal*, 40(4), 519-531.
- Butler, J. (1990). *Gender trouble: Feminism and the subversion of identity*. Abingdon, United Kingdom: Routledge.
- Chiorri, C., Marsh, H. W., Ubbiali, A., & Donati, D. (2016). Testing the factor structure and measurement invariance across gender of the Big Five Inventory through exploratory structural equation modeling. *Journal of Personality Assessment*, 98(1), 88-99.
- Clark, J. L., Algoe, S. B., & Green, M. C. (2018). Social network sites and well-being: The role of social connection. *Current Directions in Psychological Science*, 27(1), 32-37.
- Dhir, A., Pallesen, S., Torsheim, T., & Andreassen, C. S. (2016). Do age and gender differences exist in selfie-related behaviours?. *Computers in Human Behavior*, 63, 549-555.
- Dickinson, K. A., & Pincus, A. L. (2003). Interpersonal analysis of grandiose and vulnerable narcissism. *Journal of Personality Disorders*, 17(3), 188-207.
- Döring, N., Reif, A., & Poeschl, S. (2016). How gender-stereotypical are selfies? A content analysis and comparison with magazine adverts. *Computers in Human Behavior*, 55, 955-962.
- Eagly, A. H. (1987). *John M. MacEachran memorial lecture series; 1985. Sex differences in social behavior: A social-role interpretation*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Egan, S. K., & Perry, D. G. (2001). Gender identity: A multidimensional analysis with implications for psychosocial adjustment. *Developmental Psychology*, 37, 451-463.
- Feingold, A. (1994). Gender differences in personality: A meta-analysis. *Psychological Bulletin*, 116(3), 429-456.

- Fleeson, W., & Gallagher, P. (2009). The implications of Big Five standing for the distribution of trait manifestation in behavior: Fifteen experience-sampling studies and a meta-analysis. *Journal of Personality and Social Psychology*, 97, 1097-1114.
- Fraley, C., & Raftery, A. E. (2007). Model-based methods of classification: Using the mclust software in chemometrics. *Journal of Statistical Software*, 18(6), 1-13.
- Gebauer, J. E., Sedikides, C., Verplanken, B., & Maio, G. R. (2012). Communal narcissism. *Journal of Personality and Social Psychology*, 103(5), 854-878.
- Glick, P., & Fiske, S. T. (2011). Ambivalent sexism revisited. *Psychology of Women Quarterly*, 35(3), 530-535.
- Goffman, E. (1976). Gender display. In *Gender Advertisements* (pp. 1-9). London, England: Palgrave.
- Hu, L. T., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76-99). Thousand Oaks, CA: Sage Publications, Inc.
- Huang, C. (2017). Time spent on social network sites and psychological well-being: A meta-analysis. *Cyberpsychology, Behavior, and Social Networking*, 20(6), 346-354.
- Humphreys, S., & Vered, K. O. (2014). Reflecting on gender and digital networked media. *Television & New Media*, 15(1), 3-13.
- Jane, J. S., Oltmanns, T. F., South, S. C., & Turkheimer, E. (2007). Gender bias in diagnostic criteria for personality disorders: An item response theory analysis. *Journal of Abnormal Psychology*, 116(1), 166-175.
- Kang, M. E. (1997). The portrayal of women's images in magazine advertisements: Goffman's gender analysis revisited. *Sex Roles*, 37(11-12), 979.
- Kim, J. W., & Chock, T. M. (2017). Personality traits and psychological motivations predicting selfie posting behaviors on social networking sites. *Telematics and Informatics*, 34(5), 560-571.
- Klonsky, E. D., Jane, J. S., Turkheimer, E., & Oltmanns, T. F. (2002). Gender role and personality disorders. *Journal of Personality Disorders*, 16(5), 464-476.
- Krippendorff, K. (2011). Computing Krippendorff's Alpha-Reliability. Retrieved from [https://repository.upenn.edu/asc\\_papers/43](https://repository.upenn.edu/asc_papers/43).

- Lieb, K., Zanarini, M. C., Schmahl, C., Linehan, M. M., & Bohus, M. (2004). Borderline personality disorder. *The Lancet*, 364(9432), 453-461.
- Liu, C., Ang, R. P., & Lwin, M. O. (2013). Cognitive, personality, and social factors associated with adolescents' online personal information disclosure. *Journal of Adolescence*, 36(4), 629-638.
- Liu, D., & Baumeister, R. F. (2016). Social networking online and personality of self-worth: A meta-analysis. *Journal of Research in Personality*, 64, 79-89.
- Liu, Y., & Zheng, L. (2020). Relationships between the Big Five, narcissistic personality traits, and online sexual activities. *Personality and Individual Differences*, 152, 109593.
- Milfont, T. L., & Fischer, R. (2010). Testing measurement invariance across groups: Applications in cross-cultural research. *International Journal of Psychological Research*, 3(1), 111-130.
- Miller, J. D., & Maples, J. (2011). Trait personality models of narcissistic personality disorder, grandiose narcissism, and vulnerable narcissism. In W. K. Campbell & J. D. Miller (Eds.), *The handbook of narcissism and narcissistic personality disorder: Theoretical approaches, empirical findings, and treatments* (pp. 71-88). Hoboken, NJ: John Wiley & Sons, Inc.
- Morey, L. C., Warner, M. B., & Boggs, C. D. (2002). Gender bias in the personality disorders criteria: An investigation of five bias indicators. *Journal of Psychopathology and Behavioral Assessment*, 24(1), 55-65.
- Muscanell, N. L., & Guadagno, R. E. (2012). Make new friends or keep the old: Gender and personality differences in social networking use. *Computers in Human Behavior*, 28(1), 107-112.
- Nesi, J., Choukas-Bradley, S., & Prinstein, M. J. (2018). Transformation of adolescent peer relations in the social media context: Part 1—A theoretical framework and application to dyadic peer relationships. *Clinical Child and Family Psychology Review*, 21(3), 267-294.
- Nielson, M. G., Schroeder, K. M., Martin, C. L., & Cook, R. E. (2020). Investigating the relation between gender typicality and pressure to conform to gender norms. *Sex Roles*, 83, 523-535.
- Perry, D. G., & Pauletti, R. E. (2011). Gender and adolescent development. *Journal of Research on Adolescence*, 21(1), 61-74.
- Pew Research Center. (2018). *Social media use in 2018*. Retrieved from <https://www.pewresearch.org/internet/2018/03/01/social-media-use-in-2018/>.

- Poggio, B. (2006). Outline of a theory of gender practices. *Gender, Work & Organization*, 13(3), 225-233.
- Rose, J., Mackey-Kallis, S., Shyles, L., Barry, K., Biagini, D., Hart, C., & Jack, L. (2012). Face it: The impact of gender on social media images. *Communication Quarterly*, 60(5), 588-607.
- Rudman, L. A., & Glick, P. (2008). *The social psychology of gender: How power and intimacy shape gender relations*. New York, NY: Guilford Press.
- Russell, J. J., Moskowitz, D. S., Zuroff, D. C., Sookman, D., & Paris, J. (2007). Stability and variability of affective experience and interpersonal behavior in borderline personality disorder. *Journal of Abnormal Psychology*, 116(3), 578-588.
- Samp, J. A., Wittenberg, E. M., & Gillett, D. L. (2003). Presenting and monitoring a gender-defined self on the internet. *Communication Research Reports*, 20(1), 1-12.
- Samuel, D. B., & Widiger, T. A. (2009). Comparative gender biases in models of personality disorder. *Personality and Mental Health*, 3(1), 12-25.
- Scott, G. G., Boyle, E. A., Czerniawska, K., & Courtney, A. (2018). Posting photos on Facebook: The impact of narcissism, social anxiety, loneliness, and shyness. *Personality and Individual Differences*, 133, 67-72.
- Seabrook, E. M., Kern, M. L., & Rickard, N. S. (2016). Social networking sites, depression, and anxiety: A systematic review. *JMIR Mental Health*, 3(4), e50.
- Smith, L. R., & Cooley, S. C. (2012). International faces: An analysis of self-inflicted face-ism in online profile pictures. *Journal of Intercultural Communication Research*, 41(3), 279-296.
- Sorokowski, P., Sorokowska, A., Oleszkiewicz, A., Frackowiak, T., Huk, A., & Pisanski, K. (2015). Selfie posting behaviors are associated with narcissism among men. *Personality and Individual Differences*, 85, 123-127.
- Stern, S. R. (2004). Expressions of identity online: Prominent features and gender differences in adolescents' World Wide Web home pages. *Journal of Broadcasting & Electronic Media*, 48, 218-243.
- Subrahmanyam, K., Smahel, D., & Greenfield, P. (2006). Connecting developmental constructions to the Internet: Identity presentation and sexual exploration in online teen chat rooms. *Developmental Psychology*, 42, 395-406.

- Sung, Y., Lee, J. A., Kim, E., & Choi, S. M. (2016). Why we post selfies: Understanding motivations for posting pictures of oneself. *Personality and Individual Differences*, 97, 260-265.
- Tannen, D. (1991). *You just don't understand: Women and men in conversation*. London, England: Virago.
- Tifferet, S., & Vilnai-Yavetz, I. (2014). Gender differences in Facebook self-presentation: An international randomized study. *Computers in Human Behavior*, 35, 388-399.
- Tortajada, I., Araña, N., & Martínez, I. J. (2013). Advertising stereotypes and gender representation in social networking sites/Estereotipos publicitarios y representaciones de género en las redes sociales. *Comunicar (English edition)*, 21, 177-186.
- Trull, T. J., Jahng, S., Tomko, R. L., Wood, P. K., & Sher, K. J. (2010). Revised NESARC personality disorder diagnoses: Gender, prevalence, and comorbidity with substance dependence disorders. *Journal of Personality Disorders*, 24(4), 412-426.
- Vignoles, V. L., Regalia, C., Manzi, C., Gollidge, J., & Scabini, E. (2006). Beyond self-esteem: Influence of multiple motives on identity construction. *Journal of Personality and Social Psychology*, 90, 308-333.
- Viljoen, S., Cook, A. N., Lim, Y. L., Layden, B. K., Bousfield, N. K., & Hart, S. D. (2015). Are psychopathic and borderline personality disorder distinct, or differently gendered expressions of the same disorder? An exploration using concept maps. *International Journal of Forensic Mental Health*, 14(4), 267-279.
- Ward, C. A. (2000). Models and measurements of psychological androgyny: A cross-cultural extension of theory and research. *Sex Roles*, 43(7-8), 529-552.
- Waxman, R., Fenton, M. C., Skodol, A. E., Grant, B. F., & Hasin, D. (2014). Childhood maltreatment and personality disorders in the USA: Specificity of effects and the impact of gender. *Personality and Mental Health*, 8(1), 30-41.
- Webb, L. M., & Temple, N. (2016). Social media and gender issues. In B. Guzzetti & M. Lesley (Eds.), *Handbook of Research on the Societal Impact of Digital Media* (pp. 638-669). Hershey, PA: IGI Global.
- Weisberg, Y. J., DeYoung, C. G., & Hirsh, J. B. (2011). Gender differences in personality across the ten aspects of the Big Five. *Frontiers in Psychology*, 2, 178.

- Weiser, E. B. (2015). # Me: Narcissism and its facets as predictors of selfie-posting frequency. *Personality and Individual Differences*, 86, 477-481.
- West, C., & Zimmerman, D. H. (1987). Doing gender. *Gender & Society*, 1(2), 125-151.
- Wink, P. (1991). Two faces of narcissism. *Journal of Personality and Social Psychology*, 61(4), 590-597.
- Wood, W., & Eagly, A. H. (2012). Biosocial construction of sex differences and similarities in behavior. In J. M. Olson & M. P. Zanna (Eds.), *Advances in experimental social psychology* (Vol. 46, pp. 55-123). San Diego, CA: Academic Press.
- Wu, T. Y., & Atkin, D. (2017). Online news discussions: Exploring the role of user personality and motivations for posting comments on news. *Journalism & Mass Communication Quarterly*, 94(1), 61-80.
- Zanarini, M. C., Vujanovic, A. A., Parachini, E. A., Boulanger, J. L., Frankenburg, F. R., & Hennen, J. (2003). A screening measure for BPD: The McLean screening instrument for borderline personality disorder (MSI-BPD). *Journal of Personality Disorders*, 17(6), 568-573.

# APPENDIX

## Facebook Coding System Manual

### ➤ Purpose of Facebook coding

To quantify the TC's self-presentation, via coding status updates, photos, photo captions, and comments posted by the TC.

### ➤ What gets coded?

Pay attention to "Message Type" column in particular, but also take into consideration the content

- DO code "WallPost" IF it was posted by the TC
  - DO NOT code "WallPost" IF it was posted by a Peer.
- DO code "Status"
- DO code "Photo"
- DO code "StreamPhoto"
- DO code "Comment" IF it was posted by the TC
  - DO NOT code "Comment" IF it was posted by a Peer.
- DO NOT code duplicate posts (only identifiable if content is identical)
- DO NOT code spam/auto-generated messages (only identifiable if content appears to be spam; e.g., messages from restaurants, information about concert tickets going on sale, etc.)

### ➤ Facebook Coding Process

- Read the transcript in full
- Complete the codes (first post-related flags and emoticon usage, then TC-focused photo related)
- Repeat accordingly for each assigned participant ID

- **Note:** these data have previously been coded; however, the following codes are newly added and have never been used.

## Terminology

- TC: stands for "target child." This is the main participant, the person involved in the study, and whose Facebook page we are coding.
- Transcript: full excel sheet of TC's Facebook posts.
- Post: a single entry on the Facebook page. Can contain a photo, a caption or text, and may have comments following it.
- Flags: a way to capture the specific content that a post may contain. Receives either a Y or N depending if the content is present (Y) or absent (N) in any part of the post. They are NOT mutually exclusive.
- Emoticons: pre-Emoji, symbol-based affective expressions. E.g., smiley :), frowny :(, slant face :/, tongue sticking out :P, etc.

- TC-focused photo: includes any picture of the TC, posted by the TC, and either taken by themselves or taken by someone else (such as a team, group, or family photo).

## **General Post Coding**

**Content Flags:** Flags are designed to capture any mention of the categories below. A post can receive any or all of the flags, as long as the content of the message refers to the Flag. All posts will receive either a “Y” (yes) or “N” (no) for each flag below.

1. **Personal**: This is flagged when the post conveys some information unique and personal to the TC; facts about his/her life (i.e., birthday, where he/she lives, etc.)
  - Example: “Picking up my adderall Rx, then off to Austin!”  
“I’m totally ready to be done with this sinus infection”
2. **Specific social**: the post involves other people in **specific** terms (tagging a friend in the post).
  - Example: “Had a great day with the beautiful **Karen** and **Elizabeth**!”  
“I’m going to Buffalo Wild Wings with **Steve**”
3. **Mass social**: the post involves other people in **general** terms.
  - Example: “hanging out with cool people!”  
“My friends are the best!!”  
“Everyone should come to this fundraiser”
4. **School**: the post discusses some academic topic.
  - Example: “Hunkering Down for an all-night study session”  
“Just bombed my Calc test...fml”
5. **Entertainment**: this post talks about some aspect of popular culture – movies, television shows (but not specifically **sports**), music, video games, etc.
  - Example: “The new Rolling Stones CD is awesome!”  
“Miley Cyrus looks so slutty in her new video!!”
6. **Sports**: this post talks about a sporting game, or sporting team. This can be an activity that the TC is or is not involved in (i.e., talking about the Cowboys vs talking about the football team that the TC plays on).
  - Example: “The Dallas Cowboys are terrible this year!”
7. **Positive Attention-Seeking**: the post serves to gather positive attention and/or persuade the reader to like the TC. Some common characteristics are saying positive things about others or saying mildly negative things about themselves, statements of modesty, familiarity, and humor.
  - Examples:
    - i. Posting a photo with the caption “I look like a sweaty pig!” {to elicit negating compliments}
    - ii. “LIKE MY STATUS”

We will code TC-focused photos separately, but it will be important to look at the photo content to determine what flags are appropriate.

**Emoticon:** what emoticons does the TC use in the post, photo caption, or comment?

- a. If an emoticon is present, identify the type. If more than one emoticon is present, enter a new row for each emoticon present.

- b. Common types:
  - i. :), =), :], :D, :') - smile
  - ii. :(, =(, :[, D:, :'( - frown
  - iii. ;), ;D, ;] - wink
  - iv. :/, =/ - slant
  - v. :|, =|, -\_- - blank
  - vi. :P, =P - tongue
  - vii. <3 – heart; </3 - broken heart

### **Emoticon Purpose**

- a. For each emoticon used, identify purpose:
  1. Teasing/humor (positive)
    - Example: “Sarah Smith is such a dork ;)”
  2. Apology/solidarity/support
    - Example: “Sorry to Nick about your car :(”
  3. Positive feeling/thanks
    - Example: “Finally got home!! ;)”  
“Thanks to everyone for the birthday wishes!!! :D”  
“Missing my baby <3”
  4. Sarcasm (negative); blunting negativity
    - Example: “You keep going back to the same person who hurt you or that got you stressin? Nah you not in love, you\’re just stuck on stupid boo.. ;).”
  5. Sadness/despair/confusion
    - Example: “allergies are killing me right now :(”  
“I miss you so much :(”
  6. Frustration/annoyance/anger
    - Example: “That’s is so NOT ok -\_- #SoFrustrated”  
“This morning smelled like someone drove around campus with a portable zoo in tow :/”
  7. Other
- b. Enter the number corresponding to the purpose category in this column.

### **TC-Focused Photo Coding**

A TC-focused photo includes any picture of the TC, posted by the TC, and either taken by themselves or taken by someone else (such as a team, group, or family photo).

DO NOT code photos in which the TC is not in.

The photos in the transcripts are very tiny, so it will be important to drag one of the corners of the photo to enlarge it so that you can see as much detail as possible. Alternatively, you can zoom in on the photo using the zoom function in the Excel window.

It might be helpful to look at all the photos before coding each one individually, so you can get a feel for what the TC looks like and therefore be able to identify him or her in any group photos.

For each TC-focused photo posted, enter...

**#/People** – how many people are shown in the photograph? This count includes the TC.

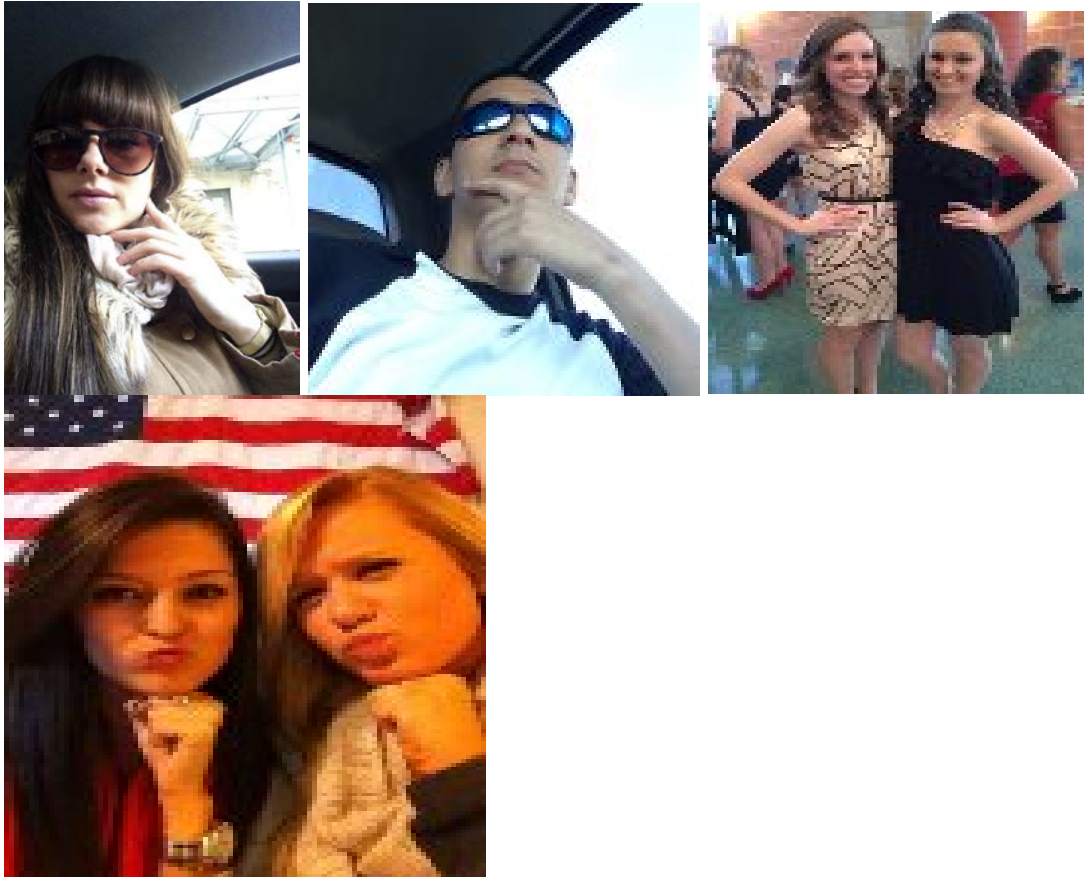
**Who** – who is shown in the photograph?

1. Just TC
  2. TC + Peer(s)
  3. TC + Significant other
  4. TC + Family (siblings, parents, grandparents, cousins, etc...)
  5. TC + Other Adults (e.g., coach, teacher, boss)
  6. TC + Other
- a. Captions will be helpful in identifying who is in the photo, but make an educated guess as best as possible. If the people appear to be similar ages, or the context of the photo is particularly social (e.g., background looks like a dance, a party), you can assume it is a group of peers.

**Photo Flags:** Do any of the below describe the expression or posture of the TC in the photo? A photo can receive any or all of the below flags, so long as it fits the description.

Enter Y or N for the following columns:

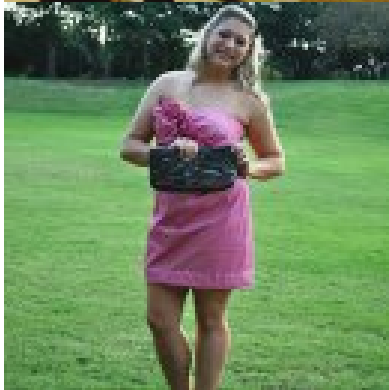
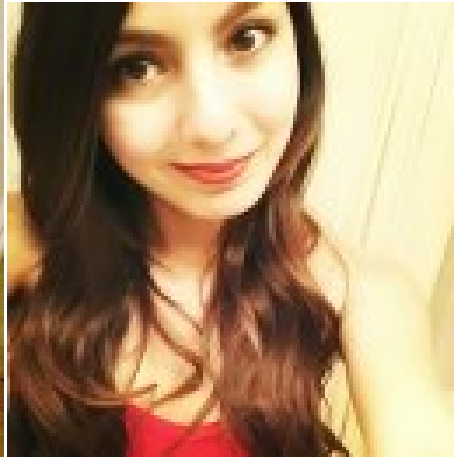
**Touch** – is the TC touching themselves, i.e. their face or hair, their clothes, or using their hands to trace an object?



**Posture** – is the TC sitting/crouching or lying down?



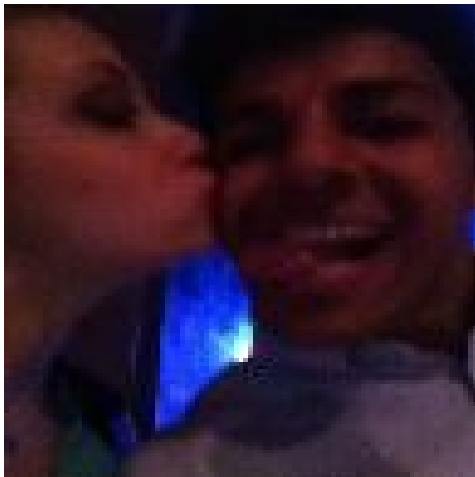
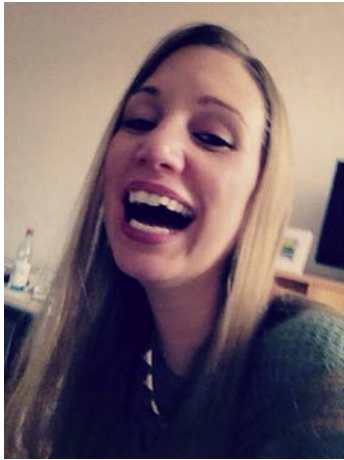
**Imbalance** – is the TC tilting the head or body, standing on one foot, crossing their legs, or leaning onto others for support?



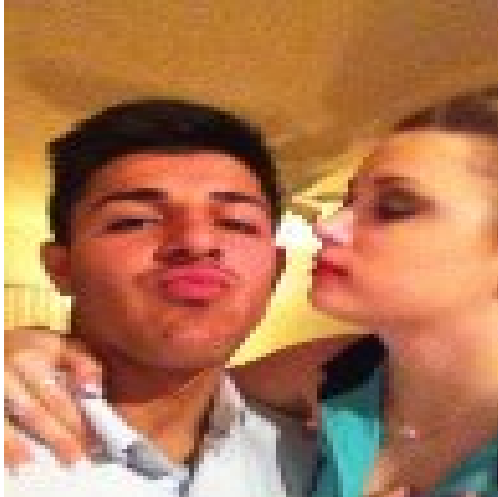
**Withdraw Gaze** – is the TC closing their eyes or looking away from the camera?



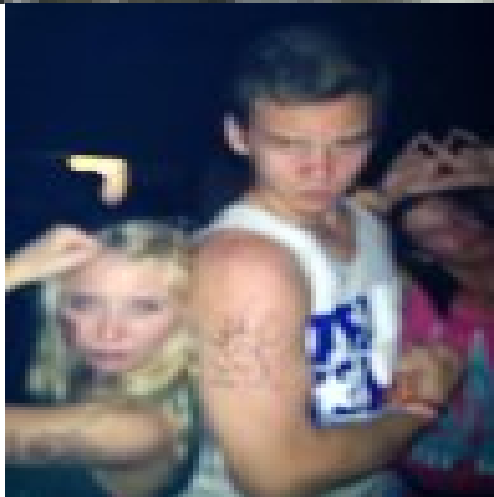
**Loss of control** – is the TC showing extreme emotion such as an expansive smile/loud laughter, or covering their mouth/biting their fingers?



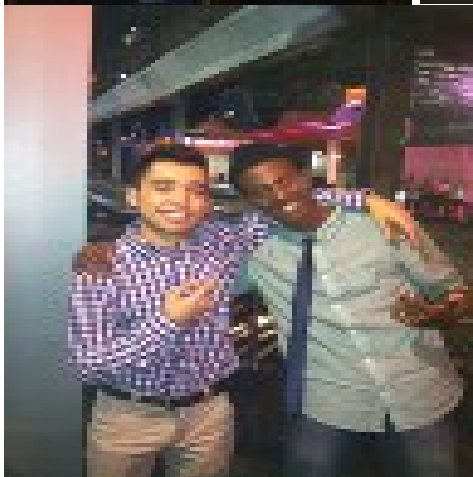
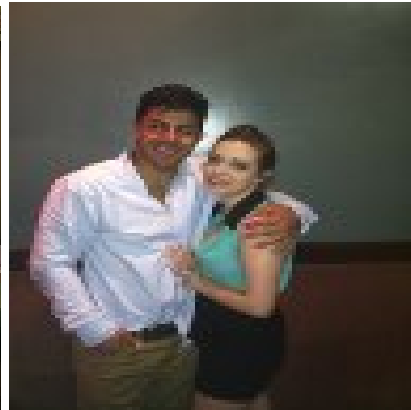
**Kissing pout** – is the TC making a kissy face?



**Muscles** – is the TC posed to show off their muscles?



**Hugging** – is the TC hugging or with his/her arm around another person?



**Pet** – is there a pet in the photo?

**Smile** – is the TC smiling?

- Half smiles, closed-lip smiles coded as yes

**Body** – How much of the TC's body is included in the photo?

0. Partial face
1. Face only
2. Face and shoulders
3. Upper part of body with face
4. Upper part of body without face
5. Full body with face
6. Full body without face
7. Other

**Dress** – How would you describe the TC's style of clothing?

0. Minimal (swimming suit, bare torso)
1. Sportswear (training, running shorts)
2. Weekday casual (jeans and t-shirt)
3. Smart casual (blazers, slacks/pencil skirts 'work wear,' – slightly more formal than weekday casual)
4. Formal/semi-formal (think prom photos or nice dresses/suits)
5. Other

**Object** – does the TC-focused photo include an object?

0. No object
1. Sport object (skateboard, tennis racket, baseball bat)
2. Vehicle (car, bike, motorbike, tractor)
3. Musical object (guitar, microphone)
4. Electronic object (iPad, cell phone)
5. Smoking or alcohol (cigarette, beer)
6. Other

**#/commenters** – enter the number of different people that commented on the TC-focused photo, excluding the TC.