



Development and validation of a measure of online deception and intimacy[☆]



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ABSTRACT

We aimed to establish the personality and psychopathology correlates of (1) misrepresenting oneself or deceiving others online and (2) seeking meaningful companionship through online relationships. In Study 1 ($N = 300$; community sample), we sought to determine (1) if we could differentiate these two dimensions and (2) whether they showed distinct correlates. Study 2 served as an opportunity to refine our assessment of these dimensions and to explicate their correlates in another community sample ($N = 294$). In Study 2, we created two scales, one which we labeled *Online Deception* (e.g., self-misrepresentation to others online) and the other *Online Intimacy* (e.g., turning to the internet for meaningful social interaction); we collectively titled these scales the Measures of Online Deception and Intimacy (MODI). Although Online Intimacy related weakly to most personality and psychopathology measures, Online Deception showed notable negative associations with conscientiousness and agreeableness and positive associations with neuroticism. Furthermore, it associated positively with both externalizing and internalizing symptoms. Our findings represent a first step toward understanding how individual differences in personality and psychopathology can be used to predict online deception and intimacy, and we hope that future research will explore the correlates of these dimensions further.

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1. Introduction

The internet serves as a tool for facilitating positive social interaction, but also provides an avenue for victimization (Whitty & Buchanan, 2012). One particular type of victimization occurs through “online romance scams,” in which “criminals pretend to initiate a relationship through online dating sites then defraud their victims of large sums of money” (Whitty & Buchanan, 2012, p. 181). Whitty and Buchanan (2012) describe how victims of this scam are hit with a “double-whammy”: not only do they lose money, but also a romantic relationship.

As seen in the popular media, there also are cases in which individuals misrepresent themselves online in romantic relationships without any intention of conning others for financial gain. In these cases, individuals in online relationships often misrepresent their identities to others (e.g., use pictures of others to represent themselves, use a different name online). Unlike the “double-whammy” described by Whitty and Buchanan (2012), many individuals who are deceived in online relationships are not scammed for money, but still experience tremendous emotional hurt.

Most research to date has focused on the “double-whammy” in which financial loss is involved; in contrast, very little attention has been given to misrepresentation online or through social media that does not involve any intention of scamming for financial gain. Similarly, the vast majority of research on online victimization also has focused on studying the psychological characteristics of those who misrepresent themselves, with less attention given to those seeking meaningful online interaction. That being said, it should not be assumed that (1) misrepresenting oneself online and (2) turning to the internet for meaningful social interaction are independent dimensions, as it is possible that those who seek genuine online companionship may also misrepresent themselves in an effort to appear more desirable to others (Seidman, 2013). Consequently, it is important that research clarify the degree to which these behaviors overlap.

1.1. Personality and online behavior

Basic individual differences have been shown to be related to online behaviors and provide a starting point for clarifying the motives underlying online misrepresentation and seeking online relationships. More specifically, individual differences in personality and psychopathology can serve as a useful framework for predicting online behavior. For instance, in their review of the literature, Nadkarni and Hofmann (2012) concluded that extraversion was associated positively with Facebook use. Research since the publication of that review supports their conclusion and indicates that neuroticism is associated positively with

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tendencies to present an “ideal” version of one's self on Facebook and to share self-aspects that individuals would not otherwise be comfortable presenting to others offline (Seidman, 2013).

McKenna, Green, and Gleason (2002) found that individuals who seek relationships online may have elevated levels of social anxiety and may find it easier to communicate with others online than in person; thus, we would not expect such individuals to report being extraverted. Similarly, Knox, Daniels, Sturdivant, and Zusman (2001) found that nearly half of the participants in their sample reported feeling more comfortable interacting with others online than face-to-face, although the vast majority of their participants also indicated that they were not using online social media to start romantic relationships. Taken together, this small body of research indicates that additional inquiry focusing on individual differences can be a potentially useful tool in explaining the new social phenomenon of victimization in online relationships.

1.2. The current study

Given that this area of research is relatively new, our goal is to establish the personality and psychopathology correlates of (1) misrepresenting oneself to deceive others online and (2) seeking meaningful and lasting companionship through online relationships. In addressing this goal, we also sought to create scales to measure these constructs, as such measures currently are not available. Note that this study has a somewhat different focus than previous research focusing on victimization in which financial loss is implicated, as we aim to inform future research by identifying the characteristics of individuals who turn to the internet for companionship and/or who misrepresent themselves online, without necessarily doing so for financial gain. For convenience, we refer to misrepresenting oneself or misleading others online as *online deception*, and to using the internet to maintain meaningful relationships with no face-to-face interaction and without having ever met the other party as *online intimacy*. As stated, it should not be assumed that these dimensions are independent, and we sought to determine the extent to which they overlap.

We present data from two community samples to explicate the nature of online deception and intimacy. In Study 1, we examined the structure of an initial item pool used to assess these constructs, and we examined how these behaviors related to both personality and psychopathology. Study 2 provided us with an opportunity to improve upon our assessment of online deception and intimacy based on the results of Study 1, and it included a more thorough assessment of both dimensions.

Across studies, we assessed psychopathology using a battery of scales assessing internalizing (e.g., depression), externalizing (e.g., deceitfulness), manic (e.g., euphoric mood) and schizotypal/psychotic (e.g., unusual beliefs) symptoms; personality was assessed using the influential five-factor model. Most research examining online behaviors has not assessed personality beyond the general domain level; consequently, it is unclear how more specific facets of broader traits are related to online behavior. Facet-level analyses are valuable in identifying relations that may be weakened or masked altogether at the general factor level (Watson, Stasik, Ellickson-Larew, & Stanton, 2015); the current studies address this gap by conducting analyses at both the domain and facet levels of personality.

1.2.1. Hypotheses

We did not make specific predictions for online intimacy, as the personality and psychopathology associations for this dimension were unclear based on previous research. However, we made predictions for online deception based on our conceptualization of this dimension. First, we predicted that online deception would associate positively with neuroticism, in accord with Seidman's (2013) findings that neuroticism related positively to presenting an “idealized self” online. Because we predicted deception to relate positively to neuroticism (e.g., feeling

depressed, anxious, angry), we also hypothesized that it would show positive associations with psychopathology. We expected deception to associate especially strongly with externalizing psychopathology (e.g., being manipulative, deceitful) given that we also anticipated it would associate negatively with agreeableness; this specific prediction for agreeableness was made because we would not expect individuals who intentionally misrepresent themselves to others to also report being honest and caring.

As discussed, some research suggests that extraverts are more likely to use social interaction online to facilitate face-to-face interaction, whereas other work suggests that introverted, socially anxious individuals turn to online relationships as a source of nonthreatening interaction (McKenna et al., 2002). Thus, we made formal no predictions regarding extraversion. We also did not make any specific predictions for openness and conscientiousness, as little data were available to suggest how these traits relate to online behavior.

2. Study 1 method

2.1. Participants

Data from this study examining personality and psychopathology relations were collected in three phases. Participants ($N = 410$) completed the first and second study phases roughly three weeks apart (mean interval = 20.3 days), and they completed the third phase ($N = 300$; although sample sizes for specific analyses vary slightly due to missing data) approximately 9 months on average after the second. The first two study phases were intended to provide comprehensive assessment of personality and psychopathology, whereas the third phase was conducted to supplement these earlier phases. It included assessment of a range of constructs (e.g., online behavior, musical preferences) that we were interested in relating to personality on a more exploratory basis.

We recruited participants from the South Bend, IN metropolitan area who had provided their contact information from previous studies (see Watson et al., 2015). Many of the participants in this sample were outpatients recruited from various sources, such as the local community mental health center. Consequently, this sample is characterized by relatively high levels of psychopathology, with nearly half of the sample ($N = 127$, 42.6%; data were missing for two participants) answering “yes” to one or more of these three questions: “Are you currently receiving psychological counseling/therapy for mental health issues?” “Have you received psychological counseling/therapy for mental health issues in the past?” “Are you currently taking medications to treat a mental illness?” Additionally, only half (49.8%) of the sample was employed. Participant mean age was 46.5 years ($SD = 13.1$); 71.6% of the sample was female. The large majority of the participants identified themselves as either Black/African-American (48.3%) or as Caucasian (46.6%), with small percentages of other minority groups represented.

2.2. Measures

Participants completed more than 250 scales over the three study phases; this battery is too extensive to examine in its entirety here. Across the three phases, all participants completed these scales in the same order. To address our goals, we used scales from the Computerized Adaptive Test of Personality Disorder Static Form (CAT-PD-SF; Simms et al., 2011) and the Expanded Version of the Inventory of Depression and Anxiety Symptoms (IDAS-II; Watson, O'Hara, Naragon-Gainey, Koffel, & Chmielewski, 2012) to assess a broad range of psychological symptoms. We used the NEO Personality Inventory-3 (NEO-PI-3; McCrae, Costa, & Martin, 2005) to model personality, which allowed us to examine the relations between online behavior and both personality domains and facets. With the exception of the NEO-PI-3, all measures described were completed at the final phase of the study.

2.2.1. Assessment of online deception and intimacy

We wrote 11 items to assess (1) misrepresenting identity to others online (online deception), and (2) utilizing the internet as a source of genuine social interaction (online intimacy). We sought to provide coverage of both domains; thus, we created several items apiece that we expected to mark the online deception (e.g., “not important to portray myself accurately online”) and intimacy (e.g., “trust personal information from others”) factors in our structural analyses. These items are presented in Table 1; participants were asked to “Read each statement and decide how well it describes you” on a 5-point scale ranging from *strongly disagree* to *strongly agree*. To determine the structure of these items, we factor analyzed them to create scales for subsequent analyses. The results of these analyses and the properties of the scales created from them are presented following descriptions of other study measures.

2.2.2. CAT-PD-SF

The CAT-PD-SF assesses basic trait dimensions underlying personality pathology. The full length CAT-PD scales were designed for computerized adaptive testing, but the 216-item static form was created to allow for assessment using traditional self-report methods. It consists of scales measuring traits organized into five broad higher-order domains: Negative Emotionality, Detachment, Antagonism, Disconstraint, and Psychoticism. Evidence indicates that the CAT-PD-SF scales display strong convergence with other measures of personality pathology (e.g., Wright & Simms, 2014). Participants completed all 33 CAT-PD-SF scales; they responded to the items using a 5-point scale ranging from *very untrue of me* to *very true of me*. Coefficient alphas for these scales ranged from .73 to .87.

2.2.3. IDAS-II

The IDAS-II assesses 18 specific depressive, anxiety, obsessive-compulsive disorder (OCD), posttraumatic stress disorder (PTSD), and bipolar disorder symptom dimensions. Watson et al. (2012) present data indicating that the IDAS-II scales demonstrate strong convergent, discriminant, and criterion validity in their relations with other depressive, anxiety, OCD, PTSD, and bipolar disorder measures. Participants completed the entire IDAS-II, indicating how much they had experienced each symptom in the past two weeks using a 5-point scale ranging from *not at all* to *extremely*. Coefficient alphas for these scales ranged from .76 to .90.

2.2.4. NEO-PI-3

The NEO-PI-3 contains 240 items and is an updated version of the NEO PI-R (Costa & McCrae, 1992). The NEO PI-3 and NEO PI-R contain the same content, but 38 items from the latter were re-written to be more appropriate for younger respondents and examinees with lower educational levels. Both general domain and facet level scores can be computed from the NEO-PI-3 items, and we examine personality scores at both levels. Participants rated themselves on a 5-point scale ranging from *strongly disagree* to *strongly agree*. They completed this measure

in the first phase of the study, that is, roughly 10 months (mean interval = 306.5 days) prior to the other study measures. Coefficient alphas for the five domain scores ranged from .85 to .93 in this study (mean $\alpha = .89$), with alphas for the 30 briefer facet level scales ranging from .49 to .83 (mean α for neuroticism facets = .75; mean α for extraversion facets = .69; mean α for openness facets = .66; mean α for agreeableness facets = .68; mean α for conscientiousness facets = .75).

3. Study 1 results

3.1. Overview

We present two series of analyses. First, we present factor analytic results based on the 11 items used to assess online deception and intimacy. We created two scales based on these analyses: one modeling deception and another assessing intimacy. Next, we report the bivariate relations between the online deception and intimacy scales with both personality and psychopathology. Because our study included a large number of psychopathology scales (i.e., 33 from the CAT-PD-SF, 18 from the IDAS-II; 51 scales in all) that appear to assess overlapping content (e.g., multiple IDAS-II scales assess depressive symptoms; multiple CAT-PD-SF scales assess antagonism), we examined the structure of these measures prior to examining their associations with online behavior. These structural analyses greatly reduced the number of associations to be reported, allowing us to focus on online deception and intimacy's relations with broader dimensions of psychopathology. However, we still report a large number of correlations for online behavior (70 correlations with personality; four with psychopathology). After we applied a Bonferroni correction to limit the chance of Type I error (corrected alpha = .05/74 = .00068), only a single Study 1 correlation between online behavior and either personality or psychopathology remained statistically significant (i.e., the correlation between online deception and externalizing psychopathology; see below). Consequently, we focus primarily on describing the patterns of associations for online behavior (i.e., the strength and direction of correlates), rather than on statistical significance.

3.2. Factor analysis of online deception and intimacy items

We conducted a series of principal factor analyses to determine the structure of the items used to assess online deception and intimacy. In all analyses, two factors (i.e., one to model online deception and one to model intimacy) were rotated to orthogonal simple structure using varimax ($N = 298$ for all factor analyses). We sought to identify a clear, two-factor structure that defined the online deception and intimacy dimensions, according to two criteria: (1) all items should load strongly onto at least one factor (i.e., $\geq |.40|$), and (2) no items should have significant cross loadings (i.e., $\geq |.30|$). We therefore conducted an iterative series of analyses in which items that failed to meet these criteria were dropped prior to subsequent analyses.

In an initial factor analysis using all 11 items, a relatively clear structure emerged, with the first factor representing online intimacy (e.g., “enjoy meeting people online”) and the second deception (e.g., “okay to lie about myself online”). However, item 4 (“online relationships not real”) loaded very weakly on both factors (loadings of $-.13$ and $.09$ on Factors I and II, respectively), whereas items 1 (“never met several friends”; loadings of $.39$ and $.38$, respectively) and 5 (“have many Facebook friends I've never met”; loadings of $.41$ and $.44$, respectively) had nearly equal loadings on both factors. Thus, these three items were dropped at this point.

Next, we conducted a factor analysis with the eight remaining items, and two clear factors of online intimacy and online deception emerged again. In this reduced analysis, items 2 (“have had an online romantic relationship”; loadings of $.42$ and $.51$, respectively) and 7 (“would enter online relationship without meeting other person”; loadings of

Table 1

Items administered to assess online social behaviors and attitudes in Study 1.

1. I have several friends I have never met in person.
2. I have had a romantic relationship where the interaction was entirely online or via technology and social media.
3. I have presented personal information online that is not accurate in order to attract friends or romantic partners online.
4. Exclusively online relationships are not real relationships. (Reverse Keyed)
5. I have many Facebook friends I have never met in person.
6. It is not important to portray myself accurately to others I meet online.
7. I would enter into an online relationship without ever meeting the other person.
8. I enjoy meeting people online or through social media.
9. I trust that personal information I receive from others online is accurate.
10. I am willing to share personal information with others online.
11. It is okay to lie about who I am online.

.32 and .48, respectively) now emerged as “splitters”; thus, these two additional items were dropped in this second round.

In the final analysis conducted with the six remaining items, the resulting factor loadings came very close to meeting our original criteria (i.e., all items loading $\geq .40$) onto a factor and no items having cross loadings $\geq .30$; see Table 2). Although item 6 loaded only .38 on Factor II, it was a relatively clear marker of the factor and so was included in the corresponding scale.

Thus, in the final solution, items 8 (“enjoy meeting people online”), 9 (“trust information I receive from others”), and 10 (“willing to share personal information online”) marked the first factor representing online intimacy, whereas items 3 (“presented inaccurate information online”), 6 (“not important to portray self accurately online”), and 11 (“okay to lie about who I am online”) marked the second factor representing online deception. Consequently, we created two corresponding scales assessing Online Intimacy ($M = 5.91, SD = 2.77; \alpha = .76$) and Deception ($M = 4.84, SD = 2.12; \alpha = .50$), which were used to examine associations with personality and psychopathology in subsequent analyses. These two scales correlated .24 with each other.

3.3. Personality relations

Even though most relations with personality were weak in magnitude, Online Deception and Intimacy showed distinct patterns of relations in some ways (see Table 3). For example, they showed very different relations with openness: whereas Intimacy had a positive correlation with NEO-PI-3 Openness ($r = .20$) and with all openness facets (r s ranged from .08 to .17; mean $r = .13$), Deception had very weak negative associations with openness at the domain ($r = -.09$) and facet levels (r s ranged from $-.02$ to $-.14$; mean $r = -.07$). Furthermore, Intimacy correlated positively with extraversion ($r = .13$), whereas Deception related very weakly to this trait ($r = -.02$). As predicted, Deception was negatively linked with agreeableness ($r = -.12$), although Intimacy ($r = -.15$) and Deception ($r = -.14$) both displayed very similar relations with its Straightforwardness facet. Both scales displayed weak relations with conscientiousness and neuroticism at both the domain and facet levels.

3.4. Psychopathology relations

3.4.1. Determining the number of psychopathology factors

As stated, our study included a large number of psychopathology measures. Thus, prior to examining relations between online behavior and psychopathology, we examined the structure defined by these psychopathology scales. To determine the number of factors to be extracted, we conducted a principal components analysis on the 51 psychopathology scales. First, we conducted a parallel analysis using O'Connor's (2000) SAS program ($N_{cases} = 299, N_{vars} = 51, N_{datasets} = 1000, percent = 95$), a procedure in which the observed eigenvalues from the principal components analysis are compared to the eigenvalues from random datasets with the same sample size and number of variables. The results indicated that the fourth eigenvalue from the

Table 2
Varimax factor loadings of the items administered to assess online social behaviors and attitudes.

Paraphrased Item	I	II
9. Trust information I receive from others online*	.70	.10
10. Willing to share personal information online*	.69	.14
8. Enjoy meeting people online*	.63	.21
11. Okay to lie about who I am online**	.07	.56
3. Presented inaccurate information online**	.19	.53
6. Not important to portray self accurately online**	.08	.38

Note. $N = 298$. Items are paraphrases of the originals. Items with an asterisk (*) were used in creating the Online Intimacy scale, and items with a double asterisk (**) were used to create the Online Deception scale. Loadings $\geq .30$ are **bolded**.

Table 3
Correlations for online intimacy and online deception with the personality domains and facets.

Scale	Online intimacy	Online deception
<i>Openness</i>	.20*	-.09
Ideas	.17*	-.02
Fantasy	.17*	-.04
Values	.13*	-.09
Esthetics	.12	-.02
Actions	.12*	-.08
Feelings	.08*	-.14
<i>Extraversion</i>	.13*	-.02
Excitement Seeking	.14	.08
Gregariousness	.13*	-.08
Warmth	.12*	-.07
Assertiveness	.09	.01
Positive Emotions	.04	-.05
Activity	.01	.04
<i>Agreeableness</i>	-.01	-.12
Straightforwardness	-.15	-.14
Altruism	.02*	-.14
Trust	.11	-.03
Modesty	-.05	-.07
Tendermindedness	.01	-.06
Compliance	.00	-.02
<i>Conscientiousness</i>	-.01	-.05
Dutifulness	.02	-.12
Order	-.09	-.02
Self-Discipline	-.03	-.06
Competence	.05	-.03
Deliberation	-.02	-.04
Achievement Striving	.03	.03
<i>Neuroticism</i>	-.01	.03
Depression	.03	.07
Self-consciousness	-.06	.02
Impulsiveness	.05	.04
Anxiety	-.03	-.03
Vulnerability	-.03	.01
Angry Hostility	.00	.00

Note. $N = 294$. Correlations with an asterisk (*) were significantly different ($p < .05$, two-tailed) between Online Intimacy and Deception. Correlations $\geq .12$ are significant at $p < .05$ and are italicized.

principal components analysis exceeded its random counterpart (1.99 vs. 1.69) but the fifth eigenvalue did not (1.45 vs. 1.63), indicating a maximum of four factors should be extracted.

Next, Velicer's (1976) minimum average partial (MAP) test is based on analyzing residual correlation matrices by computing the average squared partial correlation for a range of solutions reflecting an increasing number of factors; the optimal solution is the one that yields the lowest mean value. The MAP test on the current data indicated that the mean squared partial correlation was smallest in the seven-factor solution (.0106), suggesting that seven factors should be extracted. Given that parallel analysis and the MAP test indicated that different numbers of factors should be extracted (i.e., four and seven factors, respectively), we examined a number of factor structures in subsequent analyses. We began with a two-factor solution and examined a range of solutions with an increasing number of factors to determine which structure was the most interpretable and psychologically meaningful.

3.4.2. Factor descriptions

Next, we conducted a series of principal factor analyses, using squared multiple correlations as the initial communality estimates. In all analyses, we rotated factors to oblique simple structure using promax (power = 3). First, we began by extracting two factors. Our analysis indicated that these scales defined a relatively clear structure of internalizing and externalizing psychopathology, respectively (see Table 4). The first factor of Internalizing was defined by 28 scales with loadings $\geq .50$, and was marked most strongly by IDAS-II Dysphoria, IDAS-II Social Anxiety, and CAT-PD-SF Anxiousness (loadings = .90, .85, and .82, respectively). The second factor of Externalizing was defined by

Table 4
Promax factor loadings of the psychopathology scales in Study 1.

Scale	I	II
IDAS-II dysphoria	0.90	−0.05
IDAS-II social anxiety	0.85	−0.05
CAT-PD anxiousness	0.82	−0.04
CAT-PD cognitive problems	0.81	0.01
IDAS-II panic	0.80	−0.01
CAT-PD depressiveness	0.80	−0.03
CAT-PD anhedonia	0.80	−0.13
CAT-PD social withdrawal	0.78	−0.17
IDAS-II traumatic intrusions	0.74	0.02
CAT-PD affective lability	0.74	0.08
CAT-PD non-perseverance	0.65	0.07
IDAS-II insomnia	0.63	−0.05
CAT-PD relationship insecurity	0.61	0.22
IDAS-II mania	0.61	0.23
CAT-PD emotional detachment	0.60	−0.02
IDAS-II suicidality	0.60	0.06
IDAS-II lassitude	0.60	0.13
IDAS-II claustrophobia	0.59	0.04
IDAS-II ill temper	0.59	0.24
IDAS-II traumatic avoidance	0.58	−0.00
CAT-PD self harm	0.54	0.12
CAT-PD unusual experiences	0.53	0.28
CAT-PD health anxiety	0.52	0.13
IDAS-II well-being	− 0.52	0.32
CAT-PD anger	0.51	0.26
IDAS-II appetite loss	0.51	−0.04
CAT-PD irresponsibility	0.50	0.09
CAT-PD mistrust	0.50	0.32
CAT-PD romantic disinterest	0.49	−0.22
CAT-PD submissiveness	0.49	0.10
CAT-PD fantasy proneness	0.47	0.35
IDAS-II checking	0.45	0.20
IDAS-II ordering	0.45	0.24
IDAS-II cleaning	0.44	0.13
CAT-PD non-planfulness	0.42	0.36
IDAS-II appetite gain	0.36	0.18
CAT-PD grandiosity	−0.07	0.84
CAT-PD domineering	−0.12	0.84
CAT-PD exhibitionism	−0.30	0.78
CAT-PD hostile aggression	0.10	0.74
CAT-PD risk taking	−0.11	0.74
CAT-PD manipulativeness	0.05	0.72
CAT-PD rudeness	0.11	0.68
CAT-PD rigidity	0.16	0.64
CAT-PD callousness	0.09	0.63
CAT-PD norm violation	0.16	0.59
CAT-PD unusual beliefs	0.12	0.55
IDAS-II euphoria	0.11	0.52
CAT-PD perfectionism	−0.02	0.48
CAT-PD peculiarity	0.41	0.42
CAT-PD workaholism	−0.13	0.39

Note. $N = 299$. Loadings $\geq .50$ are **bolded**. IDAS-II = Expanded Version of the Inventory of Depression and Anxiety Symptoms. CAT-PD = Computerized Adaptive Test of Personality Disorder Static Form.

12 scales with loadings $\geq .50$, and was marked most strongly by CAT-PD-SF Grandiosity, Domineering, and Exhibitionism (loadings = .84, .84, and .78, respectively).

When three factors were extracted, the first factor was marked strongly by scales assessing internalizing psychopathology (e.g., CAT-PD-SF Depressiveness) and the third by externalizing scales (e.g., CAT-PD-SF Manipulativeness). However, the second factor in the three-factor solution was difficult to interpret, as it was marked most strongly by a blend of scales assessing content related to OCD (e.g., IDAS-II Checking), PTSD (e.g., IDAS-II Traumatic Avoidance), and bipolar disorder (e.g., IDAS-II Euphoria). The four-factor structure was even more problematic, as only a single scale (CAT-PD-SF Perfectionism) loaded $\geq .50$ on the fourth factor. When five or more factors were extracted, any emergent factors after the fourth factor also were poorly defined and difficult to interpret.

Because solutions greater than two factors were problematic, we examined relations between online behavior and the two-factor structure of Internalizing and Externalizing. Accordingly, we computed regression-based factor scores to model these two dimensions (i.e., one for Internalizing and one for Externalizing) in subsequent analyses; these two factor scores correlated .57.

3.4.3. Psychopathology correlations

Online deception and intimacy displayed differential relations with psychopathology. First, Intimacy correlated very weakly with both the Internalizing and Externalizing psychopathology factor scores ($r_s = -.04$ and $.11$; $p_s = .49$ and $.06$, respectively). Deception displayed significantly stronger associations with both Internalizing and Externalizing than did Intimacy (Deception $r_s = .18$ and $.26$; $p = .002$ and $p < .0001$, respectively; z s for differences = 3.12 and 2.15, respectively). Deception also showed stronger associations with Externalizing than with Internalizing, although this difference was not significant ($z = 1.53$).

4. Study 1 summary

Online deception and intimacy showed distinct patterns of personality and psychopathology associations. As predicted, Deception correlated negatively with agreeableness and positively with externalizing psychopathology, although the former association was weaker in magnitude than expected. Furthermore, Deception was unrelated to neuroticism, contrary to our prediction that it would correlate positively with this trait. Unexpectedly, Intimacy displayed its strongest correlations with indicators of openness and correlated positively with extraversion. We revisit these predictions and provide a more in-depth discussion of these findings after presenting the results of Study 2.

Despite Deception and Intimacy showing distinct patterns of correlations in Study 1, most of the associations were relatively weak in magnitude, perhaps due to limited coverage of both domains: Each scale consisted of only three items, and the coefficient alpha for Deception (.50) was lower than desirable. Thus, Study 2 provided an opportunity to determine whether we could improve assessment of both dimensions, thereby resulting in more robust personality and psychopathology relations.

5. Study 2 method

5.1. Participants

Participants ($N = 294$) were community members recruited online through Amazon Mechanical Turk. The majority of the sample was white (63.9% White, 19.4% Asian/Asian-American, 6.5% Black/African American, 4.8% Hispanic/Latino, with small percentages of other minority groups represented). Mean participant age was 36.3 years ($SD = 11.6$); 50.3% of the sample was male. Only 12.2% of the sample indicated that they were currently in therapy for mental health issues; however, 41.2% of the sample had been in therapy in the past. Nearly a fifth of the participants (19.4%) indicated that they currently were taking medications to treat a mental illness. Most participants were employed (77.6%) and 54.4% reported having obtained a bachelor's degree or higher.

5.2. Measures

5.2.1. Overview

Participants in Study 2 completed a range of measures assessing personality domains and facets, and both internalizing and externalizing symptoms. All participants completed these scales in the same order. Because the online deception and intimacy scales in Study 1 each consisted of only three items, an expanded item pool was created in Study 2 to provide more comprehensive coverage of these constructs.

5.2.2. Assessment of online deception and intimacy

We wrote 17 items intended to assess behaviors and attitudes related to both (1) misrepresenting one's identity to others online (online deception) and (2) utilizing the internet as a source of genuine social interaction (online intimacy). Although some items contained similar content to those from Study 1 (e.g., "enjoy meeting people online"), others were intended to assess a wider range of aspects deemed relevant to online deception (e.g., "find a sense of thrill in misleading others") or intimacy (e.g., "view others I meet online as ideal romantic partners").

To ensure sufficient coverage of each content domain (i.e., online deception and intimacy), we rationally organized our potential items into homogenous item composites (HICs; see Watson et al., 2012). Consequently, we developed two initial symptom clusters: one tapping online deception (nine items) and the other online intimacy (eight items). These items are presented in Table 5. Participants were asked to "Read each statement and decide how well it describes you" on a 5-point scale ranging from *not at all like me* to *very much like me*. To determine the structure of these items, we factor analyzed them and used these results to create scales for subsequent analyses.

5.2.3. 120-item international personality item pool-NEO

The 120-item International Personality Item Pool-NEO (120-item IPIP-NEO; Maples, Guan, Carter, & Miller, 2014) measures the broad domains of neuroticism, extraversion, openness, agreeableness, and conscientiousness, as well as six lower order facets within each domain. It was created from the original 300-item IPIP-NEO to provide more concise assessment of these personality domains and their facets. Maples et al. (2014) provide evidence that it shows strong convergence with other widely used measures of personality. Coefficient alphas for the five domain scores ranged from .81 to .95 (mean $\alpha = .89$), with alphas for the 30 briefer facet scales ranging from .60 to .91 (mean α for neuroticism facets = .84; mean α for extraversion facets = .81; mean α for openness facets = .75; mean α for agreeableness facets = .74; mean α for conscientiousness facets = .81). Participants rated themselves on a 5-point scale ranging from *very inaccurate* to *very accurate*.

5.2.4. IDAS-II

Participants completed select scales from the IDAS-II, with only the Dysphoria (10 items; e.g., "felt depressed"; $\alpha = .94$), Euphoria (five

items; e.g., "elated for no reason"; $\alpha = .80$), Mania (five items; e.g., "thoughts jumped rapidly"; $\alpha = .89$), Social Anxiety (six items; e.g., "worried about embarrassing myself"; $\alpha = .91$), Lassitude (six items; e.g., "felt exhausted"; $\alpha = .85$), Ill Temper (five items; e.g., "lost my temper"; $\alpha = .88$), Insomnia (six items; e.g. "had trouble falling asleep"; $\alpha = .91$), Appetite Gain (three items; e.g. "ate when I wasn't hungry"; $\alpha = .83$), and Appetite Loss (three items; e.g., "did not have much of an appetite"; $\alpha = .88$) scales being administered. Participants completed this particular set of scales to provide assessment of a range of depression, social anxiety, and bipolar symptoms. They indicated how much they experienced each symptom in the past two weeks using a 5-point scale ranging from *not at all* to *extremely*.

5.2.5. Personality inventory for DSM-5

The Personality Inventory for DSM-5 (PID-5; Krueger, Derringer, Markon, Watson, & Skodol, 2012) is 220-item self-report instrument assessing personality pathology as presented in DSM-5 Section III: Emerging Models and Measures (American Psychiatric Association, 2013). Wright and Simms (2014) found that the PID-5 displays strong convergence with other personality pathology measures. Only the Anxiousness (nine items; e.g. "get very nervous"; $\alpha = .95$), Attention Seeking (eight items; e.g. "like standing out"; $\alpha = .96$), Grandiosity (six items; e.g. "deserve special treatment"; $\alpha = .91$), Callousness (14 items; e.g. "don't care about others"; $\alpha = .93$), Deceitfulness (10 items; e.g. "often make up things about myself"; $\alpha = .90$), Distractibility (nine items; e.g., "trouble pursuing specific goals"; $\alpha = .94$), Impulsivity (six items; e.g., "make rash decisions"; $\alpha = .90$), Irresponsibility (seven items; e.g., "often forget to pay bills"; $\alpha = .88$), Manipulativeness (five items; e.g., "good at conning people"; $\alpha = .89$) and Risk Taking (14 items; e.g., "do a lot of things other consider risky"; $\alpha = .90$) scales were administered. We included the PID-5 Anxiousness scale to provide a measure of generalized anxiety; the other PID-5 scales were used to assess a broad range of externalizing symptoms. Participants rated themselves on a 4-point scale, ranging from *Very False or Often False* to *Very True or Often True*.

5.2.6. Substance use

The Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) is a 10-item self-report screening instrument used to assess drinking frequency, amount of alcohol consumption, and consequences of excessive drinking ($\alpha = .89$). Saunders et al. (1993) present evidence suggesting that the AUDIT provides valid and efficient assessment of alcohol use. Participants also completed the Drug Use Survey (DUS; Clark & Watson, 1999), a 10-item self-report measure assessing the occurrence and frequency of use of a range of illicit substances (e.g., marijuana, stimulants, psychedelics) on a 7-point scale ranging from *never* to *40 times or more* ($\alpha = .82$).

6. Study 2 results

6.1. Overview

We present three series of analyses. First, we present factor analytic results based on the 17 items used to assess online deception and intimacy, which we used to create online deception and intimacy scales. Second, we report the bivariate relations for the online deception and intimacy scales with personality and psychopathology. As in Study 1, Study 2 included a large number of psychopathology scales (i.e., 10 from the PID-5, nine from the IDAS-II, two assessing substance use; 21 scales in all) that appear to assess overlapping content (e.g., multiple IDAS-II scales assess depressive symptoms; multiple PID-5 scales assess antagonism); consequently, we again examined the structure of these measures prior to examining their associations with online deception and intimacy.

Table 5
Items administered to assess online social behaviors and attitudes in Study 2.

1. I find it easier to be my "real" self online.*
2. I occasionally maintain multiple romantic relationships online.
3. I sometimes misrepresent myself online to attract friends or romantic partners.
4. I enjoy meeting new people online.*
5. I generally trust personal information I receive from others online.*
6. I am willing to represent myself online using photos or information of other people to appear more desirable to others online.
7. I sometimes feel a strong emotional connection or bond with someone in an exclusively online relationship.*
8. I am willing to enter into an online romantic relationship before meeting the other person face-to-face.*
9. I find a sense of excitement in misrepresenting myself to others online.
10. Sometimes I view others I meet online to be ideal romantic partners before ever meeting them face-to-face.*
11. I get a sense of thrill in misleading others online.
12. It is easy for me to let my guard down in exclusively online relationships.*
13. I would continue to misrepresent myself online in some way, even if doing so caused another person to feel hurt or victimized.
14. I scam or con others online.
15. I am willing to maintain exclusively online romantic relationships or friendships for several weeks or more just for the sake of companionship or emotional support.*
16. I would never intentionally deceive another person online. (Reverse Keyed)
17. I am willing to maintain online relationships as long as they serve my needs.

Note. Items with an asterisk were written to assess online intimacy; items without an asterisk targeted online deception.

Third, because the online deception and intimacy scales correlated moderately in Study 2, we also conducted multiple regression analyses. For all multiple regressions, the two online behavior scales were entered simultaneously as predictors of each personality and psychopathology measure; thus, these analyses establish the unique, incremental predictive power of each online behavior scale, controlling for the other scale. We present standardized beta weights from these multiple regressions. Based on Study 1 findings, we predicted that the multiple regressions would reveal that high scores on online deception are particularly maladaptive, as it showed stronger relations than intimacy with psychopathology and had a more maladaptive personality profile (e.g., low agreeableness).

Once again, we applied a Bonferroni correction when evaluating statistical significance, because we examined a large number of associations with online behavior (specifically, 74 zero-order correlations and 74 regression coefficients). A number of associations remained significant after applying this correction (corrected alpha = .05/148 = .00034); results described as significant in text are those that remained significant with the Bonferroni correction.

6.2. Factor analysis of online deception and intimacy items: creation of the Measures of Online Deception and Intimacy (MODI)

As in Study 1, we conducted a series of principal factor analyses to determine the structure of the items used to assess online deception and intimacy (again, see Table 5). In all analyses, two factors (modeling the target constructs of online deception and intimacy) were rotated to orthogonal simple structure using varimax ($N = 294$ for all factor analyses). Once more, we sought to identify a clear, two-factor structure according to two criteria: (1) All items should load strongly onto at least one factor (i.e., $\geq .40$), and (2) No items should have significant cross loadings (i.e., $\geq .30$). We therefore conducted an iterative series of analyses in which items that failed to meet these criteria were dropped prior to subsequent analyses.

In the initial factor analysis using all 17 items, a relatively clear factor structure of online intimacy (e.g., “feel a strong emotional connection in an online relationship”) and deception (e.g., “sense of thrill in misleading others online”) emerged. However, items 3 (“sometimes misrepresent myself online to attract partners”; loading of .46 and .67 on Factors I and II, respectively) and 6 (“willing to represent myself as someone else to appear more desirable online”; loadings of .37 and .46, respectively) had moderate to strong loadings on both factors and therefore were dropped from subsequent analyses.

The subsequent factor analysis with the 15 remaining items also yielded a reasonably interpretable two-factor structure of online intimacy and deception. Items 2 (“maintain multiple relationships online”; loadings of .38 and .52, respectively), 10 (“view others to be ideal partners”; loadings of .68 and .36, respectively), and 12 (“easy for me to let my guard down online”; loadings of .64 and .34, respectively) displayed moderate to strong loadings on both factors, whereas item 16 (“would never deceive someone online”; loadings of $-.07$ and .31, respectively) loaded relatively weakly on both factors; thus, these items were dropped at this point.

The next analysis was conducted with the 11 retained items. In this analysis, all items satisfied our initial selection criteria, with the single exception of item 15 (“maintain online relationships for emotional support”; loadings of .67 and .32, respectively). Although this item seemed to be a relatively clear indicator of online intimacy, it was dropped because six other items provided markers of this factor that fully satisfied our criteria.

Thus, we conducted one final factor analysis with the 10 remaining items. As can be seen in Table 6, all 10 items now satisfied our retention criteria. Consequently, we used this final set of items to construct corresponding Online Deception (4 items; $M = 5.63$, $SD = 3.01$; $\alpha = .89$) and Online Intimacy (6 items; $M = 15.12$, $SD = 5.41$; $\alpha = .80$) scales; these scales correlated .47 in this sample. We subsequently refer to these two

Table 6

Varimax factor loadings of the items administered to assess online social behaviors and attitudes.

Item number	I	II
11. Get a sense of thrill in misleading others online	.86**	.23
13. Continue to misrepresent myself online	.81**	.25
9. Sense of excitement in misrepresenting myself online	.80**	.29
14. Scam or con others online	.69**	.12
7. Feel a strong emotional bond in online relationships	.28	.73*
4. Enjoy meeting new people online	.07	.69*
8. Willing to enter into an online relationship	.29	.61*
17. Maintain online relationships as long as they serve needs	.27	.54*
1. Easier to be “real” self online	.09	.51*
5. Trust personal information I receive from others online	.14	.50*

Note. $N = 294$. Items are paraphrases of the originals. Items with an asterisk (*) were used in creating the Online Intimacy scale, and items with a double asterisk (**) were used to create the Online Deception scale. Loadings $\geq .40$ are **bolded**.

scales collectively as the Measures of Online Deception and Intimacy (MODI). These scales were used to examine the associations for online behavior with personality and psychopathology in subsequent analyses.

6.3. Personality relations

Relations for both online deception and intimacy generally were more robust than in Study 1 (see Table 7 for correlations and Table 8 for regressions). Considering the domain level relations, Deception related negatively with openness ($r = -.11$; $\beta = -.19$) and showed more robust associations than Intimacy with agreeableness

Table 7

Correlations for online intimacy and online deception with the personality domains and facets.

Scale	Online intimacy	Online deception
<i>Agreeableness</i>	<i>$-.15^*$</i>	$-.36$
Cooperation	<i>$-.27^*$</i>	$-.44$
Morality	<i>$-.23^*$</i>	$-.39$
Altruism	<i>$-.03^*$</i>	$-.31$
Sympathy	<i>$-.01^*$</i>	$-.20$
Trust	.02	$-.00$
Modesty	$-.08$	$-.09$
<i>Conscientiousness</i>	<i>$-.14^*$</i>	$-.30$
Dutifulness	<i>$-.15^*$</i>	$-.39$
Cautiousness	<i>$-.14^*$</i>	$-.30$
Achievement striving	<i>$-.05^*$</i>	$-.23$
Self-efficacy	<i>$-.10^*$</i>	$-.22$
Orderliness	$-.15$	$-.18$
Self-discipline	$-.06$	$-.12$
<i>Neuroticism</i>	.23	.27
Self-consciousness	.23	.27
Depression	.20	.24
Anxiety	.19	.22
Anger	.17	.22
Vulnerability	.13	.18
Immoderation	.17	.17
<i>Openness</i>	.08*	$-.11$
Intellect	<i>$-.08^*$</i>	$-.23$
Imagination	.18	.15
Adventurousness	<i>$-.01^*$</i>	$-.13$
Emotionality	.14	.03
Liberalism	.01	$-.08$
Artistic interests	.05*	$-.11$
<i>Extraversion</i>	.06	$-.01$
Excitement seeking	.17	.13
Gregariousness	.11	.04
Activity level	$-.08$	$-.08$
Assertiveness	$-.02$	$-.08$
Cheerfulness	.01	$-.07$
Friendliness	.05	$-.02$

Note. $N = 294$. Correlations $\geq .20$ are **bolded**. Correlations $\geq .12$ are significant at $p < .05$ and are italicized; correlations $\geq .22$ are significant with the Bonferroni correction (corrected alpha of .00034) and are underlined. Correlations with an asterisk (*) were significantly different ($p < .05$, two-tailed) between Online Intimacy and Deception.

Table 8
Regression analyses: predicting scores on the personality domains and facets.

Scale	Online intimacy	Online deception
Agreeableness	.02	-.37**
Cooperation	-.09	-.40**
Altruism	.15*	-.38**
Morality	-.06	-.36**
Sympathy	.11	-.25**
Trust	.03	-.01
Modesty	-.05	-.07
Conscientiousness	-.00	-.30**
Dutifulness	.04	-.41**
Cautiousness	-.00	-.30**
Achievement striving	.07	-.26**
Self-efficacy	-.00	-.22*
Orderliness	-.08	-.15*
Self-discipline	-.01	-.12
Neuroticism	.13*	.21*
Self-consciousness	.13*	.21*
Depression	.12	.19*
Anxiety	.11	.17*
Anger	.09	.17*
Vulnerability	.06	.15*
Immoderation	.12	.12
Openness	.17*	-.19*
Intellect	.03	-.25**
Artistic interests	.13*	-.17*
Emotionality	.16*	-.05
Adventurousness	.06	-.15*
Imagination	.14*	.08
Liberalism	.06	-.11
Extraversion	.08	-.05
Excitement seeking	.14*	.06
Gregariousness	.12	-.01
Assertiveness	.03	-.10
Cheerfulness	.05	-.09
Friendliness	.08	-.06
Activity level	-.05	-.06

Note. $N = 294$. The values shown are standardized beta weights. Values significant at $p < .05$ are starred with an asterisk (*), and values significant with the Bonferroni correlation (corrected alpha of .00034) are double-starred (**). Values $\geq |.20|$ are **bolded**.

($r = -.36$; $\beta = -.37$), conscientiousness ($r = -.30$; $\beta = -.30$), and neuroticism ($r = .27$; $\beta = .21$). Intimacy showed weak positive relations with openness ($r = .08$; $\beta = .17$) and extraversion ($r = .06$; $\beta = .08$), correlated negatively with agreeableness and conscientiousness ($r_s = -.15$ and $-.14$, respectively), and related positively to neuroticism ($r = .23$; $\beta = .13$). Its negative relations with agreeableness and conscientiousness were due to its shared overlap with Deception; in the regressions, it was unrelated to both domains ($\beta_s = .02$ and $-.00$, respectively).

Deception also showed interesting relations with personality at the facet level. It related moderately to the Agreeableness facets of Cooperation, Morality, and Altruism ($r_s = -.44$, $-.39$, $-.31$, respectively; $\beta_s = -.40$, $-.38$, $-.36$), but related less strongly to Sympathy ($r = -.20$; $\beta = -.25$) and even more weakly to Trust and Modesty ($r_s = -.00$, $-.09$, respectively; $\beta_s = -.01$, $-.07$, respectively). Furthermore, Deception related moderately to Dutifulness and Cautiousness ($r_s = -.39$, $-.30$, respectively; $\beta_s = -.41$, $-.30$, respectively), but was more weakly linked to other conscientiousness facets.

6.4. Psychopathology relations

6.4.1. Determining the number of factors

As stated, we examined the structure of the psychopathology measures prior to examining their relations with online behavior. To determine the number of factors to be extracted, we conducted a principal components analysis on the 21 psychopathology scales. Once again, we first conducted a parallel analysis using O'Connor's (2000) SAS program ($Ncases = 294$, $Nvars = 21$, $Ndatasets = 1000$, $percent = 95$). The results indicated that the second eigenvalue from the principal

components analysis (3.20) exceeded its random counterpart (1.42) but that the third eigenvalue did not (1.29 vs. 1.35), indicating that a maximum of two factors should be extracted.

Next, the MAP test indicated that the mean squared partial correlation was lowest in the two-factor (.025) solution. Thus, the MAP test converged with the parallel analysis to indicate that two factors should be extracted.

6.4.2. Factor descriptions

Next, we conducted a principal factor analysis, using squared multiple correlations as the initial communality estimates. Based on the results of the parallel analysis and MAP test, we extracted two factors and rotated them to oblique simple structure using promax (power = 3). Our analysis indicated that these scales defined a clear structure of internalizing and externalizing psychopathology, respectively (see Table 9). The Internalizing factor was defined by 12 scales with loadings $\geq .50$, and was marked most strongly by IDAS-II Dysphoria, Lassitude, and Social Anxiety (loadings = .97, .85, and .80, respectively). The Externalizing factor was defined by six scales with loadings $\geq .40$, and was marked most strongly by PID-5 Grandiosity, Manipulativeness, and Attention Seeking (loadings = .87, .78, and .76, respectively). Based on these results, we computed regression-based factor scores to model these two dimensions (i.e., Internalizing and Externalizing) in subsequent analyses; these two factor scores correlated .35.

6.4.3. Relations with psychopathology

Online Intimacy and Deception both correlated positively with Internalizing ($r_s = .26$ and $.44$; both $p_s < .0001$, respectively) and Externalizing ($r_s = .33$ and $.50$; both $p_s < .0001$, respectively), although Deception correlated significantly more strongly with both psychopathology factors ($z_s = 3.30$ and 3.24 , respectively).

The regression analyses indicated that Deception's unique variance displayed much more predictive power for psychopathology than that for Intimacy. First, Deception emerged as a moderate positive predictor of Internalizing factor scores ($\beta = .41$, $p < .0001$), whereas Intimacy related very weakly to this dimension ($\beta = .07$, $p = .24$). Similarly, Deception was a robust positive predictor of Externalizing factor scores ($\beta = .44$, $p < .0001$), with Intimacy again showing much weaker relations ($\beta = .12$, $p = .04$).

Table 9
Promax factor loadings of the psychopathology scales in Study 2.

Scale	I	II
IDAS-II dysphoria	.97	-.13
IDAS-II lassitude	.85	-.05
IDAS-II social anxiety	.80	-.07
PID-5 anxiousness	.79	-.19
PID-5 distractibility	.77	-.00
IDAS-II insomnia	.72	-.11
IDAS-II mania	.70	.24
IDAS-II ill temper	.68	.29
PID-5 irresponsibility	.63	.30
IDAS-II appetite gain	.58	.05
PID-5 impulsivity	.54	.34
IDAS-II appetite loss	.54	.17
AUDIT	.36	.01
Drug use survey	.18	-.06
PID-5 grandiosity	-.28	.87
PID-5 manipulateness	-.09	.78
PID-5 attention seeking	-.18	.76
IDAS-II euphoria	.11	.62
PID-5 deceitfulness	.31	.62
PID-5 callousness	.21	.59
PID-5 risk taking	.09	.46

Note. $N = 294$. Loadings $\geq |.50|$ are **bolded**. IDAS-II = Expanded Version of the Inventory of Depression and Anxiety Symptoms. PID-5 = The Personality Inventory for DSM-5.

7. Discussion

In an effort to determine the characteristics of individuals who turn to the internet to deceive others or for companionship, the goals of this study were: (1) to create scales to assess online deception and intimacy and (2) to determine the personality and psychopathology correlates of such measures. To address these goals, we created an initial pool of items intended to assess relevant online behaviors in Study 1 and examined the personality and psychopathology relations for the resulting online deception and intimacy scales. Although we identified clear markers of each dimension in Study 1, Study 2 allowed us to create improved scales based on a larger item pool. Based on the Study 2 structural analyses of this item pool, we created a four-item Online Deception scale containing content assessing a willingness to deceive others online and experiencing a sense of thrill in doing so, and a six-item Online Intimacy scale that includes content assessing a willingness to share personal information and to develop intimate relationships online, even without meeting the other person in the relationship. We labeled these scales collectively as the Measures of Online Deception and Intimacy (MODI).

Our data provide evidence that the MODI scales display distinct patterns of associations with personality and psychopathology. They showed particularly robust associations in the second study, reflecting, in part, the improved assessment of these dimensions. It also is noteworthy that the MODI scales correlated moderately in Study 2. This suggests that online deception and intimacy are overlapping rather than independent dimensions (i.e., those who seek intimacy online also misrepresent themselves online), even though they show differential correlates.

In general, Online Intimacy related more weakly to personality and psychopathology than did Deception, suggesting that this dimension is tied less strongly to broader dimensions of individual differences. Whereas Online Intimacy related positively with openness and showed positive, but weak relations with most forms of psychopathology, Deception showed moderate to strong positive relations with both internalizing and externalizing psychopathology, displaying particularly strong cross-study associations with the latter. Contrary to what we predicted, Deception related weakly to neuroticism in Study 1. However, it displayed a more robust association with this trait in Study 2, and also showed moderate negative associations with agreeableness and conscientiousness in these data. Finally, it is notable that the MODI scales related weakly to extraversion, even though previous research indicated that extraversion was a key predictor of online social media use (e.g., McKenna et al., 2002; Nadkarni & Hofmann, 2012). We provide more detailed summaries of the patterns of associations for each scale in the following sections.

7.1. Online deception

Although these relations were not as apparent in Study 1, our Study 2 data with an improved version of the Online Deception scale indicate that it shows moderate negative relations with both agreeableness and conscientiousness, as well as the predicted positive association with neuroticism. Consistent with previous research indicating that neuroticism was associated with presenting an “ideal” version of one’s self online (Seidman, 2013), our findings suggest that one motive for online misrepresentation may be feelings of inadequacy and self-dissatisfaction.

Deception also displayed specificity with various personality facets, showing comparatively stronger relations to the Cooperation, Morality, and Altruism facets of agreeableness than to other components of that domain (i.e., Modesty, Sympathy, Trust). Furthermore, it displayed a stronger relation with Dutifulness than with other conscientiousness facets. Its specific associations with Cooperation (e.g. “get back at others”; reverse-keyed), Morality (e.g., “use flattery to get ahead”; reverse-keyed), Altruism (e.g., “concerned about others”) and

Dutifulness (e.g., “break my promises”; reverse-keyed) all are readily interpretable, as they seem to assess the opposite end of the online deception dimension (e.g., “misrepresent myself”; “sense of thrill in misleading others”) to a considerable extent.

Given its personality profile (i.e., elevated neuroticism; low agreeableness and conscientiousness), it is unsurprising that Deception correlated positively with psychopathology. The magnitude of its relations with externalizing psychopathology (e.g., manipulativeness) is unsurprising given that the MODI Online Deception scale directly assesses a willingness to mislead others and was associated negatively with agreeableness. However, Deception also demonstrated moderately strong relations with internalizing psychopathology in Study 2, suggesting that individuals who deceive others also are likely to report elevated levels of internal distress.

7.2. Online intimacy

Unlike Online Deception, Online Intimacy displayed weak associations with personality at both the domain and facet levels, suggesting that the personality profile for this dimension is not as distinct. However, several of its personality relations are worth mentioning. It showed a weak, but positive relation with openness across studies, suggesting that individuals scoring highly on this scale generally are open to new experiences, including engaging in intimate online social interactions. This scale also related weakly, but positively, to neuroticism in both the correlational and regression analyses in Study 2.

Similar to its relations with personality, Intimacy generally displayed weaker relations with psychopathology than did Deception. It is noteworthy that it correlated moderately positively with both Internalizing and Externalizing psychopathology in Study 2; however, it weakly predicted scores on both factors in the Study 2 regressions. Thus, considering our data across studies, it seems that Intimacy is related less strongly to individual differences in personality and psychopathology than is Deception.

7.3. Limitations and future directions

This study contributes to the literature examining how individual differences are related to social internet use, establishing distinct properties of the MODI online deception and intimacy scales in two community samples. However, future research is needed to explicate the construct validity and reliability of these scales more fully.

First, our approach to creating the MODI scales and examining their correlates was cross-sectional in both studies. Thus, it would be beneficial for future research to determine the stability of these scales. Although both final MODI scales demonstrated strong internal consistency in Study 2, their stability over time remains uncertain. Second, we examined the relations between the MODI scales and a range of both personality and psychopathology measures. However, it would be useful to incorporate informant measures when assessing personality and psychopathology, as participants may have limited insight into some symptoms and certain aspects of their personality. Lastly, we encourage future research to explicate the breadth and structure of these dimensions in other samples, as our item pool in Study 2 may have missed aspects of each construct that will be important to assess in future research. Relatedly, our data indicated that online deception and intimacy are positively correlated, and we hope that future research will clarify the mechanisms underlying this association.

8. Conclusions

We view the MODI scales as the first step toward exploring how individual differences in personality and psychopathology can be used to clarify the nature of online deception and intimacy. Thus, it will be important for future research to explicate the motives implicated in turning to the internet to deceive others and/or to find meaningful

relationships. We believe that these online behaviors represent complex phenomena that likely are multiply determined by a number of personal (e.g., personality, self-esteem) and environmental factors (e.g., proximity to others with similar interests and of one's own age). We hope that future research will build from this work by using the MODI scales to further explore the correlates of online behavior.

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