ORIGINAL RESEARCH REPORT

Investigating the Relationship Between Perfectionistic Self-Presentation and Social Anxiety Using Daily Diary Methods: A Replication

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Worrying about the negative consequences of appearing imperfect to others (i.e., perfectionistic self-presentation) is conceptually related to social anxiety. Mackinnon, Battista, Sherry and Stewart (2014) tested whether perfectionistic self-presentation could predict social anxiety beyond several important covariates using a 21-day daily measurement approach. We sought to replicate Mackinnon et al.'s (2014) findings using the same daily diary methodology. Participants included 263 young adults (79.9% women; *M* age = 21.4) who completed a series of questionnaires once per day for 21 days. Participants completed measures of perfectionistic self-presentation, perfectionism cognitions, social anxiety, depressed mood and socially prescribed perfectionism. Intraclass correlations suggested measures had both within-subjects and between-subjects variability. Confirmatory factor analyses supported the a-priori factor structures at both levels. Using multilevel structural equation modeling, we showed that perfectionistic self-presentation predicted social anxiety even when controlling for socially prescribed perfectionism, depressed mood and perfectionism cognitions at both levels, replicating Mackinnon et al (2014). Our replication suggests that perfectionistic self-presentation is an important predictor of daily social anxiety. Intervention efforts may wish to target perfectionistic self-presentation in order to better help treat those with social anxiety. Open data/methods: https://osf.io/ty2aj/.

Social anxiety is defined by marked fear of social and performance situations where the individual will be evaluated by others (American Psychiatric Association, 2013). It is one of the most frequently diagnosed anxiety disorders and is associated with a higher risk of developing other anxiety disorders, substance-use disorders, and affective disorders (Fehm, Pelissolo, Furmark, & Wittchen, 2005; Kessler, Chiu, Demler, & Walters, 2005). The self-presentation model of social anxiety suggests that social anxiety arises when individuals are driven to present a perfect impression to others, doubt that they will be able to achieve this high standard and thus imagine being negatively evaluated by others (Schlenker & Leary, 1982). This results in increased anxiety when both imagining and engaging in social interactions. Other models suggest cognitive factors play a major role in social anxiety; specifically, concealing imperfections and cognitions regarding self-doubt maintain social anxiety when activated in social situations (Clark, 2005). Taken together,

these models suggest social anxiety may be driven by a self-presentational style that focuses on hiding perceived imperfections during social interactions. Mackinnon, Battista, Sherry, and Stewart (2014) conducted the first study investigating perfectionistic self-presentation and social anxiety using daily diary methodology. The purpose of the present study was to replicate their work using the same daily diary approach in a similar population.

Perfectionism and Social Anxiety
There are three facets that compose perfectionistic self-presentation: nondisplay of imperfection, perfectionistic self-promotion, and nondisclosure of imperfection (Hewitt et al., 2003). Perfectionistic self-promotion involves actively promoting and displaying one's perfection in a self-aggrandizing style (e.g., "I try always to present a picture of perfection") and nondisclosure of imperfection focuses on avoiding discussion of imperfections without placing emphasis on the consequences of such disclosures (e.g., "I should always keep my problems to myself"). Conversely, nondisplay of imperfection focuses on hiding one's imperfections for fear of the potential negative consequences (e.g., "It would be awful if I made a fool of myself in front of others"). Thus, nondisplay of

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imperfection is the closest match for the self-presentation model of social anxiety, as it focuses on the negative consequences of displaying imperfect behaviours to others (Schlenker & Leary, 1982). Nondisplay of imperfection is elevated in people with social phobia relative to healthy controls with a larger effect size ($d = 0.97$) than other facets of perfectionistic self-presentation (Jain & Sudhir, 2010). Moreover, it predicts social anxiety in student samples when controlling for other perfectionism traits (Hewitt et al., 2003). Thus, Mackinnon et al., (2014) – and consequently, the present study – chose to focus on nondisplay of imperfection, rather than the other facets of perfectionistic self-presentation. Negative mood states are also associated with nondisplay of imperfection (Flett, Galfi-Pechenkov, Molnar, Hewitt, & Goldstein, 2012; Mushquash & Sherry, 2012), and should therefore be controlled (Mackinnon et al., 2014). Without controlling for depressed mood, nondisplay of imperfection could theoretically be measuring negative affect more broadly, rather than perfectionism specifically. Thus, if measurement is confounded with depressed affect, the results observed would be spurious.

Hewitt and Flett (1991) proposed three facets of perfectionism that represent stable personality traits: self-oriented perfectionism (i.e., requiring perfection from the self), other-oriented perfectionism (i.e., requiring perfection from others), and socially prescribed perfectionism (i.e., perceiving others require perfection). Socially prescribed perfectionism represents an interpersonal, public aspect of perfectionism and is subsequently associated with greater loneliness, shyness, and fear of negative evaluation (Flett, Hewitt, & De Rosa, 1996). Additionally, socially prescribed perfectionism is a robust predictor of social anxiety (Alden, Bieling, & Wallace, 1994; Antony, Purdon, Huta, & Swinson, 1998), as well as depressed mood (Flett et al., 1996). Conversely, self-oriented and other oriented perfectionism are not consistently related to social anxiety (Flett et al., 1996; Flett, Coulter, & Hewitt, 2012), and are thus not considered as covariates.

Perfectionism cognitions reflect more state-like personal perfectionistic themes and arise when individuals sense a discrepancy between their actual and ideal self (Flett, Hewitt, Blankstein, & Gray, 1998). These automatic thoughts tend to focus on individual aspects of perfectionism and are conceptualized by Flett et al., (1998) as being more closely related to self-oriented perfectionism. However, some researchers argue that perfectionism cognitions are multidimensional, containing three distinct factors of perfectionism (i.e., perfectionistic strivings, perfectionistic demands, and perfectionistic concerns; Stoeber, Kobori, & Brown, 2014). Supporting this view, researchers have shown that perfectionism cognitions share a strong association with both self-oriented and socially prescribed perfectionism (Flett et al., 2012). Nonetheless, given the 3-item short form used by Mackinnon et al., (2014) and their presented factor analytic results, we conceptualize perfectionism cognitions as unidimensional. Perfectionism cognitions are associated with increased depression, anxiety and anxious arousal (Flett, Madorsky, Hewitt, & Heisel, 2002), over and above other measures of trait

perfectionism (Flett, Hewitt, Whelan, & Martin, 2007). Prior to Mackinnon et al.'s (2014) study, there had been no investigation of perfectionism cognitions and social anxiety. They expected perfectionism cognitions to be a less robust predictor of social anxiety given its emphasis on private experiences of perfectionism and less on the social consequences of appearing imperfect to others (Schlenker & Leary, 1982). Mackinnon et al., (2014) found perfectionism cognitions predicted social anxiety within any given day of their study but not when aggregated across all 21 days. This suggested that more private features of daily perfectionism play a role in social anxiety, although less so than perfectionistic self-presentation.

Rationale and Hypotheses
Mackinnon et al., (2014) predicted that nondisplay of imperfection would be a robust predictor of social anxiety, even when controlling for perfectionism cognitions, depressed mood, and baseline socially prescribed perfectionism. Mackinnon et al.'s (2014) multilevel regression analyses indicated that perfectionistic self-presentation predicted social anxiety at the between- and within-subjects levels when controlling for socially prescribed perfectionism, perfectionism cognitions and depressed mood. They also showed that each variable had both trait- and state-like variation over the 21 days of the study. This supported the supposition that perfectionistic self-presentation and perfectionism cognitions have state-like variability (Flett et al., 1998; Hewitt et al., 2003). However, the initial study suffered from data quality issues, with over 37% missing data, in part due to reliance on out-dated technology (i.e., Palm Pilots). Moreover, the initial study did not incorporate latent variables to better account for measurement error, nor did they consider random slopes in their multilevel analyses, both of which could bias estimates. Given the importance of replication in cumulative science (Brandt et al., 2014), the purpose of the present study was to replicate Mackinnon et al.'s (2014) findings using the same 21-day daily diary methodology. We also improved on Mackinnon et al.'s (2014) method by measuring socially prescribed perfectionism across days instead of only at baseline, collecting our data via online questionnaires instead of Palm Pilots (resulting in less missing data), and by using latent variables in multilevel structural equation modeling (SEM). Based on Mackinnon et al.'s (2014) study, we hypothesized:

H1: Perfectionism cognitions, nondisplay of imperfection, social anxiety, socially prescribed perfectionism and depressed mood will demonstrate good reliability and factorial validity in confirmatory factor analyses.

H2: Nondisplay of imperfection, depressed mood, perfectionism cognitions and socially prescribed perfectionism will positively predict social anxiety at the between- and within-subjects levels.

H3: Nondisplay of imperfection will positively predict increased social anxiety when controlling for depressed mood, perfectionism cognitions and socially prescribed perfectionism at the between- and within-subjects levels.

Method
Open Data and Materials
Raw data, syntax files and study materials are open-access and can be found at https://osf.io/ty2aj/, including all questionnaires used in the present study (as well as other questionnaires not analyzed in this paper) and their corresponding raw data.[1]

Participants
Recruitment took place in Halifax Regional Municipality (HRM) and at Dalhousie University in Halifax, as well as in Montreal and Concordia University in Montreal. In order to participate, individuals had to: (a) be between the ages of 18 and 25; (b) have consumed at least 12 alcohol drinks within the past year;[2] and (c) have Internet access at home. Emerging adult drinkers were recruited in order to answer other research questions (see Mackinnon, Ray, Firth, & O'Connor, 2019). Flyers were placed around town and on Dalhousie university campuses. Advertisements were also placed on Dalhousie and Concordia's undergraduate participant pools in the Department of Psychology and Neuroscience, as well as online via classified ads (e.g., Kijiji).

Participant mean age ($N = 263$) was 21.37 ($SD = 1.89$) and the majority of the sample was female (79.8%). Participants self-reported their ethnicities as Caucasian/White (78.3%), Asian (7.7%), Hispanic (2.7%), African Canadian/Black (2.3%), Middle Eastern (1.1%), First Nations (0.8%), and Other (6.5%). Participants lived in either Nova Scotia (60.5%) or Quebec (39.5%). Both samples completed the same procedure and thus data from Montreal and Halifax were combined into a single dataset.

Materials
Nondisplay of imperfection
Mackinnon et al., (2014) created a 3-item short form nondisplay of imperfection scale based on the strongest factor loadings from Hewitt et al.'s (2003) nondisplay of imperfection subscale of the Perfectionistic Self-Presentation Scale.[3] Items were rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). In a prior daily diary study these items evidenced excellent reliability given the limitations of Cronbach's alpha ($\alpha = .97$; Mushquash & Sherry, 2012).

Social anxiety
Participants rated their level of daily social anxiety using Kashdan and Steger's (2006) scale. Items were rated on a scale from 0 (*not at all*) to 4 (*extremely*). This scale displayed good between-subjects ($R_{KF} = 0.99$) and within-subjects reliability ($R_C = 0.85$) when measured daily in Mackinnon et al.'s (2014) study as well as in Kashdan and Steger's (2006) study ($\alpha = .97$).

Depressed mood
Participants rated the extent to which three words (depressed, sad, blue) described their daily mood. Items were rated on a scale from 0 (*not at all*) to 5 (*extremely*). This scale displayed good between-subjects ($R_{KF} = 0.99$; reliability of the average of all ratings across all items and times) and within-subjects ($R_C = 0.81$; the generalizability

of change scores over time) reliability when measured daily in Mackinnon et al.'s 2014 study.

Perfectionism cognitions
Mackinnon et al., (2014) created a 3-item short form perfectionism cognitions scale based on the strongest factor loadings from Flett et al.'s (1998) Perfectionism Cognitions Inventory. Items were rated on a scale from 0 (*not at all*) to 4 (*all of the time*). This scale displayed good between-subjects ($R_{KF} = 0.99$) and within-subjects ($R_C = 0.74$) reliability in Mackinnon et al.'s (2014) study.

Socially prescribed perfectionism
The short-form socially prescribed perfectionism scale (Cox, Enns, & Clara, 2002) is a 5-item subscale of Hewitt and Flett's (1991) Multidimensional Perfectionism Scale. Items were rated on a scale from 1 (*strongly disagree*) to 7 (strongly agree). Alpha reliabilities for the short-form scale are usually > .75 (Hewitt, Habke, Lee-Baggley, Sherry, & Flett, 2008; Sherry, Hewitt, Sherry, Flett, & Graham, 2010).

Procedure
Ethics approval was obtained by Dalhousie University's Social Sciences and Humanities Research Ethics Board and Concordia University's Human Research Ethics Committee. Interested participants contacted our lab via email and were then sent an email with a link containing our consent form and baseline questionnaire. After obtaining consent electronically, participants completed the baseline questionnaire on day 1. Demographic information was measured at baseline only; all other measures were completed daily. The survey company Interceptum (https://interceptum.com/p/en) created and deployed the questionnaires.

Participants were sent an email containing a link to their questionnaire on days 2 through 21. They were instructed to complete the questionnaires each day before bed as they were asked to report on the past 24 hours. More specifically, the time frame for the questionnaires was from 4 am one day to 4am the next day (e.g., "From 4 am October 15 to 4 am on October 16"). Daily questionnaires took approximately 15 minutes to complete. If participants forgot to complete a set of questionnaires on a specific day, they could make it up by filling out two daily questionnaires the following day. This was possible because each questionnaire referred to a specific time and date. Once 48 hours had passed, participants were no longer able to complete that day's survey and received no compensation for that day. Participants were debriefed via email.

Participants were only compensated for each questionnaire they completed in order to reduce missing data (i.e., $2 Amazon gift cards per day, for a maximum of $42). Course credit for a psychology class was also offered as compensation, if participants were psychology students (i.e., 1 bonus point for every 5 days they participated for a maximum of 3 bonus points and a $12 gift card).

Data Analytic Plan
The following data analysis plan was preregistered https://osf.io/nyw3v. Note however, that this analysis took place on archival data collected for a different purpose. We pre-
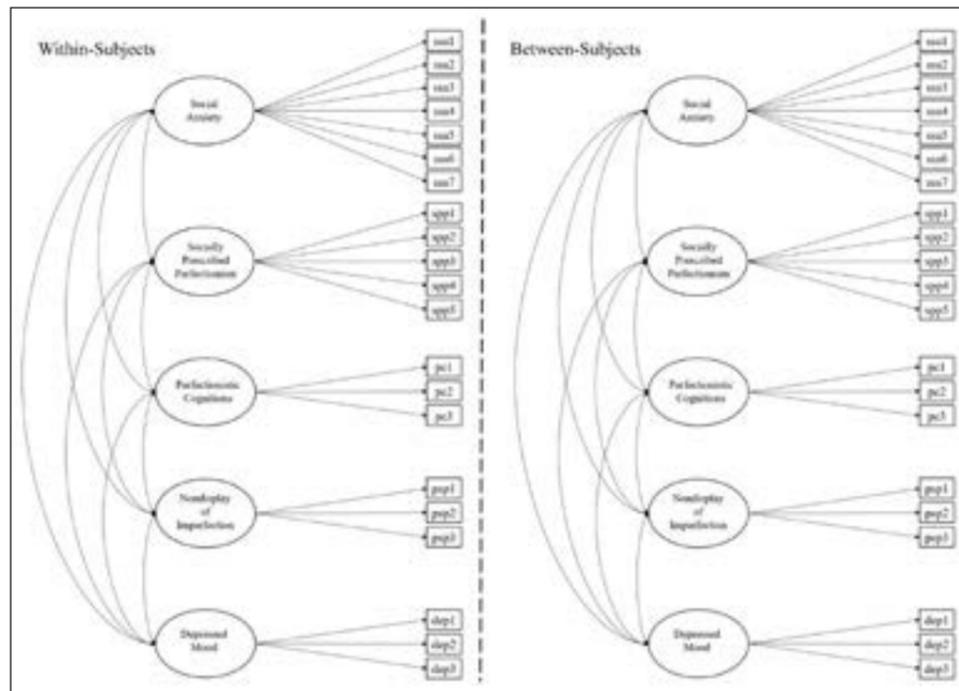
registered our analysis plan to reduce researcher degrees of freedom in subsequent analyses; however, this study cannot be considered truly pre-registered, as the data analysis plan was created after the data were collected and the second author had accessed the data prior to the registration. However, the data analyst (the first author) did not view the data prior to analysis, and the hypotheses were not tested prior to registering the analysis strategy.

Intraclass correlations, omega reliabilities, multilevel confirmatory factor analysis and multilevel structural equation modeling were utilized to test our hypotheses. Compliance rates were assessed by examining proportions of missing data. Day of study was included as a covariate in our multilevel SEM analyses to meet the missing at random assumption, consistent with Mackinnon et al., (2014). ICCs were computed for each variable to determine whether multilevel modeling was warranted. ICCs indicate the percentage of variance available to be explained at the between-subjects level. ICCs larger than .05 are considered suitable for multilevel analysis (Preacher, Zyphur, & Zhang, 2010). Means and standard deviations were calculated on averaged total scores (i.e., averaging across all items) and reported at the between-subjects level by averaging each variable across the 21 days. Latent multilevel correlations were reported at the between-subjects and within-subjects level using Mplus 8.0 (Muthén & Muthén, 2017). The omega coefficient, a reliability estimate based on the correlation of lower order factors, measured reliability at the between- and within-subjects level and was calculated

in Mplus 8.0. Omega does not require tau-equivalence (i.e., equivalent covariance across items), something that is often violated in psychological research, and is less likely to underestimate or overestimate reliability (Dunn, Baguley, & Brunsden, 2014). As a result, the omega coefficient has been shown to be a more accurate measurement of internal consistency than other widely utilized coefficients, such as Cronbach's alpha (Dunn et al., 2014; Revelle, & Zinbarg, 2009).

In order to assess factorial validity, we conducted a multilevel confirmatory factor analysis (CFA) in Mplus 8.0. At both the within- and between-subjects level, a five-factor structure was specified (see **Figure 1**). Five factors were selected based on Mackinnon et al.'s (2014) exploratory factor analysis (EFA) that used the same items as the present study for perfectionism cognitions, nondisplay of imperfection, social anxiety and depressed mood. Our analyses had an additional factor due to socially prescribed perfectionism being measured daily in the present study instead of at baseline only. A well-fitting model was defined by a confirmatory fit index (CFI) around .95, a root mean square of approximation (RMSEA) around .05, a standardized root mean square residual (SRMR) around .08, and factor loadings > .40 (Kline, 2005). We also reported the goodness-of-fit χ^2 statistic and the associated p-value; however, we relied exclusively on the fit indices above for determining model fit.

Hypotheses were tested using multilevel SEM, with days (within-subjects) nested within people (between-subjects;

see **Figure 2**). Within-subjects results allowed us to assess day-to-day variations, and between-subjects results assessed the overall relationship when variables were aggregated across the 21 days. The initial tested model had random intercepts and fixed slopes, to replicate Mackinnon et al.'s (2014) approach. However, random slopes models were tested in exploratory analyses. MLR estimation was utilized which allows for robust standard errors and does not assume normality, and missing data was handled using a full information maximum likelihood approach.

Changes from Proposed Analytic Plan
We intended to use MLR estimation in all models. However, when attempting to run the random slopes model with an MLR estimator we received an error message that there was not enough memory due a very large number of integration points (see Supplemental Materials for the output containing this error message). As a result, we utilized a Bayes estimator for our random slopes model as it is much more efficient than MLR estimation. Because we used an MLR estimator for our a-priori fixed slopes model, this prevented us from completing planned nested model comparisons as our fixed and random models utilized different estimators. Thus, we present both models.
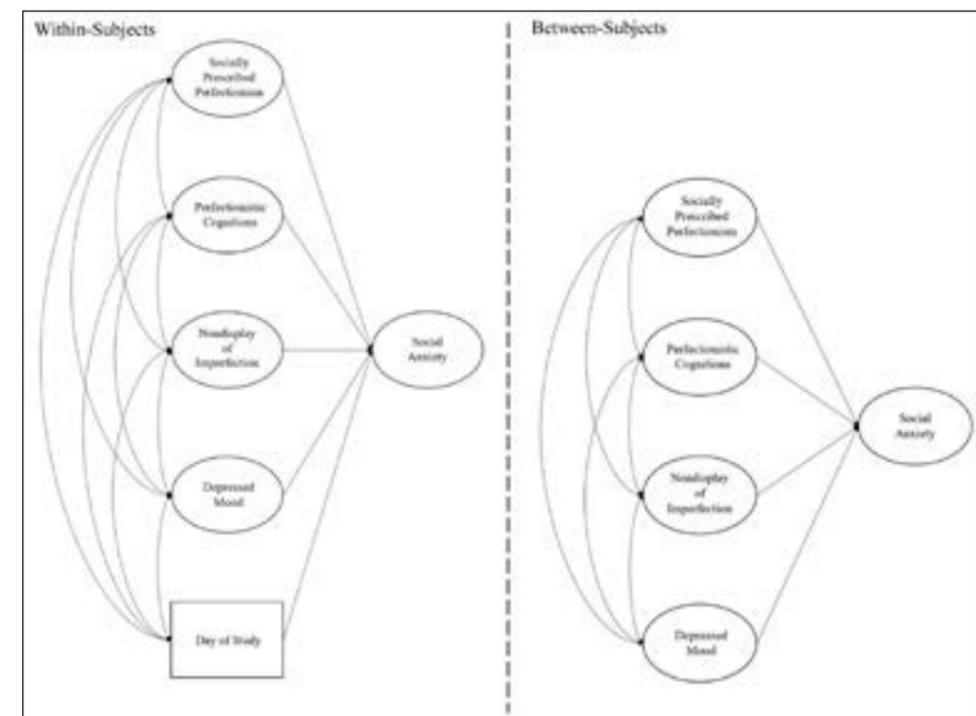
We also retained a fully unstructured covariance matrix in the random slopes model, rather than removing non-significant variance and covariance components using p-values and a sequential Bonferonni correction, as originally planned. This was an unanticipated

consequence of needing to switch to a Bayes estimator, as only full variance-covariance blocks are allowed with the Bayes estimator in Mplus 8.0 (see Online Supplementary Material for the model that produced this error).

Finally, we ran additional unplanned exploratory analyses in order to investigate poor model fit. Specifically, after investigating the modification indices for our CFA, we ran an additional CFA and fixed slopes SEM model where we removed socially prescribed perfectionism item 1 from the scale. Also, based on a reviewer request we added McDonald's noncentrality index (MNCI) as a fit index. A MNCI of around .90 defined a well-fitting model post-hoc (Hu & Bentler, 1999; McDonald, 1989). We also provide a test of cross-level metric invariance (i.e., are the factor loadings equal in magnitude at the within and between levels?) using procedures from Jak and Jorgensen (2017), similarly added due to a reviewer request. These analyses are clearly described as exploratory, rather than planned.

Differences Between the Original Study and the Replication
Our replication study differed from the original Mackinnon et al., (2014) study in a few important ways. Participants in the present study were recruited from Halifax Regional Municipality and Montreal where participants in Mackinnon et al.'s (2014) study were recruited from Halifax Regional Municipality only. The present study also utilized online questionnaires instead of Palm Pilots. Socially prescribed perfectionism was

Figure 1: Hypothesized multilevel confirmatory factor analysis (CFA) diagram. Squares indicate observed variables, ovals indicate latent variables. Single-headed arrows indicate paths, double-headed arrows indicate covariances. In multilevel CFA, the variance is partitioned into within-subjects and between-subjects components. SSA = items from the State Social Anxiety measure (Mackinnon et al., 2014); PC = items from the Perfectionism Cognitions Short Form (Mackinnon et al., 2014); PSP = items from the Perfectionism Self-Presentation measure (Mackinnon et al., 2014); DEP = items from the Depressed Affect Subscale of the Positive and Negative Affect Scale (PANAS; Watson et al., 1988; Mackinnon et al., 2014).

Figure 2: Hypothesized multilevel structural equation modeling (SEM) diagram testing the effect of socially prescribed perfectionism, perfectionism cognitions, nondisplay of imperfection and depressed mood on social anxiety. Day of study was entered at the within-subjects level only. Ovals represent latent variables, squares represent observed variables. Single-headed arrows indicate paths, double-headed arrows indicate covariances. In multilevel SEM, the variance is partitioned into within-subjects and between-subjects components.

measured daily in the present replication study, instead of at baseline only. A multilevel CFA was calculated in the present study instead of a multilevel EFA because we had an a priori factor structure based on Mackinnon et al.'s (2014) findings. Instead of testing our hypotheses with a multilevel regression using averaged total scores in SPSS (IBM Corp, 2017), the present replication utilized multilevel SEM with latent variables using Mplus 8.0. Reliability estimates in the present study were calculated using the omega coefficient, and state- and trait-like variability was measured by calculating ICCs, instead of generalizability theory (Cranford et al., 2006). An exploratory analysis was completed where random intercepts and random slopes were specified; however, our a-priori analysis specified random intercepts and fixed slopes, consistent with Mackinnon et al., (2014). Finally, socially prescribed perfectionism was entered as a multilevel predictor instead of as a between-subjects covariate, as it was measured daily.

Results

Power Analysis

We conducted a Monte Carlo simulation in Mplus 8.0 to assess statistical power. Because an analysis of this complexity has many parameters that are difficult to estimate in advance (i.e., slopes, factor loadings, covariances, variances, intercepts), we used data from the replication target (Mackinnon et al., 2014) to generate these parameters. Specifically, we ran a roughly equivalent multilevel SEM model in Mplus on the replication target's data, saved the starting values, and input these values as the population parameters for the simulation. We ran a simulation assuming N = 263, ~80% useable days of data, 1% item-level missingness, and used 5000 repetitions. Thus, this is a post-hoc power analysis that uses population parameters from the replication target and a sample/cluster size from the present replication. Statistical power was as follows: perfectionistic self-presentation (within = 1.00, between = 1.00), perfectionism cognitions (within = .993, between = .350), and depressive affect (within = 1.00, between = 1.00), socially prescribed perfectionism (between = .240). Power was generally >99%; however, there was low power for socially prescribed perfectionism and between-subjects perfectionism cognitions slopes. Given that the primary hypothesis (H3) pertains to the perfectionistic self-presentation slope, this is unlikely to be problematic. Mplus files with full details on the simulation are located on this paper's OSF page.

Protocol Compliance

There was no missing data for demographic variables given all participants were required to complete the baseline measures before beginning the daily measures. Participants completed on average 16.16 days (SD = 4.68) out of 20 days. One participant completed only the baseline measures and no daily measurements, two participants completed only one daily measurement and 67 participants completed all 20 daily questionnaires (range of 1 to 20). Participants completed on average 7.87 (SD = 4.93) make-up days (i.e., surveys that were 1 day

late). Eleven participants completed zero make-up days, 17 completed one make-up day and seven completed 19 make-up days (range of 0 to 19). It was possible to have a maximum of 5,260 data points (263 participants × 20 daily measurements). Of these, 1,009 were missing data (i.e., no data for the whole day). To be consistent with the replication target, we included day of study as an a-priori predictor of missingness. However, a non-significant chi-square, $\chi^2(19) = 25.06$, $p = .16$, failed to confirm day as a predictor of missing data as it did in Mackinnon et al.'s (2014) study. We retained day in our models because it was a part of our a priori replication plan, but acknowledge that it unnecessary to do so. Given insightful comments from a reviewer, we recognize now that including day of study was also unnecessary in the replication target due to our misunderstanding of missing data terminology. That is, because day of study does not predict social anxiety, it does not meet the missing at random assumption even if it does predict missingness (Matta, Flournoy, & Byrne, 2018). Indeed, there is no theoretical reason for day of study to predict social anxiety in any systemic way, given that our sampling strategy had participants enter the study on essentially random days. We must also consider whether unobserved social anxiety scores predict missingness (i.e., on highly socially anxious days, do participants avoid completing the survey?). On one hand, this is plausible as avoidance is a common coping mechanism for anxiety. On the other, people high in social anxiety may also fear potential negative social evaluation if they fail to comply to study protocols. These competing tendencies are liable to cancel each other out, resulting in a general tendency for unobserved social anxiety scores to be unrelated to missingness. Thus, we assume that data are missing completely at random; however, data could be missing not at random due to mechanisms we have not considered. If this is the case, our parameter estimates are liable to be biased. When data were missing at the item-level (<1%), a full information maximum likelihood approach was utilized.

Descriptive Statistics

Means, standard deviations, latent correlations and omega reliabilities can be found in **Table 1**. All variables were positively correlated with each other at the between-subjects level (rs from 0.33 to 0.84). At the within-subjects level variables were positively correlated with each other with comparatively smaller effect sizes (rs from 0.10 to 0.38), apart from perfectionism cognitions and depressed mood at the within-subjects level (r = 0.04). Relationships tended to be larger at the between-subjects level. Broadly speaking, this supports H2. Internal consistencies at the between-subjects and within-subjects levels revealed omegas that ranged from .93 to .98 (between) and from .77 to .88 (within) suggesting good reliability. However, the reliability tended to be lower at the within-subjects level.

Measurement Model

ICCs ranged from .42 to .82, suggesting there was day-to-day variation but also trait-like stability across the 21 days of the study (see **Table 2**). Overall, ICCs for perfectionism

Table 1: Latent correlations, reliability at between- and within-subjects levels, and means and standard deviations.

Variable	1	2	3	4	5
1. Social anxiety	–	.19*	.23*	.53*	.23*
2. Socially prescribed perfectionism	.44*	–	.38*	.22*	.10*
3. Perfectionism cognitions	.53*	.66*	–	.30*	.04
4. Nondisplay of imperfection	.84*	.55*	.60*	–	.11*
5. Depressed mood	.59*	.33*	.34*	.43*	–
Omega reliability (within-subjects)	.88	.77	.77	.85	.88
Omega reliability (between-subjects)	.98	.93	.95	.98	.97
M	1.35	3.21	1.89	3.62	1.75
SD	1.07	1.64	1.20	1.94	1.02

Note: Between-subjects correlations are below the diagonal, and within-subjects correlations are above the diagonal. *M* = mean; *SD* = standard deviation. * *p* < .001.

Table 2: Standardized factor loadings and intraclass correlations.

Variable	95% CI standardized factor loadings		ICC
	Within-subjects	Between-subjects	
Social anxiety			
I worried about what other people thought of me.	[0.72, 0.78]	[0.96, 0.99]	.57
I was afraid other people noticed my shortcomings.	[0.73, 0.78]	[0.96, 0.99]	.59
I was afraid that others did not approve of me.	[0.76, 0.82]	[0.97, 0.99]	.60
I was worried that I would say or do the wrong things.	[0.75, 0.80]	[0.98, 1.00]	.56
When I was talking to someone, I was worried about what they were thinking of me.	[0.70, 0.77]	[0.96, 0.99]	.58
I felt uncomfortable and embarrassed when I was the center of attention.	[0.56, 0.65]	[0.79, 0.88]	.60
I found it hard to interact with people.	[0.46, 0.56]	[0.70, 0.83]	.55
Socially prescribed perfectionism			
Success means that I must work even harder to please others.	[0.54, 0.66]	[0.68, 0.85]	.72
The better I do, the better I am expected to do.	[0.58, 0.69]	[0.80, 0.90]	.74
My family expects me to be perfect.	[0.63, 0.75]	[0.87, 0.96]	.82
People expect nothing less than perfection from me.	[0.71, 0.80]	[0.95, 1.00]	.76
People expect more from me than I am capable of giving.	[0.59, 0.70]	[0.85, 0.94]	.76
Perfectionism cognitions			
I expect to be perfect.	[0.69, 0.78]	[0.91, 0.97]	.72
I should be perfect.	[0.73, 0.81]	[0.95, 1.00]	.73
My work should be flawless.	[0.62, 0.73]	[0.83, 0.93]	.70
Nondisplay of imperfection			
I thought that failing at something is awful if other people know about it.	[0.66, 0.76]	[0.92, 0.97]	.71
I thought it would be awful if I made a fool of myself in front of others.	[0.88, 0.93]	[0.98, 1.01]	.67
I was concerned about making errors in public.	[0.77, 0.84]	[0.94, 0.98]	.63
Depressed mood			
Sad	[0.80, 0.86]	[0.93, 0.97]	.42
Depressed	[0.84, 0.90]	[0.96, 1.00]	.50
Blue	[0.77, 0.87]	[0.90, 0.98]	.43

Note: All factor loadings statistically significant at *p* < .001.

variables were large (.63–.82), and moderate for social anxiety (.55–.60), and depressed mood (.42–.50). This suggests that perfectionism variables are more trait-like and stable over time, depressed mood is more state-like and variable over time, and social anxiety falls somewhere in-between. Absolute fit indices (RMSEA and SRMR) indicated that the measurement model fit the data well; however, comparative fit indices (CFI and TLI) indicated slight misfit, $\chi^2(358) = 1,944.87$, $p < .001$, CFI = 0.94, TLI = 0.93, RMSEA = .03, SRMR$_{within}$ = .04, SRMR$_{between}$ = .05, MNCI = .83. All factors loadings were large and substantial (> .40), with the lower bound values of the 95% confidence intervals (CIs) ranging from 0.46 to 0.88 at the within-subjects level and from 0.68 to 0.98 at the between-subjects level (see **Table 2**). Overall, factor loadings were larger at the between-subjects level than at the within-subjects level and the measurement model fit was adequate.

Planned Analyses
The results of our a priori random intercepts and fixed slopes model are reported in **Table 3**. Given there is no universally agreed upon benchmark to determine the strength of an unstandardized model coefficient (and the known difficulties comparing standardized coefficients in multilevel models to single-level models), we do not compare the magnitude of our results to established benchmarks (e.g., Funder & Ozer's (2019) small, medium, large, and very large), as we believe no such credible benchmarks exist for unstandardized multilevel coefficients. Nonetheless, the unstandardized slopes can be interpreted as "a 1 point increases on a Likert scale in X is associated with a [slope] unit increase in Y, after adjusting for all other variables in the model," which have substantive meaning. All 95% CIs reported below represent unstandardized regression slopes. Fit indices indicated that the model fit the data

somewhat well, consistent with the measurement model, $\chi^2(374) = 2,066.02$, $p < .001$, CFI = 0.93, TLI = 0.92, RMSEA = .03, SRMR$_{within}$ = .04, SRMR$_{between}$ = .05, MNCI = .82. The within-subjects analysis examined state-like variance that varied across the 21 days of the study (i.e., do daily changes in X and Y co-vary?). Consistent with hypotheses, nondisplay of imperfection had the largest positive effect on social anxiety at the within-subjects level (95% CI [0.30, 0.41]), followed by depressed mood (95% CI [0.10, 0.17]) and perfectionism cognitions (95% CI [0.01, 0.14]). It is important to note the effect of perfectionism cognitions is likely negligible given a 1 unit change on its scale was associated only with a 0.01 to 0.14 unit change on the social anxiety scale. The confidence interval band for day of study was narrow and centered close to zero (95% CI [−0.01, 0.00]) and is thus likely unrelated to social anxiety. Conversely, socially prescribed perfectionism's effect on social anxiety fails to reject the null hypothesis, with an effect small enough to be of little practical importance given the range of plausible values within the confidence interval (95% CI [−0.01, 0.08]). Our results replicated Mackinnon et al.'s (2014) findings and showed that after controlling for other important predictors, nondisplay of imperfection had a large effect on social anxiety at the within-subjects level. Overall, variables predicted a substantial amount of variance in the outcome variable ($R^2 = .32$).

The between-subjects analysis examined the trait-like variance that remained the same across the 21 days of the study. Consistent with hypotheses, nondisplay of imperfection robustly predicted social anxiety, after adjusting for all other covariates at the between-subjects level (95% CI [0.34, 0.47]). However, depressed mood was also uniquely related to social anxiety (95% CI [0.26, 0.47]). This partially replicated Mackinnon et al.'s

(2014) findings, where only nondisplay of imperfection significantly predicted social anxiety at the between-subjects level. Similar to the within-subjects level results, perfectionism cognitions had a small and likely negligible effect on social anxiety at the between-subjects level (95% CI [−0.03, 0.14]). Socially prescribed perfectionism had a small, negative effect on social anxiety at the between-subjects level (95% CI [−0.15, −0.003]). Overall, variables predicted a very large portion of the variance in the outcome at the between-subjects level ($R^2 = .77$).

One anomaly requires some further explanation: The sign reversal for socially prescribed perfectionism at the between-subjects level (i.e., it is positive at the within-subjects level, but negative at the between-subjects level). This can likely be attributed to suppressor effects resulting from co-linearity. Socially prescribed perfectionism is more strongly correlated with the other predictors at the between-subjects level (rs from .33 to .66) than at the within-subjects level (rs from .10 to .38). Therefore, when averaged across days, the predictors are conceptually similar to one another, but are more differentiated from day-to-day. Moreover, as was evident with perfectionism cognitions in the within- and between-subjects models, the magnitude of the effect of socially prescribed perfectionism at the between-subjects level is small with a confidence interval that ranges from −0.15 to −0.003, so a more parsimonious alternative might be that the population estimate for the slope is nearly zero.

Overall, results from the present study replicated Mackinnon et al.'s (2014) within-subjects level findings and partially replicated their between-subjects level findings with the addition of a large effect of depressed mood (see **Table 4** for a comparison of results). Effects of socially prescribed perfectionism and perfectionism

Table 3: Multilevel structural equation models.

	Fixed slopes model			
	B (*SE*)	95% CI *B*	*p*	β
Within Subjects				
Socially prescribed perfectionism	0.04 (0.02)	[−0.01, 0.08]	0.131	.04
Perfectionism cognitions	0.08 (0.03)	[0.01, 0.14]	0.029	.06
Nondisplay of imperfection	0.36 (0.03)	[0.30, 0.41]	<001	.48
Depressed mood	0.14 (0.02)	[0.10, 0.17]	<001	.17
Day	0.00 (0.00)	[−0.01, 0.00]	0.481	−.02
Between Subjects				
Socially prescribed perfectionism	−0.08 (0.04)	[−0.15, −0.003]	0.042	−.11
Perfectionism cognitions	0.05 (0.04)	[−0.03, 0.14]	0.23	.06
Nondisplay of imperfection	0.40 (0.03)	[0.34, 0.47]	<001	.74
Depressed mood	0.37 (0.05)	[0.26, 0.47]	<001	.29
	Random slopes model			
	B (*SD*)	95% CI *B*	*p*	β
Within Subjects				
Socially prescribed perfectionism	0.07 (0.03)	[0.02, 0.12]	0.003	.07
Perfectionism cognitions	0.07 (0.05)	[−0.02, 0.16]	0.062	.05
Nondisplay of imperfection	0.32 (0.02)	[0.28, 0.37]	<001	.41
Depressed mood	0.13 (0.02)	[0.10, 0.16]	<001	.16
Day	−0.002 (0.00)	[−0.01, 0.00]	0.254	−.02
Between Subjects				
Socially prescribed perfectionism	−0.09 (0.04)	[−0.16, −0.02]	0.009	−.12
Perfectionism cognitions	0.08 (0.05)	[−0.01, 0.17]	0.045	.09
Nondisplay of imperfection	0.40 (0.03)	[0.34, 0.46]	<001	.75
Depressed mood	0.35 (0.05)	[0.25, 0.45]	<001	.28

Note: Day was measured at the within-subjects level only. Outcome = social anxiety; *B* = unstandardized path coefficients; *SE* = standard error; *SD* = posterior standard deviation; CI for fixed slopes model = confidence interval; CI for random slopes model = credibility interval; *p* for fixed slopes model = two-tailed *p*-value; *p* for random slopes model = one-tailed *p*-value; β = standardized path coefficients.

Table 4: Present study results versus Mackinnon et al.'s (2014) study results.

	Present study's multilevel structural equation model results			Mackinnon et al.'s (2014) multilevel regression results		
	B (*SE*)	95% CI *B*	*p*	*B* (*SE*)	95% CI *B*	*p*
Within Subjects						
SPP	0.04 (0.02)	[−0.01, 0.08]	0.131	—	—	—
PC	0.08 (0.03)	[0.01, 0.14]	0.029	0.11 (0.03)	—	<.001
NoI	0.36 (0.03)	[0.30, 0.41]	<.001	0.16 (0.02)	—	<.001
DM	0.14 (0.02)	[0.10, 0.17]	<.001	0.23 (0.03)	—	<.001
Day	0.00 (0.00)	[−0.01, 0.00]	0.481	0.00 (0.002)	—	>.05
Between Subjects						
SPP	−0.08 (0.04)	[−0.15, −0.003]	0.042	0.03 (0.02)	—	>.05
PC	0.05 (0.04)	[−0.03, 0.14]	0.23	−0.04 (0.04)	—	>.05
NoI	0.40 (0.03)	[0.34, 0.47]	<.001	0.24 (0.04)	—	<.05
DM	0.37 (0.05)	[0.26, 0.47]	<.001	0.51 (0.10)	—	>.05

Note: Day was measured at the within-subjects level only in both studies. Mackinnon et al., (2014) measured socially prescribed perfection at baseline only and did not report exact *p*-values or 95% confidence intervals. Outcome = social anxiety; SPP = socially prescribed perfectionism; PC = perfectionism cognitions; NoI = nondisplay of imperfection; DM = depressed mood; *B* = unstandardized path coefficients; SE = standard error; CI = confidence interval; *p* = two-tailed *p*-value.

cognitions are likely negligible when controlling for all other variables due to the magnitude of their effects as well as the co-linearity found at the between-subjects level.

Regional Differences

Because our sample was collected from two different locations in Canada (Halifax, Nova Scotia and Montreal, Quebec), we explored potential differences. Descriptive statistics for each variable split by province as well as Cohen's d as a measure of effect size are presented in Supplemental Table 1. The two sites were highly similar (ds from −.04 to .25), with the largest difference being that Halifax participants display slightly higher levels of nondisplay of imperfection ($d = 0.25$).

Exploratory Analyses

The results of our exploratory random intercepts and random slopes model with an unstructured covariance matrix and Bayes estimator[4] are reported in **Table 3**. Results were broadly similar to the fixed slopes model. All effects were in the same direction, and the magnitude of the slopes were similar in size. For the null hypothesis tests using the $p < .05$ criterion, three findings changed: (a) The positive effect of socially-prescribed perfectionism at the between-subjects level became significant; (b) the positive effect of perfectionism cognitions at the within-subjects level became non-significant; and (c) the positive effect of perfectionism cognitions at the between-subjects level became non-significant. Despite this, it is important to stress that the magnitude of the point estimates for the slopes were broadly the same (the largest change in the point estimate was .04), and the width of the confidence intervals changed only slightly (at most, a change of .03). Thus, the conclusions of the fixed slope analyses are corroborated: Nondisplay of imperfection and depressed mood are comparatively stronger predictors of social anxiety (relative to the other predictors), while perfectionism cognitions and socially prescribed perfectionism are comparatively weak predictors when controlling for all other variables in the model.

Given two of our a priori fixed slopes model fit indices were lower than expected (i.e., CFI = 0.94; TLI = 0.93), modification indices were examined in order to locate the source of model misfit. At the within-subjects level, there was a very large correlated error between socially prescribed perfection item 1 (i.e., "Success means that I must work harder to please others") and socially prescribed perfection item 2 (i.e., "The better I do, the better I am expected to do"). Specifically, the modification index showed that including this correlated error would reduce the chi-square value by ~456. This likely indicated the item wording was similar to the point of potentially being redundant at the within-subjects level; thus, we opted to omit one of the two items, rather than add a correlated error term post-hoc. A measurement model was run with socially prescribed perfection item 1 removed. Fit indices indicated an improvement in model fit based on our criteria, $\chi^2(320)$ =1,315.46, $p < .001$, CFI = 0.96, TLI = 0.95, RMSEA = .03, SRMR$_{within}$ = .03, SRMR$_{between}$ = .04, MNCI = .89 (see Online

Supplementary Material for raw output). An exploratory fixed slopes SEM model with socially prescribed perfectionism item 1 removed was also specified. Fit indices indicated an improvement in model fit based on our criteria $\chi^2(335)$ =1,437.96, $p < .001$, CFI = 0.96, TLI = 0.95, RMSEA = .03, SRMR$_{within}$ = .03, SRMR$_{between}$ = .04, MNCI = .88. Results remained virtually identical to the a-priori fixed slopes model (see Online Supplementary Material for a table of the results). The only notable difference is a small shift in the between-subjects effect for socially prescribed perfectionism, which became non-significant, $B = -.06$, 95% CI [−.15, .001]. Nonetheless, the shift in the parameter estimate was small (~.03) and the shift in the p-value was only from .042 to .055, so this difference is very slight. Thus, while the exploratory model fit the data better, the magnitude of the effects remained virtually the same when this item was removed. The results do, however, further suggest that the negative slope for socially prescribed perfectionism is spurious and/or trivial in effect size.

Finally, a test of cross-level metric invariance was conducted using the approach from Jak and Jorgensen (2017). Specifically we compared (a) the configural measurement model with SPP item 1 removed to (b) a model with factor loadings constrained to equality across levels (i.e., at the between and within levels). The cross-level metric invariance model fit the data reasonably well, $\chi^2(335)$ =1409.475, $p < .001$, CFI = 0.96, TLI = 0.95, RMSEA = .03, SRMR$_{within}$ = .05, SRMR$_{between}$ = .05, MNCI = .88. However, a nested model comparison using BIC was slightly in favor of the original unconstrained model, ΔBIC = 5.079. Thus, there is some evidence to suggest that the factor loadings are not invariant across levels, with loadings at the between-subjects level emerging as larger than the loadings at the within-subjects level.

Discussion

Our aim was to replicate Mackinnon et al.'s (2014) study on perfectionistic self-presentation and social anxiety using daily diary measures. Prior to Mackinnon et al.'s (2014) work, little research had investigated these constructs longitudinally and it was unclear if perfectionistic self-presentation and perfectionism cognitions contained both state- and trait-like variability. Consistent with Mackinnon et al.'s (2014) findings, daily measures had elements of both trait-like stability across the 21 days of the study and state-like day-to-day variation. Perfectionism variables were more trait-like, depressed mood was more state-like, and social anxiety fell somewhere in-between. This is consistent with theoretical accounts indicating that perfectionism is a stable personality trait (Hewitt & Flett, 1991). However, perfectionistic self-presentation, perfectionism cognitions and socially prescribed perfectionism evidenced state-like variability as well. This adds support to the notion that perfectionism cognitions and perfectionistic self-presentation are state-like aspects of perfectionism and improves on cross-sectional accounts by measuring constructs repeatedly (Hewitt et al., 2003; Mackinnon et al., 2014).

Confirmatory factor analyses supported our measurement model for perfectionistic self-presentation, perfectionism cognitions, depression mood and social anxiety at the within- and between-subjects levels. However, comparative fit indices indicated slight model misfit due to a large correlated error between two items on the socially prescribed perfectionism scale. This issue only arose at the within-subjects level, where it appeared that questions became redundant when asked daily. Mackinnon et al., (2014) did not measure socially prescribed perfectionism daily so we are unable to compare our model misfit to theirs. Other daily diary studies that contain socially prescribed perfectionism measured the construct only at baseline and not across days, providing no information on its daily factor structure (e.g., Dunkley, Zuroff, & Blankstein, 2006; Mushquash & Sherry, 2012; Mushquash & Sherry, 2013). Removing one of the correlated items from our measurement model resulted in improved model fit and resulted in minimal change in our fixed slopes model results. Future research may wish to investigate socially prescribed perfectionism daily in order to investigate its factor structure when measured repeatedly.

Replicating Mackinnon et al.'s (2014) findings, perfectionistic self-presentation predicted social anxiety when controlling for socially prescribed perfectionism, perfectionism cognitions and depressed mood. At the between-subjects level, variables are interpreted as stable, trait-like features of personality and represent the portion of the variance that remains stable across time. Compared to the other predictors, perfectionistic self-presentation had the strongest effect on social anxiety at the between-subjects level, followed by depressed mood. Perfectionism cognitions and socially prescribed perfectionism had a small and likely negligible effect on social anxiety and these results remained consistent across fixed and random slope models. This is partially consistent with Mackinnon et al.'s (2014) results, where only perfectionistic self-presentation predicted social anxiety at the between-subjects level. Missing data and a smaller sample size may have contributed to depressed mood being unrelated to social anxiety in Mackinnon et al.'s (2014) results as prior research suggests depressed mood is related to social anxiety (Flett et al., 1996). Regardless, perfectionistic self-presentation appears to be the most robust predictor of social anxiety in our model and may be a key personality feature of those who are socially anxious.

At the within-subjects level, variables are interpreted as state-like aspects of personality and represent the portion of the variance that varies from day-to-day. Consistent with hypotheses, and our between-subjects level results, when perfectionistic self-presentation and depressed mood changed from day-to-day, social anxiety also tended to change in the same direction. Perfectionism cognitions and socially prescribed perfectionism had a small and likely negligible effect on social anxiety and these results remained consistent across fixed and random slope models. Perfectionism cognitions predict generalized anxiety and distress (Flett et al., 2007), but unfortunately no other research has investigated this construct

alongside social anxiety specifically. Future research might investigate perfectionism cognitions and social anxiety daily to better establish whether more private experiences of perfectionism predict social anxiety. Our results suggest that perfectionistic self-presentation, as well as comorbid negative affect, play an important role in predicting social anxiety from day-to-day.

Results support the notion that nondisplay of imperfection is an important predictor of social anxiety. An individual high in nondisplay of imperfection is preoccupied with a desire to appear perfect to others and fears the negative consequences of failing to do so. Individuals with social anxiety desire to appear perfect to others, doubt they will make a perfect impression, and believe such failures will result in negative consequences (Schlenker & Leary, 1982). From a network analysis perspective on psychopathology, symptoms are viewed as dynamically interacting with each other in a causal way (Fonseca-Pedrero, 2017). As such, symptoms do not reflect underlying mental disorders but instead mutually influence each other and group together as a result. If we apply this to social anxiety disorder, nondisplay of imperfection appears to be a core facet that makes up part of the network of social anxiety. Given it is impossible to maintain an image of perfection, individuals attempting to do so often become anxious when faced with social situations as they doubt their ability to perform to their high standards. Self-consciousness often leads to displays of anxiety that are then interpreted by others negatively, thus causing the outcome that the individual was trying their hardest to avoid (Clark, 2005). Given the role perfectionistic self-presentation plays in social anxiety, intervention efforts may wish to focus on reducing levels of nondisplay of imperfection in order to reduce the likelihood of future social anxiety (Flett et al., 2012).

Reflections on an Unconventional Preregistration

When I (the second author) began this study, I was against the idea that a dataset like this could be preregistered. I had published a paper from these data (Mackinnon et al., 2018) and had used the data in tutorials for my graduate statistics class. Nonetheless, I had this replication study in mind as a secondary project from the outset, and wanted to run a confirmatory analysis. As a workflow experiment, I decided to treat this study as close to a formal preregistration as possible, given the circumstances. I recruited an analyst who had never accessed the data and we spent a few weeks planning the data analysis plan together prior to posting it as a preregistration. The first obvious benefit was workflow efficiency; by specifying in advance what we wanted to do, we removed many researcher degrees of freedom and the paper was completed more quickly than normal. This is especially valuable for SEM, where there are an unusually large number of analytic choice points. Nonetheless, I had known in advance that there was a strong relationship between nondisplay of imperfection and social anxiety in these data, even though I had not tested this particular model. Would I have embarked on this process if I had discovered only a weak relationship?

I hope so but given hindsight bias, it is impossible to know for sure. Regardless, though I am not sure if this study should be referred to as "preregistered," recruiting a second blinded analyst and planning the analysis in advance was a net positive in terms of workflow efficiency and reducing human bias.

Limitations and Future Directions

Our study has important limitations. Our replication study differed from the original Mackinnon et al., (2014) study in a few ways (see above) which may impact our ability to make direct comparisons. However, much of the methodology remained the same and we improved on some of the shortcomings of Mackinnon et al.'s (2014) analytic strategy (e.g., utilizing multilevel SEM with latent variables as opposed to averaged total scores). Model fit for our CFA was also lower than expected due to large correlated errors at the within-subjects level for two items of our socially prescribed perfectionism scale. There was also some evidence these measures may not have metric invariance, since the factor loadings are larger at the between-subjects level (Jak & Jorgensen, 2017). However, subsequent exploratory analyses did suggest that this model misfit had little effect on the hypothesized slopes. Future research might examine socially prescribed perfectionism daily in order to determine whether the scale items are indeed replicated when measured daily. In order to more closely replicate Mackinnon et al.'s (2014) results, we did not utilize lagged variables and thus directionality could not be determined (i.e., nondisplay of imperfection did not temporally precede social anxiety in this analysis). We also did not incorporate other perfectionism variables that were measured, such as self-oriented and other-oriented perfectionism. Future researchers might utilize our open-access dataset to examine other analytic strategies or to include other variables of interest. Generalizability to other demographics may be limited given that many participants are white, female, undergraduate emerging adult drinkers. Future research might investigate these relationships with a clinical sample of individuals diagnosed with social anxiety disorder. Finally, we relied on self-report measures in the present study which are prone to social desirability biases. This may be especially true for those high in perfectionistic self-presentation and they may be especially motivated to answer untruthfully in order to present the most idealistic version of themselves. Future research might use informant reports and self-reports in order to obtain an accurate estimation of perfectionism, negative mood states and social anxiety.

Conclusions

The results of our study demonstrated that perfectionistic self-presentation predicts social anxiety, replicating Mackinnon et al.'s (2014) main findings with similar daily diary methodology. Moreover, we improved upon Mackinnon et al.'s (2014) method by measuring social prescribed perfectionism daily along with depressed mood and perfectionism cognitions. We were also able to utilize rigorous multilevel SEM analyses to reach similar conclusions. This work improves upon past cross-sectional investigations of perfectionistic self-presentation (Jain & Sudhir, 2010) and suggests that nondisplay of imperfection and perfectionism cognitions do indeed posses both state-like and trait-like components (Mackinnon et al., 2014). We believe that by utilizing daily diary measures researchers are better able to understand how perfectionism operates from day-to-day and subsequently leads to negative mood states such as social anxiety. Understanding perfectionism in this way may lead to better intervention efforts targeted at the daily processes that directly relate to social anxiety.

Data Accessibility Statement

All participant data and analysis scripts can be found on this paper's project page on the Open Science Framework website (https://osf.io/ty2aj/).

Notes

[1] One research paper has been published utilizing this dataset. It explored the links between two perfectionism facets (perfectionism cognitions and nondisplay of imperfection), drinking motives, and alcohol-related problems (Mackinnon, Ray, Firth, & O'Connor, 2019).

[2] This is different than Mackinnon et al.'s (2014) criteria, which required that participants consume alcohol "at least four times in the past month."

[3] A list of items for all measures located in Table 2. Multilevel factorial validity for all measures was demonstrated in Mackinnon et al. (2014).

[4] See Supplemental Table 2 for the results of an exploratory fixed slopes model with a Bayes estimator.

Additional Files

The additional files for this article can be found as follows:

- **Table S1.** Descriptive statistics and Cohens' d statistics comparing Nova Scotia and Québec. DOI: https://doi.org/10.1525/collabra.257.s1
- **Table S2.** Multilevel structural equation model. DOI: https://doi.org/10.1525/collabra.257.s2

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- Approved the submitted version for publication: Ivy-Lee L. Kehayes, Sean P. Mackinnon

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