# Imposterism and perfectionism: Imposterism predicts rigid and self-critical perfectionism, but not narcissistic perfectionism

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## ARTICLE INFO

## ABSTRACT

*Introduction:* Imposter phenomenology, often colloquially referred to as "imposter syndrome," describes the feeling of inadequacy and intellectual phoniness experienced by some high achieving individuals. We hypothesized that imposterism would be correlated with perfectionism, but this effect would differ by subtype of perfectionism.
*Methods:* We recruited a sample of 278 undergraduate students from the University of Pennsylvania. Perfectionism was measured with the Big Three Perfectionism Scale. Imposterism was measured with the Clance Imposter Scale, and factor analysis was used to identify three previously identified factors of discounting one's success, luck, and feeling like a fraud.
*Results:* Imposterism was positively correlated with overall perfectionism. We found a significant interaction between imposterism and subtype of perfectionism, where imposterism was positively correlated with rigid and self-critical perfectionism, but not with narcissistic perfectionism. The discount latent factor of imposterism was specifically negatively correlated with narcissistic perfectionism.
*Conclusions:* Imposterism and perfectionism are closely related constructs, but the subtypes of rigid and self-critical perfectionism are more closely related to imposterism, while narcissistic perfectionism appears to have a null or inverse relationship.

## 1. Introduction

Imposter phenomenology, often colloquially referred to as "imposter syndrome" (Mullangi & Jagsi, 2019), was first identified by Clance and Imes (1978) to describe the feelings of inadequacy and intellectual phoniness experienced by some high achieving individuals, comprised of the sense of being a fraud, fear of being discovered, and difficulty internalizing success. Previous research has shown that imposterism as measured by the Clance Imposter Scale can be broken down in to three latent factors: feeling like a fraud ("fake"), discounting one's own success ("discount"), and attributing one's success to luck ("luck") (Chrisman et al., 1995; French et al., 2008). Imposterism has been linked to neuroticism, procrastination, and depression and anxiety (Hu et al., 2019; McGregor et al., 2008; Pannhausen et al., 2020; Rohrmann et al., 2016; Wang et al., 2019).

Research has also shown imposterism to be positively correlated with trait perfectionism (Thomas & Bigatti, 2020; Wang et al., 2019). Past

research on the multidimensional factors of perfectionism has found that perfectionism can be characterized by three global dimensions of perfectionism: rigid perfectionism, self-critical perfectionism, and narcissistic perfectionism (Smith et al., 2016; Wu, 2023). Rigid perfectionism describes a "rigid instance that one's own performance must be perfect," (Smith et al., 2016), and is related self-oriented perfectionism as well as a tendency to base self-worth on self-imposed perfectionistic standard (DiBartolo et al., 2004). Self-critical perfectionism captures the maladaptive facets of concern over making mistakes, doubts about the uncertainty of own's own performance, self-criticism when performance falls short of perfection, and the tendency to perceive others as demanding perfection (Dunkley et al., 2003; Smith et al., 2016). Narcissistic perfectionism captures the grandiose tendency for individuals to believe they are perfect or entitled to special treatment, as well as unrealistic perfectionistic standards for others (Nealis et al., 2015; Smith et al., 2016).

The three subtypes of perfectionism identified by Smith et al. (2016)

also appear to be clinically distinct. For instance, a study by Bockhorst et al. (2025) on inpatient samples found that self-critical and rigid perfectionism, but not narcissistic perfectionism, are most strongly associated with intake depression and suicidal ideation; and further, that self-critical perfectionism was uniquely associated with diminished symptom improvement over the course of a partial hospital program. A study by Pereira et al. (2022) found that self-critical perfectionism had a direct effect on psychological distress, while rigid perfectionism and narcissistic perfectionism had effects on psychological distress that were mediated via fear and repetitive negative thinking.

The three subtypes of perfectionism also appear to have distinct developmental patterns (Curran et al., 2017; Wu, 2023). For instance, past research on adolescents has linked the development of self-critical and narcissistic perfectionism, but not rigid perfectionism, to parental conditional regard (Curran et al., 2017). Another study by Wu (2023) found that adolescent perfectionism and perceived maternal perfectionism shares a unidirectional relationship in narcissistic perfectionism, but a bidirectional relationship in rigid perfectionism and self-critical perfectionism. Further, only rigid perfectionism appeared to show a unique mediational relationship between maternal rigid perfectionism, adolescent rigid perfectionism, and adolescent depression risk (Wu, 2023).

Thus, the research literature suggests that there are distinct developmental and clinical relationships for each of the three subtypes of rigid, self-critical, and narcissistic perfectionism. However, there remains an open question about the relationship between which dimensions of perfectionism are specifically related to imposterism. Specifically, Clane & Imes (1978) proposed that when confronted by challenges, individuals high on imposterism enter a cycle of worry and fear, followed by either a combination of immobility and procrastination or a combination of perfectionism and overpreparation. Understanding this relationship between subtypes of perfectionism and imposterism is important to understanding how imposterism contributes to downstream effects on negative outcomes like anxiety, depression, and procrastination (McGregor et al., 2008; Pannhausen et al., 2020; Rohrmann et al., 2016; Wang et al., 2019).

At present, there has been little research examining whether this relationship is constant across perfectionism and imposterism broadly, or only for specific subtypes of perfectionism and certain latent factors of imposterism. Due to the multi-dimensional nature of perfectionism (Dunkley et al., 2003; Nealis et al., 2015; Smith et al., 2016), we hypothesized that imposterism would not be perfectly correlated with perfectionism, but might differentially be more strongly related to specific subtypes of perfectionism. We conducted an exploratory analysis on the relationship between the three dimensions of perfectionism and the three latent factors of imposterism. Given that imposterism is characterized by feelings of inadequacy despite high achievement levels, we hypothesized that self-critical and rigid perfectionism would be positively correlated with imposterism. Similarly, given that imposterism is characterized by self-doubt and discounting one's own successes, we hypothesized that imposterism would be negatively correlated with the grandiose tendencies of narcissistic perfectionism.

## 2. Method

### 2.1. Participants and procedures

The current study was conducted as secondary analysis on data collected for a study examining the relationship between imposterism and reactions to vignettes describing interpersonal and achievement based rejections (manuscript under review). A total of 295 undergraduate students were recruited from the University of Pennsylvania's Department of Psychology human subjects pool for extra course credit. Participants were first asked to electronically sign an online informed consent form, where they were informed of the purpose of the study, that participation would be confidential and voluntary, and that they could withdraw from the study at any time without any explanations. All study materials were presented online via Qualtrics.

After informed consent, participants were presented the experimental vignettes, and then completed questionnaires on demographics and personality traits, including imposterism and perfectionism. An attention check question was included in our questionnaires. All procedures and materials were reviewed and approved by the University of Pennsylvania Institutional Review Board protocol #853199.

### 2.2. Materials

#### 2.2.1. Imposterism

Imposterism was measured by the Clance Imposter Phenomenon Scale (CIPS; Clance, 1985). The CIPS is the most commonly used measure of imposter phenomenology by researchers, and is worded to minimize social desirability effects (Mak et al., 2019). The CIPS consists of 20 items such as "Sometimes I'm afraid others will discover how much knowledge or ability I really lack" or "Sometimes I feel or believe that my success in my life or my job has been the result of some kind of error." The CIPS is rated on a 5-point Likert scale from 1 ("not at all") to 5 ("very true").

The CIPS has previously been found to break down into three latent factors: feeling like a fraud ("fake"), discounting one's own success ("discount"), and attributing one's success to luck ("luck") (Chrisman et al., 1995; French et al., 2008). In order to extract scores for each of these latent factors, we conducted an exploratory factor analysis with varimax rotation for three factors to identify the items loading onto each factor, using the "factanal()" function in R 4.3.0. Items with factor loadings greater than 0.40 were then averaged to calculate subscale scores for each latent factor of imposterism (DiStefano et al., 2009).

#### 2.2.2. Perfectionism

Perfectionism was measured by the Big Three Perfectionism Scale – Short Form (BTPS-SF; (Feher et al., 2020). The BTPS-SF consists of 16-items such as "I have a strong need to be perfect" and "The idea of making a mistake frightens me," and is rated on a 5-point Likert scale ranging from 1 (disagree strongly) to 5 (agree strongly). The BTPS-SF contains questions that measure three higher-order subtypes of perfectionism: rigid perfectionism, self-critical perfectionism, and narcissistic perfectionism. Previous research on the BPTS-SF has found that it has strong test-retest reliability and criterion validity for assessing perfectionism (Feher et al., 2020; Smith et al., 2016; Wu, 2023).

### 2.3. Statistical analyses

We first used Pearson correlations to examine the relationships between the imposterism, perfectionism, and the subtypes of perfectionism and the latent factors of imposterism. While examining the unweighted correlations between subtypes of perfectionism and latent factors of imposterism can provide a general idea of how these constructs are related, we were specifically interested in examining how each of the subtypes of perfectionism related to imposterism, while accounting for the shared variance between total perfectionism and total imposterism. In other words, we wanted to examine if there was an interaction effect between the relationship of perfectionism and imposterism, depending on the subtype of perfectionism examined.

First, we wanted to examine the relationship between imposterism and the three subtypes of perfectionism, while accounting for the shared variance between total imposterism and total perfectionism. Thus, we built a hierarchical model using the "lme4" package (Bates et al., 2025) in R 4.3.0 with perfectionism subscale defined as the dependent variable. Imposterism, perfectionism subtype as an effect-coded variable (rigid perfectionism, self-critical perfectionism, and narcissistic perfectionism), and the imposterism-by-perfectionism type interaction were entered as fixed effects. In order to account for the repeated within-subjects measurement of the three subtypes of perfectionism, a

random intercept of participant was entered as a random effect. Given previous literature on potential gender differences in imposterism (Clance & Imes, 1978), we also entered gender as a fixed covariate. The model specification is thus reported:

$$\text{Perfectionism}_i = b_{0i} + b_{1ij}\,\text{Imposterism} + b_{2ij}\,\text{PerfectionismType} + b_{3ij}\,\text{Imposterism} \times \text{PerfectionismType} + e_{ij}$$

This model thus allows us to test the interaction between perfectionism subtype and imposterism, thus allowing us to determine whether the correlations between imposterism and perfection are significantly stronger or weaker depending on the subtype of perfectionism examined. A significant interaction between imposterism and perfectionism subtype would suggest that certain subtypes of perfectionism are more strongly correlated to imposterism than others. By modeling the relationship between imposterism and perfectionism through this hierarchical model with the perfectionism subtype-by-imposterism interaction entered as a predictor, we are able to identify the unique relationship of each of the three types of perfectionism with imposterism, while accounting for the within-subjects individual effect of overall perfectionism (Gelman & Hill, 2007).

To further identify the exact relationship between imposterism and each perfectionism subtype, while accounting for the shared variation between total imposterism and total perfectionism, we extracted the linear contrast for each of the imposterism-by-perfectionism type slopes using the general linear hypothesis test function "glht()" in the package multcomp (Hothorn et al., 2025).

As a secondary analysis, we were also interested in the relationship whether this relationship between subtypes of perfectionism and imposterism was consistent for each of the latent factors of imposterism. Thus, we created three more hierarchical models that were identical to the previous hierarchical model, except with a different latent factor of imposterism as the dependent variable (fake, discount, and luck). As in the primary analysis model, imposterism, perfectionism subtype as an effect-coded variable, and the imposterism-by-perfectionism type interaction were entered as fixed effects, as well as gender as a fixed effect covariate. A random intercept of participant was entered as a random effect. We similarly extracted the linear contrast for each of the imposterism-by-perfectionism type slopes. Because this secondary analysis is a repeated our primary analysis across each of the three latent factors of imposterism (fake, discount, and luck), we corrected for multiple comparisons by interpreting results significant at a Bonferroni adjusted $\alpha = 0.05\ /\ 4 = 0.0125$ (Armstrong, 2014).

## 3. Results

Our final sample size was 278 after removal of participants who did

not complete the questionnaire or pass the attention check. The ages ranged from 18 to 24 with a mean of 19.91 (SD = 1.34). The sample consisted of 112 males (40.1 %) and 166 females (59.9 %). Participants identified as 116 White (41.7 %), 87 Asian (31.2 %), 30 Black/African American (10.8 %), 29 Hispanic/Latino (10.4 %), and 15 Other (5.4 %). As participants were all students, the school years were distributed with 31.7 % freshman, 29.6 % sophomore, 22.7 % junior, and 15.8 % seniors. Participants reported a wide range of family incomes, with 10.8 % of participants reporting a family household income of <$40,000/year; 21.2 % of participants reporting a household income from $40,000 – $100,000/year, 25.3 % of participants reporting a household income from $100,000 – $200,000/year, and 42.6 % of participants reporting a household income > $200,000/year.

Total score on the Clance Imposter Scale was positively correlated with total score on the big three perfectionism scale, $r(276) = 0.42$, $p < .001$. The BTPS-SF showed strong internal consistency ($\alpha = 0.87$), and strong internal consistency for rigid perfectionism ($\alpha = 0.88$), self-critical perfectionism ($\alpha = 0.84$), and narcissistic perfectionism ($\alpha = 0.79$). Pairwise correlations between subtypes of perfectionism and factors of imposterism are described in Table 1.

### 3.1. Factor analysis of the CIPS

Exploratory factor analysis with three factors explained a cumulative 42.6 % of the variance. CIPS items 3, 6, 7, 8, 12, 13, 14, 15, 17, 20 were found to load onto feeling like a fraud ("fake"), items 4, 10, 16, 18, 19, loaded onto discounting personal success ("discount"), and items 5, 9, and 11 loaded on to attributing ones success to luck ("luck"), which corresponded with the factors previously identified by Chrisman et al. (1995).

### 3.2. Imposterism and perfectionism subtypes

Imposterism significantly predicted overall perfectionism ($b = 0.020$, $t = 7.398$, $p < .001$). There were no significant effect of gender ($b = -0.108$, $t = -1.470$, $p = .143$). There was a significant interaction between imposterism and self-critical perfectionism ($b = 0.013$, $t = 3.54$, $p < .001$) and a significant interaction between imposterism and narcissistic perfectionism ($b = -0.025$, $t = -6.77$, $p < .001$), implying that the relationship between imposterism and these subtypes of perfectionism significantly differed from that between imposterism and rigid perfectionism, see Fig. 1. Simple slopes analysis revealed a significant positive relationship between imposterism and rigid perfectionism ($b = 0.024$, $z = 6.912$, $p < .001$) and a significant positive relationship between imposterism and self-critical perfectionism ($b = 0.037$, $z =$

**Table 1**
Pairwise correlations between subtypes of perfectionism and factors of imposterism.

| | Rigid perfectionism | Self-critical perfectionism | Narcissistic perfectionism | Imposterism - Fake | Imposterism - Discount | Imposterism - Luck |
|---|---|---|---|---|---|---|
| Rigid perfectionism | 1 | | | | | |
| Self-critical perfectionism | **0.60**[*] | 1 | | | | |
| Narcissistic perfectionism | **0.30**[*] | **0.29**[*] | 1 | | | |
| Imposterism - Fake | **0.35**[*] | **0.62**[*] | 0.07 | 1 | | |
| Imposterism - Discount | **0.28**[*] | **0.49**[*] | **−0.17**[*] | **0.71**[*] | 1 | |
| Imposterism - Luck | **0.13**[*] | **0.35**[*] | −0.04 | **0.59**[*] | **0.50**[*] | 1 |

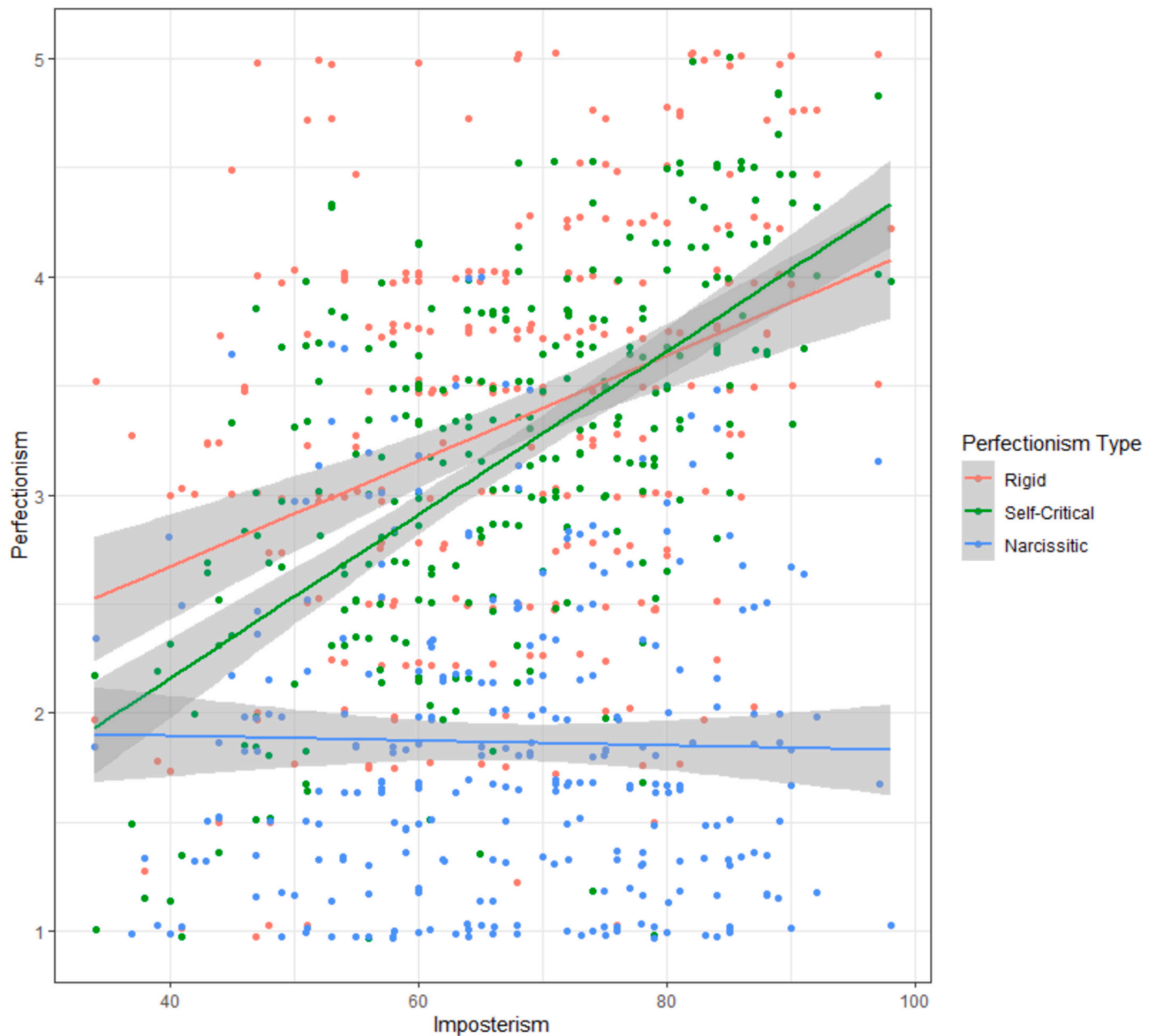[*] Significant at the p < .05 level.

**Fig. 1.** Relationship between Imposterism on the Clance Imposter Scale (CIPS) score and perfectionism on the Big Three Perfectionism Scale (BTPS), by perfectionism subtype. Jitter added to points to enhance readability.

10.79 p < .001). There was no significant relationship between imposterism and narcissistic perfectionism (b = −0.001, z = −0.485, p = .628).

### 3.3. Imposterism latent factors and perfectionism

#### 3.3.1. Fake

The fake factor significantly predicted overall perfectionism (b = 0.383, t = 8.555, p < .001). There were no significant effect of gender (b = −0.112, t = −1.566, p = .118). There was a significant interaction between the fake factor and self-critical perfectionism (b = 0.244, t = 3.691, p < .001) and a significant interaction between the fake factor and narcissistic perfectionism (b = − 0.373, t = −5.635, p < .001), implying that the relationship between the fake factor and these subtypes of perfectionism significantly differed from that between imposterism and rigid perfectionism, see Fig. 2. Simple slopes analysis revealed a significant positive relationship between the fake factor and

rigid perfectionism (b = 0.426, z = 7.239, p < .001) and a significant positive relationship between the fake factor and self-critical perfectionism (b = 0.670, z = 11.39 p < .001). There was no significant relationship between the fake factor and narcissistic perfectionism (b = 0.054, z = 0.907, p = .364).

#### 3.3.2. Discount

The discount factor significantly predicted overall perfectionism (b = 0.200, t = 4.712, p < .001). There were no significant effect of gender (b = −0.127, t = −1.638, p = .102). There was a significant interaction between the discount factor and self-critical perfectionism (b = 0.162, t = 2.868, p = .004) and a significant interaction between the discount factor and narcissistic perfectionism (b = −0.433, t = −7.680, p < .001), implying that the relationship between imposterism and these subtypes of perfectionism significantly differed from that between the discount factor and rigid perfectionism, see Fig. 2. Simple slopes analysis revealed a significant positive relationship between the discount factor and rigid
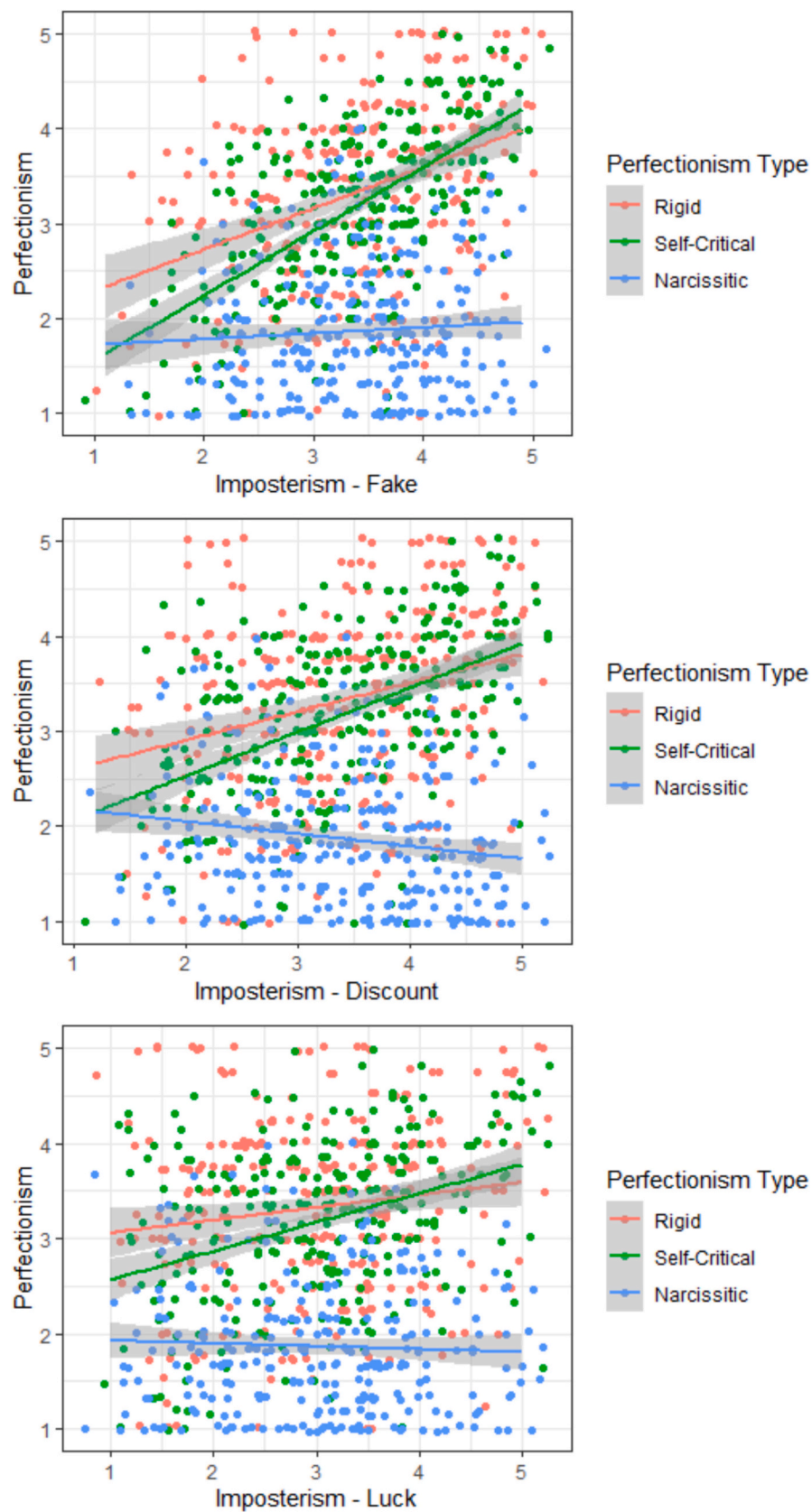
**Fig. 2.** Relationship between the three subtypes of perfectionism (rigid, self-critical, narcissistic), and the three factors of imposterism (fake, discount, luck). Jitter added to points to enhance readability.

perfectionism (b = 0.291, z = 5.431, p < .001) and a significant positive relationship between the discount factor and self-critical perfectionism (b = 0.453, z = 8.45, p < .001). There was a significant negative relationship between the discount factor and narcissistic perfectionism (b = −0.142, z = −2.652, *p* = .008).

### 3.3.3. Luck

The luck factor significantly predicted overall perfectionism (b = 0.127, *t* = 3.213, *p* = .001). After correction for multiple comparisons, there was not a significant effect of gender (b = −0.159, *t* = −2.025, *p* = .044). There was a significant interaction between the luck factor and self-critical perfectionism (b = 0.172, *t* = 3.106, *p* = .002) and a significant interaction between the luck factor and narcissistic perfectionism (b = − 0.163, *t* = −2.936, *p* = .003), implying that the relationship between imposterism and these subtypes of perfectionism significantly differed from that between the luck factor and rigid perfectionism, see Fig. 2. Simple slopes analysis revealed a significant positive relationship between the luck factor and self-critical perfectionism (b = 0.453, z = 8.45, p < .001). After corrections for multiple comparisons, there was no significant relationship between the luck factor and rigid perfectionism (b = 0.124, z = 2.440, *p* = .015), nor was a significant negative relationship between the luck factor and narcissistic perfectionism (b = −0.038, z = −0.753, *p* = .452).

## 4. Discussion

The present study is the first to examine the relationship between imposterism and the specific subtypes of perfectionism. We found that, consistent with our hypothesis, overall trait imposterism was correlated with overall trait perfectionism. Further, we specifically found that imposterism was positively correlated with rigid and self-critical perfectionism, but imposterism was not correlated with narcissistic perfectionism. When examining the latent factors of imposterism, we found that the discount factor of imposterism appears to specifically be negatively correlated with narcissistic perfectionism.

Our finding that overall trait imposterism was positively correlated to overall trait perfectionism is consistent with that of previous research. (Thomas & Bigatti, 2020; Wang et al., 2019). Further, given that imposterism is characterized by feelings of inadequacy despite high achievement levels (Clance & Imes, 1978), it is not surprising that imposterism is positively correlated with self-critical and rigid perfectionism. Similarly, given that imposterism is characterized by self-doubt and discounting one's own successes (Clance & Imes, 1978), it is also not surprising that imposterism showed a null correlation with narcissistic perfectionism. Specifically, narcissistic perfectionism is characterized by an internalized grandiose sense of a perfect self, and a belief of the capacity of achieving that perfection (Flett et al., 2014). This sense of grandiosity runs would specifically run counter to the tendency and self-doubt described by imposterism.

Further, we found that the discount latent factor of imposterism was negatively correlated with narcissistic perfectionism, which is consistent with previous research. Flett et al. (2014) specifically describes that neurotic perfectionism (i.e., self-critical and rigid perfectionism) is characterized by a tendency towards minimizing mistakes that reveal personal inadequacies, while narcissistic perfectionism is characterized by a tendency towards self-defensiveness and self-positivity. What is interesting is that we found a null relationship between the luck factor of imposterism and narcissistic perfectionism, showing that while a tendency for self-discounting success may be negatively correlated with narcissstic perfectionism, the tendency to attribute one's successes to luck was not negatively correlated.

Further, it is interesting that we did not see positive correlation between the fake factor of imposterism with narcissistic perfectionism, as previous research has argued that individuals high on narcissistic perfectionism experience self-defensiveness and self-preoccupation above normal levels (Flett et al., 2014). However, this perfectionistic

insecurity is also described in rigid and self-critical perfectionism, and thus our model shows there is no remaining residual variance in the relationship between the fake factor of imposterism and narcissistic perfectionism, once the other subtypes of rigid and self-critical perfectionism are taken into account.

The present study further clarifies the relationship between imposterism and perfectionism, and helps better understand the imposter phenomenon cycle identified by Clance and Imes (1978). Consistent with previous research finding that the subtypes of perfectionism have distinct relationships between with clinical outcomes such as depression, suicidal ideation, and distress tolerance (Bockhorst et al., 2025; Pereira et al., 2022; Wu, 2023), we found that rigid and self-critical perfectionism were distinctly related to imposterism, but not narcissistic perfectionism. Maladaptive perfectionism has long been identified as playing an important role in psychological disorders such as anxiety and depression (Flett & Hewitt, 2002; Lo & Abbott, 2013). The relationship between perfectionism and imposterism, and how the two interact to contribute to depression, anxiety, and other negative behaviors such as procrastination (Hu et al., 2019; Pannhausen et al., 2020; Wang et al., 2019) has only received limited attention. Our results suggest that it is only the specific subtypes of rigid and self-critical perfectionism, but not narcissistic perfectionism, that are related to imposterism. Our results may have clinical implications, as interventions designed to target maladaptive perfectionism (Lloyd et al., 2015) may potentially only need to target rigid and self-critical perfectionism in order to reduce imposterism and its associated negative outcomes such as anxiety and procrastination.

### 4.1. Limitations and future directions

One limitation is that we did not measure between-subjects variation in objective achievement. That is, while participants self-reported their feelings of imposterism, we do not know whether the effects would be magnified or reduced for an individual who is objectively higher or lower achieving among their peers. A future replication could examine the effects of imposterism for students with an objectively higher measure of achievement relative to their peers, such as using GPA as an objective measure of academic achievement.

Another limitation is that because our data collection was cross sectional, we do not know the directionality of whether imposterism is leading rigid and self-critical perfectionism, or if perfectionism leads to imposter phenomenon, or if there is a bi-directional relationship. A future experiment could apply an intervention designed to reduce perfectionism (Lloyd et al., 2015), and then examine which of the subtypes of rigid, self-critical, or narcissistic perfectionism most mediated improvements in imposter phenomenology. Such an experiment could also test a multiple mediation model examining how changes in perfectionism impact the downstream imposter phenomenon-related behaviors of procrastination and overpreparation (Clance & Imes, 1978).

### 4.2. Conclusions

Previous research has identified a positive relationship between trait imposterism and trait perfectionism. We found that imposterism was strongly positively correlated to the subtypes of rigid and self-critical perfectionism, but showed a null correlation with narcissistic perfectionism. Further, we found that factor describing the tendency to discount one's own success in imposterism was specifically negatively correlated with narcissistic perfectionism. Thus, it appears imposterism and perfectionism are closely related constructs, but there are important distinctions between the subtypes of each.

**CRediT authorship contribution statement**

**Colin Xu:** Writing – review & editing, Writing – original draft,

Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Caitlyn Kim:** Writing – review & editing, Methodology, Investigation, Conceptualization. **Katelyn Candido:** Writing – review & editing, Methodology, Investigation, Conceptualization. **Isabel Germano Salerni:** Writing – review & editing, Methodology, Investigation, Conceptualization. **Albena Ruseva:** Writing – review & editing, Methodology, Investigation, Conceptualization.

## Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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