

The Struggle is Real: Imposter Syndrome and Therapy Attendance in Collegiate Populations

Kieran A. Lichter*

Abstract

Imposter syndrome is a phenomenon wherein conventionally successful individuals feel that their success is unwarranted or fraudulent, resulting in significant stress and anxiety. Although imposter syndrome's relationship with demographic, occupational, and mental health experiences is well-researched, little has been done to examine the connection to direct therapeutic treatment. Data from the 2021–2022 Healthy Minds Survey were used to compare scores on a subset of the Clance Imposter Phenomenon Scale, a common questionnaire used to measure imposter syndrome, with self-reported therapy attendance, using a chi-square test for independence. Imposter score and therapy attendance were significantly associated with each other, but this association only held in those with neither anxiety nor depression, with sample data showing a correlation between higher rates of therapy attendance and higher imposter scores. Imposter syndrome characteristics could be used as an additional screening tool for prioritizing recipients of mental health services, but further research is required to explore the exact relationship between the imposter phenomenon, therapy attendance, and other correlates such as general mental health and demographics.

1. Imposter Syndrome and Therapy Attendance in Collegiate Populations

Imposter syndrome, frequently referred to as the imposter phenomenon in psychology literature, is a widespread issue. Characterized by intense feelings of self-doubt, imposter syndrome affects high-achieving or otherwise successful individuals who routinely discredit their success by attributing it to external factors. These factors typically include the idea that peers have made a mistake by allowing the individual to get this far or that there was some fault in the system used to grade them. Yet, despite the extensive blog posts

or forum threads on the topic, the true prevalence of imposter syndrome is unclear (Bravata et al., 2019). Furthermore, the phenomenon cannot be found in either the DSM or the ICD, the two most used mental disorder diagnostic manuals across the world, a particularly notable fact given its broad use over the past decade.

1.1. Trends and Correlates

Imposter syndrome is highly correlated with several mental health indicators, with higher scores associated with lower well-being, increased depression, and increased anxiety. Dao et al. (2024) found a moderate to strong positive correlation (0.58) between imposter syndrome and general depression, as well as a moderate

*Kieran Lichter (lichterk@oregonstate.edu) is a senior studying psychology at Oregon State University. Kieran has been a part of the Perception, Cognition, and Performance lab with Dr. McCarley since Fall 2024 and have loved every moment of the research process. Kieran has also grown a fondness for strong statistical analyses and honest science, due to the rigor and humor of Dr. McCarley. After graduation, Kieran plans to pursue a PhD with aspirations for a research career in mental health and its connections to cognition, identity, and/or expression.

negative correlation (-0.41) between imposter syndrome and well-being, both of which maintained across time. A separate study found a weaker, but still significant, positive correlation (0.43) between imposter syndrome and depression and an additional moderate positive correlation (0.48) between anxiety and imposter syndrome (Pervez et al., 2021). Social support, such as helpful advice from a mentor figure or positively sharing experiences with peers, has a protective effect against imposter syndrome regardless of who is providing it, with no singular social support having a strong effect (Pervez et al., 2021; Carmichael et al., 2024). Demographically, the findings lean towards the presence of gender and ethnic effects. Some studies suggest that rates are similar across different age groups and genders, but a large number support prevalent gender effects, with women experiencing imposter syndrome at a higher rate than men (Bravata et al., 2019; Carmichael et al., 2024; Price, Holcomb, & Payne, 2024). Differences in these findings could be due to differing imposter phenomenon measures, cultural understandings of imposterism, or platforms of questionnaire administration (Price, Holcomb, & Payne, 2024). Ethnic minority groups have consistently been found to experience higher rates of imposter syndrome, often attributed to lower levels of social support (Bravata et al., 2019; Carmichael et al., 2024).

Few studies, if any, connect the imposter phenomenon with therapy attendance directly. The vast majority instead focus on how demographic characteristics, life experiences, and mental illness affect care utilization. Hyun et al. (2006) found that people who identified as female reported utilizing mental health care 19.5% more than those who identified as male, but also had higher depression index scores on average (14.1 female vs. 12.2 male). This trend is mirrored

in Kook et al. (2025), who report a small but significant positive correlation between care utilization and female gender identity (0.150) and stronger correlations with depression (0.186) and worry (0.289). Ethnic minorities tend to utilize mental health care at a much lower rate than other groups, with one study finding that Asian and African-American graduate students used counseling services on average 14% less and 36% less than White students, respectively (Hyun et al., 2006), though this finding has been challenged in some contexts. Across the board, ethnic minority groups tend to view care utilization less favorably, reporting more negative attitudes towards personally seeking care (Kook et al., 2025).

1.2. Instruments

Several different scales exist for measuring imposter syndrome. The four most common are the Clance Imposter Phenomenon Scale (CIPS), the Harvey Imposter Scale (HIPS), the Perceived Fraudulence Scale (PFS), and the Leary Impostorism Scale (LIS). Analysis on the validity and usefulness of these scales has so far failed to reveal a true gold standard: every scale has demonstrated adequate validity and reliability, but none have proven to be better than the others. Of these four, the CIPS is the most cited measure of imposter syndrome, which carries the unique advantage of comparison with other studies, though it should be noted that this does not necessarily make it superior in construction (Mak et al., 2019). The CIPS is a 20-item questionnaire developed to study a rising population of externally successful individuals who feel that their success is unwarranted or fraudulent. It has been rigorously tested and validated over the years (Chrisman et al., 1995; Jaruwat Sakulku & Alexander, 2011; Leary & Tate, 2010). Some example questions are: "At times, I feel my success

has been due to some kind of luck,” “I rarely do a project or task as well as I’d like to,” and “I often compare my ability to those around me and think they may be more intelligent than I am,” with answers being scored on a 5-point Likert scale. Questions are separated into three main dimensions—fake, luck, and discount—and are centered on a person’s perception of their current skills and position (Mak et al., 2019). Scores are interpreted by first summing scores before grouping into four categories: “few” for a score of 40 or less, “moderate” for scores between 41 and 60, “frequently” for scores between 61 and 80, and “intense” for scores greater than 80, where a higher category indicates more frequent and severe disruptions in day-to-day life.

1.3. Treatment

Despite the commonality of imposter syndrome, the majority of treatment advice and plans directed towards managing it are found in lay literature like online blogs or psychology-themed news outlets (Bravata et al., 2019). Without properly vetted treatments, the only course for someone experiencing the stress of imposter syndrome is to pick an online article and hope for the best. That being said, there has been an uptick in studies examining more formal treatments in recent years. Schema-therapy, in which maladaptive patterns of thought and appraisals (schemas) are interrogated and changed over time, has been put forth as a potential treatment strategy, with preliminary studies showing some success by increasing self-efficacy and decreasing emotional exhaustion, depersonalization, and perfectionism (Salicru, 2022; Bagheri Sheykhgafshe, 2022). A similar study found evidence for cognitive-behavioral therapy’s efficacy, though it remains preliminary in nature due to its small sample size (Bagheri

Sheykhgafshe et al., 2024). Such limited official treatments are exacerbated by the imposter phenomenon’s absence from both the DSM-5 and ICD-11.

1.4. The Present Study

Although the present study cannot address this specific gap in the literature, it does hope to explicitly identify associations between therapy attendance and imposter syndrome characteristics. Based on high correlations with mental illness, I hypothesize that, despite the self-doubt endemic to imposter syndrome potentially reducing therapy attendance (due to individuals doubting the validity of their emotions), higher imposter syndrome scores will correlate with higher rates of therapy attendance.

2. Method

2.1. Procedure

Data were selected from the 2021–2022 survey year of the national (United States) Healthy Minds Study (HMS). The HMS is a cross-sectional survey administered annually, assessing the health and well-being of college students. Colleges and universities self-select (i.e., volunteer) to participate in the HMS. For each institution, they provided a sample of either the entire population of the school or a randomly selected sample. For institutions with graduate students (i.e., master’s, doctoral, professional), graduate students and undergraduate students were typically sampled. Students needed to be currently enrolled and older than 18 years of age. Students were invited to participate via email, scheduled to avoid the first two weeks of term, the last week of term, and major holidays, and completed the survey via Qualtrics. The survey administered to all institutions included three core modules of demographics, mental health

status, and mental health survey utilization/help seeking. In addition to these core modules, institutions have multiple elective modules they can choose from, including substance use, sleep, mental health climate, resilience and coping, financial stress, and peer support. Students were provided informed consent prior to participating, and the HMS is approved by the IRBs of the University of Michigan, Boston University, and Advarra. All data used are de-identified and publicly available through the Healthy Minds Network. As such, IRB approval by Oregon State University was not needed per institutional guidelines.

2.2. Participants

The 6181 participants (64.3% woman, 29.1% man, 0.81% non-conforming, 4.72% non-binary, 0.36% trans woman, 0.74% trans man, mean age = 23.5 years) answered at least one question about imposter score on the Healthy Minds Survey and had data on therapy attendance. The sample was primarily white (60.4%) and in the first, second, or third year of their degree (30.1%, 30.2%, and 18.7%, respectively).

2.3. Measures

2.3.1. Demographics

Participants were asked about their age, gender, sex at birth, sexual orientation, year in school, as well as several questions regarding family life, grades, scholarships, and campus activity.

2.3.2. Therapy Attendance

Therapy attendance was measured through the question “Have you ever received counseling or therapy for mental health concerns?” Four answers were available (never, prior to starting college, since starting college, and both of the above). For this analysis, “prior to counseling,”

“since starting college,” and “both of the above” were collapsed into “yes,” while “never” was coded as “no” (Clance, 1985).

2.3.3. Imposter Score

Imposter score was measured by summing the answers to five questions adapted from the Clance Imposter Phenomenon Scale (CIPS) (Clance, 1985). These questions were included in the HMS as an optional measure. With its five questions, the HMS imposter measure has a maximum score of 25 and a minimum score of 5. Only one example question is publicly displayed for the HMS: “I’m afraid people important to me may find out that I’m not as capable as they think I am.” Information on the other four questions used is unavailable, as is the rationale behind their selection. Scores were transformed by multiplying the sum by four to more closely align with the guidelines given in the CIPS (five questions to 20 questions). Bins were then constructed from this modified score based on the original CIPS questionnaire: “few” corresponds to an adjusted score of <40, “moderate” (mod) to 41-60, “frequently” (freq) to 61-80, and “intense” (int) to 81-100. “No” and “Yes” refer to whether the participant had ever attended therapy.

2.3.4. Anxiety

Anxiety was measured through the GAD-7, a highly reliable and well-tested measure of anxiety (Löwe et al., 2008; PAR staff, 2020a). The GAD-7 uses seven questions, with each question being scored on a four-point Likert scale. Respondents are asked, “Over the last 2 weeks, how often have you been bothered by any of the following problems?” Responses range from “Not at all” (0) to “Nearly every day” (3) (PAR staff, 2020a). The HMS included all seven questions of the GAD-7.

The HMS then took the scores for all the questions and combined them before sorting the sum into “yes” and “no” categories, where a “yes” constituted an aggregate score above 10 out of a total possible score of 21 and a “no” constituted an aggregate score less than 10.

2.3.5. Depression

Depression was measured through the PHQ-9, a well-established and well-tested measure of depression (Kroenke et al., 2001; PAR staff, 2020b). The PHQ-9 uses nine questions scored on a four-point Likert scale using the same responses and initial prompt as the GAD-7 (PAR staff, 2020b). The HMS included all nine questions of the PHQ-9. Scores for each participant were then summed, with an aggregate score above 10 out of a possible 27 meaning the participant qualified as having depression.

2.4. Analysis

Missing data for all analyses was handled via complete-case analysis, where participants who are missing one or more data points in relevant variables are omitted from the analysis entirely. An overview of missing data points by variable indicated no distinct pattern of missingness and a low percentage of missing data in general, making complete-case analysis a viable, if inelegant, solution (White & Carlin, 2010).

Because the modified imposter sum score is categorical and number of therapy visits is categorical, the chi-square test for independence was chosen to determine if there was a relationship between therapy visits and imposter score. The chi-square test for independence is best used when analyzing for a relationship between multiple categorical variables when determining if a significant association exists between them. A

p-value less than or equal to 0.05 was used to determine significance.

Although not initially planned, a stratified analysis testing for an association between therapy attendance and imposter score based on a participant’s answers to the GAD-7 and PHQ-9 was done to more closely examine the effects of existing mental health conditions on the original association. 196 participants were excluded due to missing data on either anxiety or depression, resulting in a final sample size of 5985. A chi-square test for independence was done for each of four conditions: neither depression nor anxiety, only anxiety, only depression, and both depression and anxiety. A p-value less than or equal to 0.0125 was used to determine significance, following guidelines for Bonferroni correction.

All analyses were done using R Statistical Software (v4.4.3; R Core Team, 2025), Rstudio (Posit Team, 2026), and the *tidyverse* package (Wickham et al., 2019).

3. Results

Pearson’s chi-square test for independence was used to examine the relationship between imposter syndrome characteristics and therapy attendance. Of those who attended therapy, the majority had either frequent (score between 61-80) or intense (score between 81-100) imposterism characteristics, meaning that it frequently and severely affected their life. Of those who did not attend therapy, more fell into the moderate (score between 41-60) and few (score between 0-40) when compared to participants who attended therapy, but many still had frequent experiences. Full category breakdowns can be found in Figure 1. The results indicate a statistically significant association between imposter syndrome characteristics and therapy attendance ($\chi^2 =$

183.09, $df = 3$, $p < 0.001$) with a medium effect size (Cramer's $V = 0.172$). These findings suggest that mental health outreach should consider individuals' experiences with imposter syndrome when determining who needs care, but also that those who experience greater degrees of imposter syndrome are, in fact, finding their way into therapy.

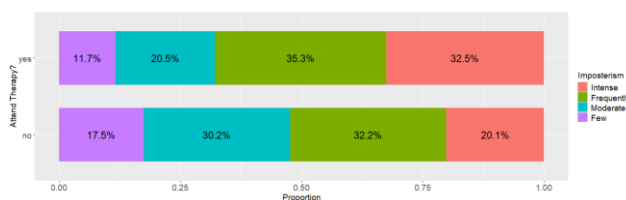


Figure 1. CIPS Imposter Score & Therapy Attendance.

Note: Percentages represent relative proportion of imposter scores based on whether therapy was attended. For example, “11.7%” over a purple bar in the “yes” category means that, of those who attended therapy, 11.7% had few imposter characteristics.

3.1. Stratified Analyses

To further explore the relationship between therapy attendance and the imposter phenomenon, additional chi-square tests of independence were calculated after stratification into four categories: respondents who had neither depression nor anxiety (total score less than 10 on both the PHQ-9 and the GAD-7), respondents who had only anxiety (total score less than 10 on the PHQ-9 and greater than 10 on the GAD-7), respondents who had only depression (total score greater than 10 on the PHQ-9 and less than 10 on the GAD-7), and respondents who had both (total score greater than 10 on both the PHQ-9 and GAD-7). Of the sample, 2980 had neither depression nor anxiety, 413 had only anxiety, 834 had only depression, and 1758 had both anxiety and depression. Results showed that only in cases when a participant had neither depression nor anxiety did the association between therapy attendance and imposter syndrome scores remain

significant ($X^2 = 67.16$, $df = 3$, $p\text{-value} < 0.001$) with a modest effect size (Cramer's $V = 0.150$). Full breakdowns by imposterism severity can be found in Figure 2. The categories of only anxiety, only depression, and both were all insignificant ($p\text{-values}$ of 0.602, 0.039, and 0.100, respectively) after Bonferroni correction. Interestingly, though the association between imposter syndrome and therapy attendance was not significant, participants with both anxiety and depression endorsed the most imposter characteristics when compared to the other three groups (see Figures 2-5). This indicates a potential interaction effect between anxiety, depression, and imposterism.



Figure 2. CIPS Imposter Score & Therapy Attendance with neither Depression nor Anxiety

Note: Percentages represent relative proportion of imposter scores based on whether therapy was attended.

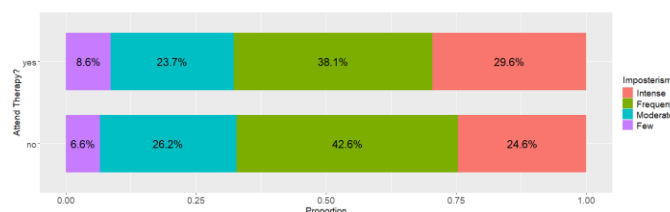


Figure 3. CIPS Imposter Score & Therapy Attendance with only Anxiety

Note: Percentages represent relative proportion of imposter scores based on whether therapy was attended.

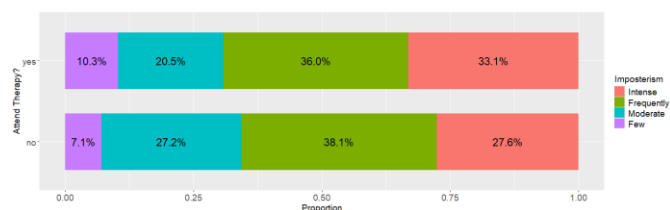


Figure 4. CIPS Imposter Score & Therapy Attendance with only Depression

Note: Percentages represent relative proportion of imposter scores based on whether therapy was attended.

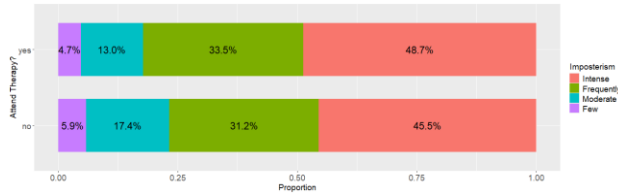


Figure 5. CIPS Imposter Score & Therapy Attendance with both Depression & Anxiety

Note: Percentages represent relative proportion of imposter scores based on whether therapy was attended.

4. Discussion

Imposter syndrome is simultaneously a well-documented and under-studied phenomenon (Bravata et al., 2019). It has been explored through the lens of demographic connections and broader mental health activity, yet very few treatment or outreach programs reference it specifically (Bravata et al., 2019; Carmichael et al., 2024; Dao et al., 2024; Pervez et al., 2021). This study sought to narrow that gap by examining the relationship between imposter syndrome characteristics and therapy attendance in a collegiate population. It was hypothesized that a greater imposter syndrome score would correlate with greater rates of therapy attendance. Our analyses confirm that there is a statistically significant association between the two, with sample proportions indicating that more severe imposter syndrome was associated with greater rates of therapy attendance, but that the association only held when participants had neither preexisting depression nor anxiety.

Several studies have found that imposter syndrome is correlated with increased rates of depression and anxiety in general (Dao et al., 2024; Pervez et al., 2021). As therapy seeking is more likely when individuals experience substantial disruptions in their day-to-day lives, it is reasonable to assume that depression and anxiety both lead to therapy attendance. Alternatively, someone is unlikely to end up with an official diagnosis unless they go to a therapist in the first

place, meaning that therapy attendance would be a precursor of sorts to those mental health disorders. Why then would the association between therapy and imposterism seem less significant once an individual is already facing disruptive mental health? Perhaps, the predominant motivator for someone to go to therapy in the first place is the existing disruptions caused (or attributed to) disorders like anxiety and depression. Put another way: depression and anxiety are more impactful and thus take precedence over something like imposter syndrome. Because the anxiety or depression explains the therapy attendance more than the imposter phenomenon, the specific association disappears.

Another possible reason is that feelings associated with imposter syndrome (self-doubt, fear of judgment, difficulty accepting praise) could be attributed to general anxiety or depression based on the similarity, or even overlap, in their symptoms (Salari et al., 2025). Depression, especially major depressive disorder, may be linked to negative expectations of performance or success despite the presence of positive feedback (Kube et al., 2020). These expectations appear to persist in social contexts, potentially increasing the frequency of depressive episodes or fostering treatment-resistant depression (Kirchner et al., 2025). Anxiety has also been linked to poor self-evaluation and a persistent fear of evaluation, positive and negative (Bates, Elphinstone, & Whitehead, 2021). The similarity to imposter syndrome is notable: imposter syndrome is functionally a negative expectation of both performance and social evaluation that refuses to change despite demonstrable successes. In this way, imposter syndrome could be seen as an extension of those preexisting conditions.

Some evidence for this can be found in the different distribution of imposter scores based on

scores for the PHQ-9 and GAD-7. Even for those groups whose association was no longer significant, imposter scores were still higher on average, with participants with both anxiety and depression endorsing the most imposter feelings. Though they experience more imposter feelings, the difference in endorsed imposterism is not significant based on therapy attendance, indicating that it is not a driving factor for seeking care. In contrast, those with neither anxiety nor depression may see the disruptions unique to imposter syndrome as more significant to their personal functioning and thus seek care to alleviate those feelings.

Importantly, the association between attendance and imposter scores and the higher scores on average suggest that, at least for those with neither depression nor anxiety, people are finding their way into therapy in order to manage imposter feelings. If therapy can provide some measure of improvement to the quality of life of those with imposter syndrome, then it is possible that imposter characteristics could be used as an additional screening tool for mental health resources. Someone could experience disruptions due to imposterism, but find that they do not reach the cutoffs for either anxiety or depression, therefore being overlooked by any outreach programs that allocate resources based on those more traditional measures. By adding an imposterism scale, such as the CIPS or the HIPS, those populations could be flagged for care.

Finally, despite the finding not being statistically significant, the large discrepancy in both “frequent” and “intense” imposter scores among those with both depression and anxiety may point to the existence of a more complex interaction between depression, anxiety, therapy attendance, and imposter syndrome. More severe imposter experiences are endorsed than with just anxiety or depression alone, representing an

additional, synergistic effect between the three, wherein anxiety and depression heighten the intensity of the imposter phenomenon. If that is the case, then treatments tailored towards typical levels of imposter syndrome may prove less effective when utilized for individuals with pre-existing mental disorders.

5. Limitations and Future Research

Although analysis was stratified based on mental health to a degree, chi-square tests only test for an association among variables, meaning that it is not explicitly clear if imposter syndrome itself is a unique predictor of therapy attendance, and, if it is a unique predictor, whether or not it has a positive or negative relationship with therapy attendance. Using a more sophisticated technique like logistic regression could allow for an explicit examination of the direction of the relationship, providing a more complete model of the interaction overall. In a similar vein, log-linear analysis could also be used if a researcher wanted to focus more on potential interaction effects between anxiety, depression, imposter syndrome, and therapy attendance. With either of those two techniques, future researchers could also add more potential covariates or predictors, such as race and gender, creating a more holistic and reliable model.

Additionally, the present study is not experimental and thus cannot be used to draw any causal conclusions. If the model were to be expanded, it still would not be clear if imposter syndrome characteristics cause greater therapy attendance or if therapy attendance causes more imposter syndrome. More believably, it is possible that a different variable, like depression or anxiety, causes imposter syndrome and therapy attendance. In general, more experimental studies could only improve our knowledge of imposter

syndrome, both in its treatments and in its relationships. Experiments or controlled trials studying effective interventions are especially needed as more and more individuals turn towards mental health care to improve their quality of life in the face of disruptions caused by the imposter phenomenon.

Another limitation was the shortened imposter questionnaire used. Modification had to be done to ensure that results could be compared with imposterism literature as a whole, but it is far from ideal. Although there is evidence supporting the validity of a shortened 10-item questionnaire, no such research has been done to determine the psychometric power of anything shorter than six items (Wang et al., 2022; Wang et al., 2024). Utilizing fewer questions puts the psychometric validity of the measure into question. It is imperative that any future studies gathering original data include the entire CIPS, or at the very least the 10-item version, to maintain validity, sensitivity, and specificity.

Multiple imputation was not used in the present study to account for missing data. Although complete-case analysis remains viable in the majority of situations where data is missing completely at random and in some cases where data is missing at random, multiple imputation generally lends itself to more robust findings by limiting bias potentially introduced to complete-case analysis. Multiple imputation has the added bonus of maintaining a similar degree of power and specificity when compared to the loss in power due to lowering the total sample size (White & Carlin, 2010). Future studies with more resources should take care to implement multiple imputation where necessary or beneficial to ensure that findings remain as accurate as possible.

6. Conclusion

Recent years have seen a remarkable increase in talk about imposter syndrome, feelings of chronic self-doubt regarding personal abilities, usually found in those who have achieved demonstrable and culturally relevant success. The present study examined the 2021–2022 Healthy Minds Study to test for an association between therapy attendance and imposter syndrome characteristics. An association was identified, but it only held for participants who had neither anxiety nor depression. Based on the connections between imposter syndrome and mental health as a whole, questionnaires like the CIPS can be used as an additional measure of screening. That screening can then be used to target outreach more precisely, ensuring that money and manpower are spent efficiently and effectively. However, to establish more thorough models, further research is necessary to determine the extent other factors mediate or moderate the interaction and to establish any causal connections.

Acknowledgements

I'd like to thank Dr. Sanders for his guidance and feedback in writing this manuscript. His comments are always well-structured and insightful, and this wouldn't have been possible without him.

References

- Bagheri Sheykhangafshe F, Nouri E, Savabi Niri V, Choubtashani M, Farahani H. (2024). The Efficacy of Cognitive Behavioral Therapy on Mental Health, Self-esteem and Emotion Regulation of Medical Students with Imposter Syndrome. *Educ Res Med Sci*, 13(1):e147868. doi: <https://doi.org/10.5812/ermsj-147868>
- Bagheri Sheykhangafshe, F., Tajbakhsh, K., Savabi Niri, V., Mikelani, N., Eghbali, F., & Fathi-Ashtiani, A. (2022). The Effectiveness of Schema Therapy on Self-efficacy, Burnout, and Perfectionism of Employees with Imposter Syndrome. *Health and*

- Development Journal*, 11(3), 140-148. doi: 10.34172/jhad.92349
- Bates, G. W., Elphinstone, B., & Whitehead, R. (2021). Self-compassion and emotional regulation as predictors of social anxiety. *Psychology and Psychotherapy*, 94(3), 426-442. <https://doi.org/10.1111/papt.12318>
- Bravata, D. M., Watts, S. A., Keefer, A. L., Madhusudhan, D. K., Taylor, K. T., Clark, D. M., Nelson, R. S., Cokley, K. O., & Hagg, H. K. (2019). Prevalence, Predictors, and Treatment of Impostor Syndrome: a Systematic Review. *Journal of general internal medicine*, 35(4), 1252-1275. <https://doi.org/10.1007/s11606-019-05364-1>
- Carmichael, N., Zayhowski, K., & Saenz Diaz, J. (2024). Deconstructing imposter syndrome among BIPOC genetic counseling students: Insights from a longitudinal qualitative study. *Journal of genetic counseling*, 10.1002/jgc4.2004. Advance online publication. <https://doi.org/10.1002/jgc4.2004>
- Chrisman, S. M., Pieper, W. A., Clance, P. R., Holland, C. L., & Glickauf-Hughes, C. (1995). Validation of the Clance Impostor Phenomenon Scale. *Journal of personality assessment*, 65(3), 456-467. https://doi.org/10.1207/s15327752jpa6503_6
- Clance, P. R. (1985). *The impostor phenomenon: when success makes you feel like a fake* (pp. 20-22). Toronto: Bantam.
- Dao, A., Pegg, S., Okland, S., Green, H., & Kujawa, A. (2024). Longitudinal associations between sense of belonging, imposter syndrome, and first-year college students' mental health. *Journal of American college health : J of ACH*, 1-10. Advance online publication. <https://doi.org/10.1080/07448481.2024.2355162>
- Hyun, J.K., Quinn, B.C., Madon, T., & Lustig, S. (2006). Graduate Student Mental Health: Needs Assessment and Utilization of Counseling Services. *Journal of College Student Development* 47(3), 247-266. <https://dx.doi.org/10.1353/csd.2006.0030>.
- Jaruwan Sakulku, J., & Alexander, J. (2011). The Impostor Phenomenon, *International Journal of Behavioral Science*, 6(1), 73-92.
- Kirchner, L., Kube, T., Berg, M., Eckert, A.-L., Straube, B., Endres, D., & Rief, W. (2025). Social expectations in depression. *Nature Reviews Psychology*, 4(1), 20-34. <https://doi.org/10.1038/s44159-024-00386-x>
- Kook, Y., Le, T. P., Robey, N., & Raposa, E. B. (2025). Mental health and resource utilization among underrepresented students transitioning to college in the United States. *Journal of Diversity in Higher Education*, 18(2), 162-173. <https://doi.org/10.1037/dhe0000496>
- Kroenke, K., Spitzer, R.L. and Williams, J.B.W. (2001). The PHQ-9. *Journal of General Internal Medicine*, 16, 606-613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Kube, T., Schwarting, R., Rozenkrantz, L., Glombiewski, J. A., & Rief, W. (2020). Distorted Cognitive Processes in Major Depression: A Predictive Processing Perspective. *Biological Psychiatry* (1969), 87(5), 388-398. <https://doi.org/10.1016/j.biopsych.2019.07.017>
- Leary, M.R., & Tate, E.B. (2010). Self-criticism and impostorism. In J.E. Maddux & J.P. Tangney (Eds.), *Social Psychological Foundations of Clinical Psychology* (pp. 26-27). New York: Guilford Press
- Löwe, Bernd; Decker, Oliver; Müller, Stefanie; Brähler, Elmar ; Schellberg, Dieter; Herzog, Wolfgang; Herzberg, Philipp Yorck. Validation and Standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the General Population. *Medical Care* 46(3), 266-274, March 2008. DOI: 10.1097/MLR.0b013e318160d093
- Mak, K. K. L., Kleitman, S., & Abbott, M. J. (2019). Impostor Phenomenon Measurement Scales: A Systematic Review. *Frontiers in psychology*, 10, 671. <https://doi.org/10.3389/fpsyg.2019.00671>
- PAR Staff (2020a). Administration and Scoring of the Generalized Anxiety Disorder-7 (GAD-7) [technical supplement]. PAR.
- PAR Staff (2020b). Administration and Scoring of the Patient Health Questionnaire-9 (PHQ-9) [technical supplement]. PAR.
- Pervez, A., Brady, L. L., Mullane, K., Lo, K. D., Bennett, A. A., & Nelson, T. A. (2021). An Empirical Investigation of Mental Illness, Impostor Syndrome, and Social Support in Management Doctoral Programs. *Journal of Management Education*, 45(1), 126-158. <https://doi.org/10.1177/1052562920953195>
- Posit team (2026). RStudio: Integrated Development Environment for R. *Posit Software, PBC*. Boston, MA. <http://www.posit.co/>
- Price, P. C., Holcomb, B., & Payne, M. B. (2024). Gender differences in impostor phenomenon: A meta-analytic review. *Current Research in Behavioral Sciences*, 7, Article 100155. <https://doi.org/10.1016/j.crbeha.2024.100155>
- R Core Team (2025). R: A Language and Environment for Statistical Computing. *R Foundation for Statistical Computing*. Vienna, Austria. <https://www.R-project.org>
- Salari, N., Hashemian, S. H., Hosseini-Far, A., Fallahi, A., Heidarian, P., Rasoulpoor, S., & Mohammadi, M. (2025). Global prevalence of impostor syndrome in health service providers: a systematic review and meta-analysis. *BMC Psychology*, 13(1), Article 571. <https://doi.org/10.1186/s40359-025-02898-4>
- Salicru, S. (2022). A New Model to Treat Impostor Syndrome and Associated Conditions. *American Journal of Applied Psychology*, 11(1), 17-27. <https://doi.org/10.11648/J.AJAP.20221101.13>
- Wang, B., Andrews, W., Bechtoldt, M. N., Rohrmann, S., & de Vries, R. E. (2022). Short Clance Impostor Phenomenon Scale (CIPS-10, CIPS-6) [Database record]. APA PsycTests. <https://doi.org/10.1037/t87441-000>
- Wang, B., Andrews, W., Bechtoldt, M. N., Rohrmann, S., & de Vries, R. E. (2024). Validation of the Short Clance Impostor Phenomenon Scale (CIPS-10). *European Journal of Psychological Assessment: Official Organ of*

- the European Association of Psychological Assessment*, 40(2), 158–168. <https://doi.org/10.1027/1015-5759/a000747>
- White, I.R. & Carlin, J.B. (2010). Bias and efficiency of multiple imputation compared with complete-case analysis for missing covariate values. *Statist. Med.*, 29, 2920-2931. <https://doi.org/10.1002/sim.3944>
- Wickham H, Averick M, Bryan J, Chang W, McGowan LD, François R, Golemund G, Hayes A, Henry L, Hester J, Kuhn M, Pedersen TL, Miller E, Bache SM, Müller K, Ooms J, Robinson D, Seidel DP, Spinu V, Takahashi K, Vaughan D, Wilke C, Woo K, Yutani H. (2019). Welcome to the tidyverse. *Journal of Open Source Software*, 4(43), 1686. doi:10.21105/joss.01686