

Psychometric Instrument Critique: Social Phobia and Anxiety Inventory

Nicholas Antonio Inclan

School of Behavioral Sciences, Liberty University

Author Note

Nicholas Antonio Inclan

I have no known conflict of interest to disclose.

Correspondence concerning this article should be addressed to Nicholas Antonio Inclan

Email: ninclan@liberty.edu

Abstract

Discussed herein is a critique of the Social Phobia and Anxiety Inventory (SPAI). A brief overview of the history of SPAI is provided, which includes identifying the authors and publishers of the SPAI, and a reason for developing the SPAI is given. Pricing for testing material is given, this includes the psychometric instrument, manual, and forms. A description of the test is outlined which includes the purpose for the psychometric instrument, administration type, item count, type of scoring technique, optimal reading level, qualification level, scoring procedures, and optimal score cut off. Subscales of the SPAI are identified and explained. Alternatives of the SPAI are mentioned, which include SPAI-18, SPAI-23, and SPAI-C (Social Phobia and Anxiety Inventory for Children). Additionally, the author provides a discussion of the technical components of the SPAI. Psychometric properties that are discussed include normative samples, evidence for reliability, and evidence for validity. Strengths and weaknesses of the SPAI are provided along with recommendations for usage, and future versions.

Keywords: Psychometric Instrument, Psychometric Integrity, Social Phobia, Anxiety, Agoraphobia,

Psychometric Instrument Critique: Social Phobia and Anxiety Inventory

Social Phobia (SP) is classified as an anxiety disorder which presents as fear, nervousness, and unfounded excessive self-conscious cognitions during social settings (Bunnell et al., 2013; Roberson-Nay et al., 2007). Individuals diagnosed with SP commonly experience fictitious cognitions that others are judging and being critical of them (Vente et al., 2014). In addition, SP plagues individuals with the fear of behaving unbecomingly and embarrassing themselves in social situations (Vente et al., 2014; Osman et al., 1995; Bunnell et al., 2013). SP diagnostics criteria was first introduced by the American Psychiatric Association (APA) in their third version of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III) in 1987. At the time, SP was considered the least investigated and least understood anxiety disorder (Turner et al., 1989). Provided that there was no consensus of diagnostic criteria for SP prior to the DSM-III, no psychometric instruments were available to evaluate this disorder (Turner et al., 1989). This led Turner et al. (1989) to design a new psychometric instrument to empirically evaluate SP according to the diagnostic criteria within the DSM-III.

General Information

The psychometric instrument of interest is Social Phobia and Anxiety Inventory (SPAI; Turner et al., 1989) which was first published in 1989 (Osman et al., 1995). Within the domain of psychometric instruments, the Social Phobia and Anxiety Inventory is commonly known as the SPAI (eProvide, 2020; Multiple Health Systems: Beyond Assessments [MHS], 2020; Pearson, 2020, Turner et al., 1989). Though there are several alternative versions of the SPAI, the original authors of the SPAI are Samuel M. Turner, Ph.D., Deborah C. Beidel, Ph.D., and Constance V. Dancu, Ph.D. (Pearson, 2020; MHS, 2020;). It is important to note that an article published in 1989 by Turner et al., included Melinda A. Stanley as a contributing author of the

SPAI. An alternative publisher, eProvide (2020), also includes Melinda A. Stanley as an author of the SPAI.

In 1987, the APA published the third version of the DSM (Turner et al., 1989). Though there were several psychometric instruments developed and used by clinicians measuring social anxiety, the majority were developed prior to the publication of the DSM-III (Turner et al., 1989), making the existing psychometric instruments inadequate for measuring for social phobia. Acknowledging this gap, Turner et al. (1989) set out to develop a psychometric instrument to measure social phobia, social anxiety, and fear (Osman, et al., 1995; Turner et al., 1989; Rodebaugh et al., 2000; Panayiotou et al., 2017; Beidel et al., 1989a; Beidel et al., 1989b; Klieger & Johnson, 2007; Baños et al., 2007). The SPAI is best used for individuals 14 and older (MHS, 2020), is considered an objective psychometric instrument, and is classified as a personality inventory given its capabilities of measuring psychological disorders (Sheperis et al., 2020; Turner et al., 1989; Rodebaugh et al., 2000; Panayiotou et al., 2017). Though the SPAI was originally published in 1989, several researchers have tested the SPAI for evidence of validity and reliability and have consistently demonstrated it to have sound psychometric integrity (Osman et al., 1995; Beidel et al., 1989a; Beidel et al., 1989b; Rodebaugh et al., 2000; Turner et al., 1989; Bunnell et al., 2013; Roberson-Nay et al., 2007); .

The cost for the SPAI varies between publishers. The price ranges for the complete SPAI kit are from \$133 to \$164 (Pearson, 2020; MHS, 2020). SPAI forms from MHS (2020) are approximately \$67.00, while SPAI forms from Pearson (2020) are approximately \$94. The SPAI manual's cost also varies between publishers. Pearson (2020) lists the SPAI manual for approximately \$127, while MHS (2020) list the SPAI manual for approximately \$90.00. eProvide (2020) does offer the SPAI, though their offer is provided as a subscription-based

membership instead of a one-time purchasing option. A 1-year subscription to eProvide (2020) is approximately \$400.00 for a student account. The SPAI was only offered as printed material, no online availability was offered.

As briefly mentioned above, there are several alternative versions of the SPAI. Those alternatives include Social Phobia and Anxiety Inventory for Children (SPAI-C; Pearson, 2020; MHS, 2020), published in 1995 by Beidel et al., the SPAI-23 published in 2007 by Roberson-Nay et al., and the SPAI-18 by Vente et al. published in 2014. The SPAI-C was developed out of the necessity for a sound psychometric instrument to measure the specifics of social phobia in children which did not exist prior to the SPAI-C (Beidel et al., 1995). The SPAI-23 was developed for several reasons including, but not limited to, providing clinicians with a psychometric instrument that takes less time to administer by reducing the overall inventory count to 23 items (Roberson-Nay et al., 2007; Vente et al., 2014). The SPAI-18 was developed with the goal of producing a short, sound psychometric instrument that may be utilized for discerning those who are on the social anxiety continuum (Vente et al., 2014).

Test Description

The SPAI is a self-report psychometric instrument in which the construct of interest is social phobia (MHS, 2020; Pearson et al., 2020; Turner et al., 1989; Beidel et al., 1989a; Beidel et al., 1989b). More specifically, the SPAI purports to assess social phobic cognitions and somatic symptoms as well as measure escape and avoidance behaviors related to social anxiety (Beidel et al., 1989a; Rodebaugh et al., 2000; Bunnell et al., 2013). It was originally designed upon the Behavioral-analytic model by Goldfried and D'Zurilla (1969) to provide clinicians with a psychometric instrument to measure social phobia based on the DSM-III (Turner et al., 1989). Given the excellent psychometric properties in both clinical and non-clinical samples (Roberson-

Nay et al., 2007; Beidel et al., 1995; Vente et al., 2014; Baños et al., 2007), the SPAI can be utilized for a wide range of individuals, ages 14 and older, with a suggested 6th grade reading level (MHS, 2020). Though the SPAI is a self-report psychometric instrument, a B qualification level is recommended for those interested in administering the test (MHS, 2020).

There are two subscales to the SPAI: social phobia (SP), consisting of 32-items, and agoraphobia (AG), consisting of 13-items, for a total of 45 items (Panayiotou et al., 2017; Rodebaugh et al., 2000; Baños et al., 2007; MHS, 2020; Bunnell et al., 2013). Items for both subscales are rated on a 7-point Likert scale: 1 (never), 2 (very infrequent), 3 (infrequent), 4 (sometimes), 5 (frequent), 6 (very frequent), and 7 (always) (Turner et al., 1989; Bunnell et al., 2013; Roberson-Nay et al., 2007; Vente et al., 2014). The SPAI utilizes a hand-scored format (MHS, 2020). Online scoring capabilities are not available at this time.

Each subscale is scored separately. The SP subscale score is obtained by summing each of the 32-items and subtracting 32 from the total score (Turner et al., 1989). Subtracting 32 allows for a minimum SP subscale score of 0 (Turner et al., 1989). In total, the maximum score for the SP subscale is 192 (Turner et al., 1989). Scoring the AG subscale is similar. The 13-items are computed by adding the scores and subtracting 13 (total number of items for the AG subscale) (Turner et al., 1989). The same logic applies for subtracting the total number of items in the AG subscale, to allow for a minimum score of 0 (Turner et al., 1989). In total, the maximum score for the AG subscale is 78 (Turner et al., 1989). Though there are separate scoring procedures for the subscales, there is an overall total SPAI score. The scoring procedure includes computing the differences between the AG subscale and SP subscale, which aids in further differentiating between SP and AG (Turner et al., 1989). Though the SPAI is able to differentiate between other psychopathologies depending on the cutoff score, Turner et al. (1989)

recommend a score of 80 to minimize false positives and negatives.

Technical Evaluation

During the initial development of the SPAI, researchers sent the psychometric instrument to 114 psychologists and psychiatrists within Canada and the United States who specialized in either treating anxiety or in the assessment of anxiety (Turner et al., 1989). The researchers utilized three unique samples for the initial correlation analysis among the sample groups and to identify items that overlapped (Turner et al., 1989). The first sample included 34 college students who were identified as being socially anxious based on individual diagnostic interviews and anxiety-related self-report psychometric inventories (Turner et al., 1989). The second sample consisted of 52 college students identified as non-socially anxious after completing the same battery of assessments as the first sample (Turner et al., 1989). The third sample consisted of 21 clinical patients at the Western Psychiatric Institute and Clinic's (WPIC) Anxiety Disorders Clinic, who met DSM-III diagnostic criteria for social phobia (Turner et al., 1989). Upon comparing the scores between the socially anxious and non-socially anxious students, using Hotelling's T^2 procedure, researchers identified a significant difference between the two groups, $F(175, 204) = 2.43, p < .05$ (Turner, et al., 1989). This analysis provided researchers the opportunity to remove items that overlapped between the groups (Turner et al., 1989). After the final analysis, the SPAI was published with 32-items for SP and 13-items for AG (Turner et al., 1989).

In addition to the initial analysis, researchers conducted additional tests for evidence of validity and reliability. A 308-student pool from an introductory psychology course was given the same battery of psychometric assessments as the initial analysis groups (Turner et al., 1989). Out of the 308 psychology students, 182 were selected (Turner et al., 1989). From the 182

students, 59 were identified as socially anxious while 123 were identified as non-socially anxious (Turner et al., 1989). The 59 students were further evaluated using a comparable anxiety inventory (Turner et al., 1989). Out of the 59 students, 51 were classified as meeting the criteria for social phobia according to the DSM-III (Turner et al., 1989).

Upon statistical analysis using the Pearson product correlation, the test-retest reliability score for the whole sample was $r(173) = .86, p < .0001$ (Turner et al., 1989). Researchers furthered their analysis by splitting the sample by gender. The coefficients for male and female were $r(56) = .87, p < .0001$ (male) and $r(117) = .85, p < .0001$ (female) (Turner et al., 1986). Cronbach's alpha was used for internal consistency for both subscales SP (.96) and AG (.85) (Turner et al., 1986). Additional analysis revealed socially anxious participants scoring significantly higher on the SPAI when compared to non-socially anxious participants ($f(183) = 12.09, p < .0005$ ($M_s = 72.2$ and 32.7)) (Turner et al., 1989). When separated by gender, a significant difference was revealed between non-socially anxious males and socially anxious males, $t(57) = 5.74, p < .0005$ ($M_s = 77.4$ and 38.9), and between non-socially anxious females and socially anxious females, $t(124) = 11.65, p < .0005$ ($M_s = 70.6$ and 29.4) (Turner et al., 1989).

Evidence for validity was demonstrated as researchers ran statistical procedures on a clinical sample consisting of 21 patients diagnosed with social phobia, 45 patients diagnosed with panic disorder or panic disorder with agoraphobia, and 18 patients diagnosed with obsessive-compulsive disorder (Turner et al., 1989). The participants were patients at the WPIC Anxiety Disorders Clinic and had taken the same battery of assessments as the other samples (Turner et al., 1989). Upon utilizing the Scheffe procedure, running a post hoc analysis revealed that the 21 social phobia patients scored significantly higher than the other patients: social phobia

patients ($M = 94.0$), panic disorder with or without agoraphobia patients ($M = 61.8$), and obsessive-compulsive patients ($M = 57.8$) (Turner et al., 1989). Further discriminant functions revealed ~76% of social phobia patients were properly classified, exceeding chance (24%, $p < .05$), ~75.6% of agoraphobia patients were properly classified, exceeding chance (52%, $p < .05$), and 38.9% of obsessive-compulsive patients were properly classified, exceeding chance (21%, $p < 0.5$) (Turner et al., 1989).

Given that the SPAI was first published by Turner et al. in 1989, this has allowed the SPAI to undergo extensive psychometric validation while using both clinical and non-clinical samples (Bennell et al., 2013; Panayiotou et al., 2017; Rodebaugh et al., 2000; Roberson-Nay et al., 2007; Vente et al., 2014; Osman et al., 1995). Numerous psychometric evaluations have indicated that the SPAI has shown exceptional psychometric properties making it one of the most widely used psychometric instruments measuring social phobia, anxiety, and behaviors related to anxiety avoidance (Panayiotou et al., 2017; Rodebaugh et al., 2000; Roberson-Nay et al., 2007; Vente et al., 2014; Osman et al., 1995). The results provided by Turner et al. (1989) and subsequent research (Panayiotou et al., 2017; Rodebaugh et al., 2000; Roberson-Nay et al., 2007; Vente et al., 2014; Osman et al., 1995) supporting the results obtained by Turner et al., (1989) indicate that the SPAI is an adequate psychometric instrument for both non-clinical and clinical samples, ages 14 and older.

Practical Evaluation

Noticeably, the leading attractiveness of the SPAI is the excellent psychometric properties that have been evaluated over decades (Turner et al., 1989; Panayiotou et al., 2017; Rodebaugh et al., 2000; Roberson-Nay et al., 2007; Vente et al., 2014; Osman et al., 1995; Beidel et al., 1989a; Beidel et al., 1989b). This characteristic will provide practitioners with

confidence in the results produced by the SPAI. Another attractive characteristic is the 6th grade reading level (MHS, 2020; Pearson, 2020), which is most likely to be applicable to those that are within the preferred age demographic (14 years and older) (MHS, 2020; Pearson, 2020). The minor time of investment for completing the SPAI could be considered another attractive quality. The SPAI has only 45 items to complete which has been estimated to take up to 30 minutes, a reasonably small investment of time (MHS, 2020; Pearson, 2020).

Furthermore, the SPAI has a wide range of practical uses. It is ideal for multiple settings including, but not limited to, psychiatric outpatient clinics, employment settings, correctional environments, schools, and residential treatment facilities (MHS, 2020; Pearson, 2020). Easy of scoring could be a reason why the SPAI is applicable across several settings. The SPAI has a clear suggested cut off score of 80 (Turner et al., 2020) which allows for clinicians to easily interpret the results. In addition to the unambiguous suggested cut off score, the MHS QuikScore Forms for calculating the SPAI results are designed to make calculating scores easy and efficient (MHS, 2020; Pearson, 2020). Given these practical characteristics, the SPAI is a psychometric instrument worth consideration when the need for evaluating individuals for social phobia is present.

Summary Evaluation and Critique

The SPAI, which is considered a widely used psychometric instrument for measuring social phobia and anxiety avoidance behaviors, has many strengths (Rodebaugh et al., 2000; Panayiotou et al., 2017). One such strength is the sound psychometric integrity proved through decades of psychometric evaluations (Turner et al., 1989; Panayiotou et al., 2017; Rodebaugh et al., 2000; Roberson-Nay et al., 2007; Vente et al., 2014; Osman et al., 1995; Beidel et al., 1989a; Beidel et al., 1989b). Another strength includes the ability for the SPAI to be utilized on both

clinical and non-clinical participants (Turner et al., 1989; Osman et al., 1995; Beidel et al., 1989a). Related to weaknesses, although a minor one, the hand scoring methodology of the SPAI (MHS, 2020; Pearson, 2020) increases its susceptibility for human error. According to MHS (2020), however, the MHS Quikscore Forms are designed for easily calculable results.

The SPAI is recommended for evaluating individuals for psychopathologic symptoms of social phobia and anxiety avoidance behaviors and cognitions in clinical and non-clinical individuals ages 14 and older (MHS, 2020; Pearson, 2020). Although the limited population of 14 and older could be perceived as a weakness, there are additional child versions of the SPAI available (Beidel et al., 1995; Gauer et al., 2005). No revisions or updates are recommended as the SPAI has several alternative versions for diverse populations (Beidel et al., 1995; Baños et al., 2007; Kuusikko et al., 2009; Scaini et al., 2012; Gauer et al., 2005), including lite versions (Roberson-Nay et al., 2007; Vente et al., 2014),

Conclusion

The SPAI has undergone numerous psychometric evaluations throughout the last decade which have consistently revealed sufficient psychometric integrity across non-clinical and clinical participants (Turner et al., 1989; Panayiotou et al., 2017; Rodebaugh et al., 2000; Roberson-Nay et al., 2007; Vente et al., 2014; Osman et al., 1995; Beidel et al., 1989a; Beidel et al., 1989b). Provided the consistent psychometric integrity (Turner et al., 1989; Panayiotou et al., 2017; Rodebaugh et al., 2000; Roberson-Nay et al., 2007; Vente et al., 2014; Osman et al., 1995; Beidel et al., 1989a; Beidel et al., 1989b), the SPAI is an optimal psychometric instrument for evaluating individuals for SP throughout numerous settings (MHS, 2020). Those considering a psychometric instrument for evaluating individuals for SP should highly consider the SPAI.

References

- American Psychiatric Association. (1987). *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., revised). American Psychological Association.
- Baños, R. M., Botella, C., Quero, S., & Medina, P. (2007). The Social Phobia and Anxiety Inventory: Psychometric properties in a Spanish sample. *Psychological Reports, 100*(2), 441–450. <https://doi.org/10.2466/pr0.100.2.441-450>
- Beidel, D. C., Borden, J. W., Turner S. M., & Jacob R. G. (1989a). The Social Phobia and Anxiety Inventory: Concurrent validity with a clinic sample. *Behaviour Research and Therapy, 27*(5), 573-579. [https://doi.org/10.1016/0005-7967\(89\)90093-4](https://doi.org/10.1016/0005-7967(89)90093-4)
- Beidel, D. C., Turner, S. M., Stanley, M. A., & Dancu, C. V. (1989b). The social phobia and anxiety inventory: Concurrent and external validity. *Behavior Therapy, 20*(3), 417-427. [https://doi.org/10.1016/S0005-7894\(89\)80060-7](https://doi.org/10.1016/S0005-7894(89)80060-7)
- Beidel, D. C., Turner, S. M., & Morris, T. L. (1995). A new inventory to assess childhood social anxiety and phobia: The Social Phobia and Anxiety Inventory for children. *Psychological Assessment, 7*(1), 73–79. <https://doi.org/10.1037/1040-3590.7.1.73>
- Bunnell, B. E., Joseph, D. L., & Beidel, D. C. (2012). Measurement invariance of the Social Phobia and Anxiety Inventory. *Journal of Anxiety Disorders, 27*(1), 84-91. <https://doi.org/10.1016/j.janxdis.2012.09.001>
- eProvide. (2020). *Social Phobia and Anxiety Inventory (SPAI)*. <https://eprovide.mapitrust.org/instruments/social-phobia-and-anxiety-inventory>
- Gauer, G.J.C., Picon, P., Vasconcellos, S.J.L., Turner, S.M., & Beidel, D.C.. (2005). Validation of the Social Phobia and Anxiety Inventory for children (SPAI-C) in a sample of

- Brazilian children. *Brazilian Journal of Medical and Biological Research*, 38(5), 795-800. <https://doi-org.ezproxy.liberty.edu/10.1590/S0100-879X2005000500019>
- Goldfried, M. R., & D'Zurilla, T. J. (1969). A behavioral-analytic model for assessing competence. *Current Topics in Clinical and Community Psychology*, 1, 151-196. <https://doi.org/10.1016/B978-1-4831-9972-6.50009-3>
- Klieger, D. M., & Johnson, H. K. (2007). The Social Phobia and Anxiety Inventory: Problem of underlying medical conditions. *Psychological Reports*, 101(3), 697–706. <https://doi.org/10.2466/pr0.101.3.697-706>
- Kuusikko, S., Pollock-Wurman, R., Ebeling, H., Hurtig, T., Joskitt, L., Mattila, M.-L., Jussila, K., & Moilanen, I. (2009). Psychometric evaluation of social phobia and anxiety inventory for children (SPAI-C) and social anxiety scale for children-revised (SASC-R). *European Child & Adolescent Psychiatry*, 18(2), 116–124. <https://doi-org.ezproxy.liberty.edu/10.1007/s00787-008-0712-x>
- Multiple Health Systems: Beyond Assessments. (2020). *SPAI: Social Phobia and Anxiety Inventory*. <https://storefront.mhs.com/collections/spai>
- Osman, A., Barrios, F. X., Aukes, D., & Osman, J. R. (1995). Psychometric evaluation of the social phobia and anxiety inventory in college students. *Journal of Clinical Psychology*, 51(2), 235–243. [https://doi-org.ezproxy.liberty.edu/10.1002/1097-4679\(199503\)51:2<235::AID-JCLP2270510213>3.0.CO;2-R](https://doi-org.ezproxy.liberty.edu/10.1002/1097-4679(199503)51:2<235::AID-JCLP2270510213>3.0.CO;2-R)
- Panayiotou, G., Michaelides, M. P., Theodorou, M., & Neophytou, K. (2017). Identifying sub-categories of social fears using an alternative factor analytic structure of the Social Phobia and Anxiety Inventory. *Psychiatry Research*, 251, 304-311. <https://doi.org/10.1016/j.psychres.2017.02.040>

Pearson. (2020). *Clinical Assessment Canada*. Social Phobia and Anxiety Inventory (SPAI).

<https://www.pearsonclinical.ca/en/products/product-master/item-124.html>

Roberson-Nay, R., Strong, D. R., Nay, W. T., Beidel, D. C., & Turner, S. M. (2007).

Development of an Abbreviated Social Phobia and Anxiety Inventory (SPAI) Using Item Response Theory: The SPAI-23. *Psychological Assessment*, *19*(1), 133–145.

Rodebaugh, T. L., Chambless, D. L., Terrill, D. R., Floyd, M., & Uhde, T. (2000). Convergent,

discriminant, and criterion-related validity of the social phobia and anxiety

inventory. *Depression & Anxiety*, *11*(1), 10–14. <https://doi->

[org.ezproxy.liberty.edu/10.1002/\(SICI\)1520-6394\(2000\)11:1<10::AID-DA2>3.0.CO;2-3](https://doi.org/10.1002/(SICI)1520-6394(2000)11:1<10::AID-DA2>3.0.CO;2-3)

Scaini, S., Battaglia, M., Beidel, D. C., & Ogliari, A. (2012). A meta-analysis of the cross-

cultural psychometric properties of the Social Phobia and Anxiety Inventory for Children

(SPAI-C). *Journal of Anxiety Disorders*, *26*(1), 182-188.

<https://doi.org/10.1016/j.janxdis.2011.11.002>

Sheperis C. J., Drummond R. J., & Jones K. D. (2020). *Assessment Procedures for Counselors*

and Helping Professionals. Pearson Education

Turner, S. M., Beidel, D. C., Dancu, C. V., & Stanley, M. A. (1989). An Empirically Derived

Inventory to Measure Social Fears and Anxiety: The Social Phobia and Anxiety

Inventory. *A Journal of Consulting and Clinical Psychology*, *1*(1), 35-40

Vente W., Majdandžić, M., Voncken, M. J., Beidel, D. C., Bögelsa, S. M. (2014). The SPAI-18,

a brief version of the Social Phobia and Anxiety Inventory: Reliability and validity in

clinically referred and non-referred samples. *Journal of Anxiety Disorders*, *28*(2), 140-

147. <https://doi.org/10.1016/j.janxdis.2013.05.003>