Overview: Social Phobia Inventory (SPIN)© and MINI-SPIN©

Citation as: Davidson JRT. Manual for Social Phobia Inventory (SPIN) and Mini-SPIN. Unpublished document. January 2021. The two scales are not in the public domain and further information about access and use can be obtained from the author at mail@cd-risc.com.

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Introduction

The Social Phobia Inventory (SPIN) was developed to measure the severity of social phobia (SP), which later became more often referred to as social anxiety disorder (SAD). It is a 17-item self-rating which asks respondents to indicate how much they have been bothered by 17 symptoms of SA during the preceding week. These symptoms cover fear, avoidance and physical signs of social anxiety, which are three important dimensions of SA. The
inclusion of four autonomic symptoms (trembling, blushing, heart palpitations, sweating) distinguishes the SPIN from most other SA rating scales and may give the scale additional practical utility as a symptom measure in primary care, where SP may be more likely to present with physical symptoms that are bothersome in public.

The three-item Mini-SPIN was developed primarily as a brief screener for SA or SAD, but it can also serve as a severity measure.

**Directions for Scale Administration and Scoring**

The SPIN and Mini-SPIN are usually self-administered but can be read out to subjects if necessary. The subject is directed to respond to each question with reference to how much they have been bothered (i.e., distressed) by that particular symptom in the previous week. Scoring is based on summing the total of all items, each of which is scored from 0-4. The full range is therefore from 0 to 68, with higher scores reflecting greater social anxiety. The three subscales of the SPIN – fear, avoidance, and physiological symptoms – may be scored separately if there is special interest in those dimensions. We do not recommend other methods of scoring such as the subscales defined by factor analysis, nor the adoption of a 1-5 scoring range for each item, as has been reported in some publications. We also do not support use of “partial” scales, such as items which have been determined by factor analysis or other statistical technique to produce a seemingly “purer” version of the scale.

The Mini-SPIN is scored from 0-12, with similar instructions to those of the SPIN.

**SPIN**

The total score for the SPIN ranges from 0 to 68. Lower scores correspond to less distress and higher scores correspond to greater distress from symptoms of social phobia (or social anxiety disorder (SAD)).

Each item (or symptom) can be scored as 0, 1, 2, 3, or 4. A score of zero indicates that the respondent is not bothered (or distressed) at all, a score of
1 suggests that the symptom is a little bothersome, a score of 2 = somewhat, 3 = very much and 4 = extremely. It is important to keep in mind that the SPIN rates the extent of distress and not the degree of disability or interference with function, nor does it measure frequency of symptoms.

The total SPIN score is generally recommended as the most useful, but the three subscales provide further information concerning the dimensions of fear, avoidance and physical symptoms. The items corresponding to these scales are as follows: Fear - 1, 3, 5, 10, 14, 15 (Range 0-24); Avoidance - 4, 6, 8, 9, 11, 12, 16 (Range 0-28); Physical symptoms: 2, 7, 13, 17 (Range 0-16).

A total score of 0-10 broadly corresponds to absence of symptoms. A score between 11 and 20 suggests borderline or very mild social anxiety. Scores between 21 and 30 correspond to mild social anxiety. Scores between 31 and 40 correspond to moderate social anxiety. Scores of 41-50 suggest severe social anxiety, and scores of 51 and above indicate very severe social anxiety.

The SPIN measures severity of symptoms, but it does not alone indicate a diagnosis of social anxiety disorder (social phobia), although the higher the score, the greater the chance of the diagnosis. Only a qualified professional can make this diagnosis. The threshold score at which the SPIN best discriminates between those with, and those without, SAD has been found to vary according to the nature of the sample, e.g. general population or medical patients, adolescents versus adults and in different countries. In a US adult population, the threshold of 19 gave the best separation for determining the likelihood whether a person had SAD in a population which consisted of healthy subjects, those with SAD and psychiatric patients with diagnoses other than SAD. By contrast, in adolescents studied in Finland, who either had SAD or other psychiatric problems, the threshold of 24 best separated those with SAD from other groups. But a score of 19 was a sensitive cutoff point in distinguishing those with subclinical (very mild) or moderate SAD as a combined group from others. Therefore, no single threshold applies across the board – it depends on the population and who the SAD group is being compared to. But in general, it is fair to assume that a score of 25 or above might well suggest the presence of SAD which, if it interferes with everyday life, might warrant professional consultation. The issue of optimal cutoff score is discussed further below.
Any improvement from treatment can be detected by the SPIN. One study showed that a reduction of 40-55% from baseline (i.e. the score before treatment) is associated with much overall improvement, while a reduction of 55% and greater is associated with very much improvement. The SPIN is also useful in detecting differences between treatments, such as the greater effect found from an active intervention compared to a control like placebo or waiting list.

Access to the SPIN, Mini-SPIN and Terms of Use

The SPIN is protected by copyright and may only be used with permission from the copyright holder, Jonathan Davidson. The SPIN occasionally appears on the internet. Unless it states clearly that the scale is copyright and may only be used with permission, such postings of the scale are unauthorized and in violation of copyright. Permission to use the scale can be obtained through inquiry to mail@cd-risc.com. Use fees are determined by type of use, size of sample/number of administrations and purpose of use.

Users should also be aware that some presentations of the scale differ in potentially important ways from the official version and may not be accurate representations of the SPIN.

The Mini-SPIN is protected by copyright and can only be used with permission of the copyright holder.

Is There More Than One SPIN?

The SPIN as described in this manual should not be confused with another measure which is also called the Social Phobia Inventory, abbreviated by its authors as SoPhI (Moore KA and Gee DL. The reliability, validity, discriminant and predictive properties of the Social Phobia Inventory (SoPhI). Anxiety, Stress & Coping: An International Journal. 2003. DOI: 10.1080/106158002100057068). The SoPhI is a 21-item measure and includes certain items that map onto DSM-IV criteria for SAD. An 8-item Swedish translation of the SPIN has also been described, referred to as the SPIN-8. This scale is unauthorized and would violate copyright. Likewise, Cho et al (2018) have described a factor-analysis derived SPIN-10, which is also not for use, as it would be in violation of copyright.

Is There More Than One Mini-SPIN?
A report has been published in which the authors subjected the SPIN to an item-theory related non-parametric kernel smoothing method (Aderka et al, 2013). They derived a different set of three items, which were found to demonstrate greater internal consistency and convergent validity compared to the Mini-SPIN. The authors referred to this scale as the Mini-SPIN-R. Although the scale has not formally been prepared for use, copyright of the instrument is claimed as a derivative of the SPIN.

**Reading Ease and Reading Grade Level**

Flesch Reading Ease calculations indicate a score of 73 for the SPIN, and the Flesch-Kincaid Grade score indicates the scale should be understandable to those with at least a 5th grade level.

A review follows below of the psychometric data on validity, reliability and factor structure, obtained in the various studies worldwide.

**Demographic Features of the SPIN and Mini-SPIN**

**SPIN**

In the initial report describing the SPIN (Connor et al, 2000), the mean scores were given for four groups: social phobia (SP), SP, psychiatric patients (PP) with diagnoses other than SP and healthy controls (HC). Mean scores for these groups were 41.1 (12.1) for the combined SP groups versus 12.1 (9.3) for the combined controls.

Some (Sanches et al, 2014; Wei et al, 2012), but not all (Ranta et al, 2007a), have found that adolescent girls had higher scores than boys. Ethnicity was studied by De Jager et al (2014), who adapted the scale to include branches in the questions to accommodate ethnicity. SPIN scores were significantly higher when subjects were responding to interactions with persons of another ethnicity, suggesting possible ethnocultural factors may influence SP symptom severity.

**Mini-SPIN**
Gender effects are inconsistent. In a study by Osorio et al (2010) of Brazilian students, women scored higher than men in an all-comers sample, but in a clinical population, there were no differences. Women also scored higher than men in a German study (Wiltink et al, 2017). Women scored higher than men in a sample of Nigerian medical students (Chinawa et al, 2018). No differences were found in Spanish schoolchildren (Garcia-Lopez et al, 2015) or an Australian sample (Seeley-Wait et al, 2009).

Older subjects had significantly higher anxiety in one study (Newby et al, 2014) but not in two others (Seeley-Wait et al, 2009; Wiltink et al, 2017), although in the German sample, women with a diagnosis of SAD scored higher than men.

**Mean Scores in Different Populations**

**SPIN**

*Social Phobia Populations:* In those with SP/SAD, scores range from 26 to 49 (see Table 1). The lowest score was obtained in a community sample of adolescents with SP (Johnson et al, 2006), while higher scores were obtained in adults seeking treatment, in clinical trials of pharmacotherapy or other mechanistic studies of SP/SAD

*Non-Social Phobia controls (NSP):* SPIN scores range from 8 to 22. SPIN scores of control groups are generally lower in healthy volunteers than in those with other psychiatric disorders. In adolescents with GAD, Johnson et al (2006) noted the mean score to be 19.3, and in depressed patients, Sosic (2008) reported a score of 20.9.

Table 1. Mean SPIN Scores in Various Population Samples

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample size</th>
<th>Sample Characteristics</th>
<th>Mean SPIN</th>
<th>Location</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connor et al (2000)</td>
<td>353</td>
<td>Psych OP, Healthy volunteers</td>
<td>41.1 SP</td>
<td>USA</td>
<td>Social phobia, other psychiatric disorders and healthy volunteers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12.1 HV</td>
<td>USA</td>
<td></td>
</tr>
<tr>
<td>Johnson et al (2006)</td>
<td>174</td>
<td>Local school samples in community</td>
<td>SP 26.6 GAD 19.3 No 12.8</td>
<td>USA</td>
<td>Adolescents with SP, GAD or no psychiatric disorder</td>
</tr>
<tr>
<td>Study (Year)</td>
<td>Sample Size</td>
<td>Composition</td>
<td>Mean Age</td>
<td>Country</td>
<td>Findings</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>Tang et al. (2012)</td>
<td>20</td>
<td>Healthy male volunteers</td>
<td>19.0</td>
<td>USA</td>
<td>Imaging study to assess brain correlates of social decision making.</td>
</tr>
<tr>
<td>Campbell-Sills et al. (2015)</td>
<td>397</td>
<td>Primary care patients with SP/SAD</td>
<td>38.4</td>
<td>USA</td>
<td>Part of large primary care trial of CALM treatment for anxiety. Factor analysis performed on SPIN.</td>
</tr>
<tr>
<td>Shaughnessy et al. (2017)</td>
<td>374</td>
<td>Mechanical Turk Online Users</td>
<td>20.9</td>
<td>USA</td>
<td>Social anxiety did not correlate with online privacy concerns.</td>
</tr>
<tr>
<td>Ranta et al. (2007a)</td>
<td>752</td>
<td>Adolescents: general population</td>
<td>11.3</td>
<td>Finland</td>
<td>Scores similar in boys and girls.</td>
</tr>
<tr>
<td>Ranta et al. (2007b)</td>
<td>5252</td>
<td>Community school sample ages 12-16</td>
<td>12.2</td>
<td>Finland</td>
<td>Fear = 3.9, Avoidance = 6.1, Physiological = 2.2.</td>
</tr>
<tr>
<td>Erliksson (2020)</td>
<td>333</td>
<td>Volunteers</td>
<td>17.0</td>
<td>Sweden</td>
<td>Validation against new Swedish SA scale.</td>
</tr>
<tr>
<td>Sanches et al. (2014)</td>
<td>2600</td>
<td>University students: study of joint hypermobility and anxiety</td>
<td>16.3</td>
<td>Brazil</td>
<td>Women &gt; Men on SPIN. Joint hypermobility scores correlated with SPIN in women.</td>
</tr>
<tr>
<td>Silva-Rocha et al. (2019)</td>
<td>238</td>
<td>Athletes</td>
<td>10.7</td>
<td>Brazil</td>
<td>Prevalence of SAD = 14% using cutoff of 19.</td>
</tr>
<tr>
<td>Gutz et al. (2015)</td>
<td>25 SAD 25 BPD 25 HC</td>
<td>Social anxiety Borderline personality disorder Healthy controls</td>
<td>32.6 34.4 13.8</td>
<td>Germany</td>
<td></td>
</tr>
<tr>
<td>Weinbrecht et al. (2018)</td>
<td>26 29 28</td>
<td>SAD BPD HC</td>
<td>41.0 35.9 12.8</td>
<td>Germany</td>
<td></td>
</tr>
<tr>
<td>Rambau et al. (2018)</td>
<td>302 108</td>
<td>SAD without AUD SAD with AUD</td>
<td>42.9 41.2</td>
<td>Germany</td>
<td>No differences in score between those with and without alcohol use disorder.</td>
</tr>
<tr>
<td>Wieser et al. (2018)</td>
<td>45</td>
<td>High and low social anxiety</td>
<td>20.3 10.1</td>
<td>Germany</td>
<td>Female undergraduate students at University of Würzburg.</td>
</tr>
<tr>
<td>Bublatzky (2020)</td>
<td>30</td>
<td>Healthy university student volunteers</td>
<td>9.5</td>
<td>Germany</td>
<td>Magneto-EEG study.</td>
</tr>
<tr>
<td>Tsai et al. (2009)</td>
<td>3393</td>
<td>Junior HS sample</td>
<td>14.2</td>
<td>China (Taiwan)</td>
<td></td>
</tr>
<tr>
<td>Tavoli (2009)</td>
<td>235</td>
<td>University student volunteers and university psychology clinic patients with anxiety</td>
<td>SP= 30.9, NSP = 22.4</td>
<td>Iran</td>
<td></td>
</tr>
<tr>
<td>Adler et al. (2017)</td>
<td>12</td>
<td>SAD patients in treatment</td>
<td>41.7</td>
<td>Israel</td>
<td>See Table 3 for change scores.</td>
</tr>
</tbody>
</table>
MINI-SPIN

Beutel and colleagues (2016) studied 3525 German immigrants and found the prevalence of SAD, using a cut off score of 6 or above to be 4.6% and 3.5% in first- and second-generation immigrants and 3.8% in a general community sample of 11,418.

Wiltink et al (2017) evaluated the scale in clinical and community samples in Germany. They found a mean score of 5.22 and 1.20 respectively, with sensitivity and specificity analyses suggesting the optimum cutoff of 6 or higher to detect a probable diagnosis of SAD.

Using the recommended cut-off score, Chinawa et al (2018) reported a 17.1% prevalence of SAD in Nigerian medical students.

In the Gutenberg Health Study (GHS), the Mini-SPIN at a cut point of 6 or greater gave a prevalence rate of 7.1% in a large sample (n=13,918) (Tibulos
et al, 2018). Prevalence was highest in first generation migrants (9.3%), compared to second generation (6.4%) and native Germans (7.1%).

A study of childhood cancer survivors aged 24-49 showed a higher prevalence using the cutoff score of 6 in 951 cancer survivors (9%) compared to the German population (n=1130) in that age group (5%) (Burghardt et al, 2018).

Table 2. Cut Point Scores to Distinguish Social Phobia (SP) from Non-Social Phobia (NSP), Psychiatric Controls, Healthy Controls (HC) or Subthreshold SP (SSP)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample groups</th>
<th>Number</th>
<th>Cut Off Score</th>
<th>Location</th>
<th>Diagnostic group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connor et al (2000)</td>
<td>SP Non-psych control NSP psych control</td>
<td>353</td>
<td>SP vs All Controls = 19 SP vs Nonpsych = 15 SP vs NSP psych = 16</td>
<td>USA</td>
<td>Adult psych OPs and healthy volunteers</td>
</tr>
<tr>
<td>Johnson et al (2006)</td>
<td>Community adolescents</td>
<td>174</td>
<td>21</td>
<td>USA</td>
<td>Adolescents with SP, GAD and Healthy controls</td>
</tr>
<tr>
<td>Talepasand and Arya (2006)</td>
<td>General population</td>
<td>701</td>
<td>33</td>
<td>Iran</td>
<td>Few details given</td>
</tr>
<tr>
<td>Tavoli (2009)</td>
<td>SP NSP</td>
<td>235</td>
<td>25</td>
<td>Iran</td>
<td>SP vs NSP</td>
</tr>
<tr>
<td>Dogabeh (2013)</td>
<td>SP HC</td>
<td>330</td>
<td>29</td>
<td>Iran</td>
<td>University volunteer and SP cases</td>
</tr>
<tr>
<td>Ragheb (2007)</td>
<td>SP HC</td>
<td>100</td>
<td>23</td>
<td>Egypt</td>
<td></td>
</tr>
<tr>
<td>Ranta et al (2007a)</td>
<td>General population of adolescent schoolchildren</td>
<td>752</td>
<td>SP vs NSP = 24 SP and SSP vs NSP = 19</td>
<td>Finland</td>
<td></td>
</tr>
<tr>
<td>Zelviene (2012)</td>
<td>Students ????</td>
<td></td>
<td>&gt;26 for SP</td>
<td>Lithuania</td>
<td></td>
</tr>
<tr>
<td>Ratnani et al (2017)</td>
<td>Medical students</td>
<td>290</td>
<td>24 and above</td>
<td>India</td>
<td>SAD more impaired and symptomatic</td>
</tr>
<tr>
<td>Tsai et al (2009)</td>
<td>Junior high school community</td>
<td>3393</td>
<td>25</td>
<td>China (Taiwan)</td>
<td>Adolescents</td>
</tr>
<tr>
<td>Osorio et al (2009 and/or 2010)</td>
<td>University students</td>
<td>2314</td>
<td>19-21</td>
<td>Brazil</td>
<td>Young adults</td>
</tr>
<tr>
<td>Nagata et al (2013)</td>
<td>Psych OP Hospital staff HC</td>
<td>172</td>
<td>22</td>
<td>Japan</td>
<td>Adults</td>
</tr>
<tr>
<td>Bravo et al (2017)</td>
<td>Students and patients with SAD or GAD</td>
<td>530, 51, 50</td>
<td>25</td>
<td>Mexico</td>
<td>Healthy, SAD or GAD</td>
</tr>
<tr>
<td>Chukwujekwu (2020)</td>
<td>University students in tertiary hospital</td>
<td>280</td>
<td>&gt;19</td>
<td>Nigeria</td>
<td>Sensitivity 82%, specificity 78%</td>
</tr>
</tbody>
</table>
Mekuria et al (2017) examined the prevalence of SAD in a group of 386 Ethiopian high school students. No mean or cut-off scores were given, but the authors reported a 27% prevalence of SAD. Aazh and Moore (2017) reported a 31% prevalence rate of SAD using the standard cutoff score, in a population with hyperacusis (n=150), in whom the mean (sd) score was 3.7 (3.0). Hakami et al (2017) used a cutoff score of 29 and found a 26% prevalence rate of SAD in Saudi Arabian undergraduates. Kvedaraite et al (2019) reported a 15.3% prevalence rate in Lithuanian university students, using an empirically-derived cutoff score >26 to determine a diagnosis.

**Factor Analysis**

**SPIN**

Good internal consistency has been demonstrated for the SPIN by means of the Cronbach α coefficient, which has been reported as 0.95 (Connor et al, 2000), 0.96 (Nagata et al, 2013), 0.92 (Antony et al, 2006), 0.89 (Chen et al, 2011; Dogaheh, 2013), 0.90 (Radomsky et al, 2006), 0.95 (Sosic et al, 2008), 0.85 (Tsai et al, 2009), 0.96 (Means-Christensen et al, 2003), 0.92 (Lipman et al, 2018), 0.85 (Hakami et al, 2017). The Cronbach α = 0.91 in Korean students (Cho et al, 2018). With respect to the fear, avoidance and physiological subscales, Connor et al (2000) have reported the Cronbach α as 0.89, 0.91, 0.80 in one series, and 0.68, 0.71 and 0.70 in another, while Gori et al (2013) reported α = 0.87 overall and 0.83, 0.70 and 0.60 for fear, avoidance and physical symptoms.

In the first report describing the scale in an adult cohort, Connor et al (2000) described five factors, fear of talking to strangers, criticism/embarrassment, authority figures, public speaking and physiological distress.

Other authors have obtained a range of factors, from one (Garcia-Lopez et al 2010) to five (Nagata et al, 2013; Osorio et al, 2007). In the Nagata and Osorio reports, the authors in both cases noted a five factor solution applied only to the SP group, and that NSP controls manifested either a one-factor (Nagata) or three-factor (Osorio) solution, which suggest that the nature and number of factors obtained with the SPIN is influenced by the degree to which NSP subjects are represented in the sample.
A three-factor solution was found by Radomsky et al (2006), Carleton et al (2010) and Chen et al (2011), a four-factor solution by Dogaheh (2013). Campbell-Sills et al (2015) found multiple latent factors in a primary care sample with SP. These factors described fear of negative evaluation, fear of uncertainty in social situations and distress secondary to physical symptoms. However, all these were accounted for by one higher order factor of fear of negative evaluation.

A three-factor solution was also found by Bravo et al (2017) in a mixed Mexican group of students and adults with SAD or GAD. A Swedish study obtained two factors (Mörtberg and Fröjmark Jansson, 2018), although the authors used their data to propose an 8-item version of the SPIN, which is not authorized by the copyright holder for use.

In a large sample of Korean undergraduates, Cho et al (2018) reported a three-factor solution, labelled authority/criticism, social contact and physiological symptoms. Their paper also presented a summary of all published factor analyses of the SPIN.

**Mini-SPIN**

Internal consistency has been demonstrated by Garcia-Lopez et al in a study of Spanish adolescents, by Newby et al (2014), Seeley-Wait et al (2009), Weeks et al (2007) in anxiety clinic populations in Australia and the US (Cronbach $\alpha = 0.78, 0.86$ and $0.84, 0.91, 0.85$), and $\alpha$ values of $0.9$ at baseline, post-treatment and follow up in volunteers receiving internet-based CBT (Fogliati et al, 2016). Wiltink et al (2017) reported Cronbach $\alpha$’s of $0.83$ and $0.80$ for clinical and community German samples. Tudorel et al (2018) reported an $\alpha = 0.92$ in Romanian students. A lower value of $0.68$ was obtained in Swedish students (Mörtberg and Jansson Fröjmark, 2018).

**Validity**

**SPIN**

*Construct:* Construct validity for the SPIN has been shown by Connor et al (2000) who found that subjects with SP had significantly higher scores than those without. Moreover, as the severity of SP increased when measured...
independently by means of a Global Severity Rating scale (CGI), so did the SPIN score. A report by Ranta et al (2007a) showed that the mean SPIN scores for those with SP, Subthreshold SP (SSP) and NSP controls were 31.2, 24.1 and 12.4. In university students grouped into high and low social anxiety based on clinical rating, the SPIN scores confirmed the clinical judgements (Wieser et al, 2018), being respectively 20.3 and 10.1. Silva-Rocha et al (2019) found a significant correlation (r = 0.29 – 0.41) between the scale and measures of sports-related anxiety on the SAS-2 in a group of Brazilian athletes. Among Indian adolescents, the SPIN score was correlated with the level of internet use (r = 0.411, p < 0.001) (Vadher et al, 2019). SPIN scores correlated positively with the extent of internet gaming (r = 0.36), and also with levels of escape, fantasy, coping and preference for online social interactions in an Italian sample (Marino et al, 2020).

Construct validity relative to the WHO-DAS measure of disability was demonstrated by El-Tantawi (2010) (r = 0.30). Correlations of r =0.19 – 0.29 (all significant) were found for the SPIN and three dimensions of the Sheehan Disability Scale and of r = - 0.11 to – 0.92 for three subscales of the WHO QOL-BREF scale (Hakami et al, 2017)

Bravo et al (2017) noted a significant correlation between the SPIN and the Beck Anxiety Inventory (BAI) of r = 0.43. Wieser et al (2018) noted a correlation of r = 0.762 between the SPIN and the Beck Depression Inventory-III. Ratnani et al (2017) observed a correlation of r -0.44 (p < 0.001) between SPIN and BDI-II score, and higher scores (21.3) in students with SAD and depression compared to SAD alone (13.1).

In study of Romanian students, Tudorel et al (2018) found that the SPIN correlated positively with time spent online and the score on the Internet Addiction Test (IAT).

Italian students showed a negative relation between SPIN score and mental imagery score (Guarnera et al, 2019).

SPIN correlated with IES-R rated PTSD symptoms in Lithuanian students (r=0.23) (Kvedaraite et al, 2019).

Convergent Validity: Concurrent (convergent) validity is demonstrated by showing that the scale correlates with like measures. Connor et al (2000)
showed that the SPIN was closely correlated with an observer measure of SP, the Brief Social Phobia Scale (BSPS) \( (r = 0.57) \). The three SPIN subscales correlated with the three BSPS scales (Fear, \( r = 0.61 \); Avoidance, \( r = 0.47 \); Physiological, \( r = 0.66 \)). Correlation between the total SPIN and the total Liebowitz Social Anxiety Scale (LSAS) was \( r = 0.55 \). Even higher correlations were found for the SPIN against all these other measures in a second study of SP (Connor et al, 2000). Relative to the Marks FQ SP subscale, the total SPIN correlated at \( r = 0.77 \), and its fear, avoidance and physiological subscales correlated at \( r = 0.76 \), \( r = 0.78 \) and \( r = 0.42 \).

Others have shown correlations between the SPIN and the LSAS Nagata et al (2013) \( (r = 0.89) \); the SPIN and the BSPS \( (r = 0.59) \) (Osorio et al, 2007); the Social Interaction and Anxiety Scale (SIAS), \( r = 0.60 \) (Antony et al, 2006), \( r = 0.68 \) (Tavoli et al, 2009), \( r = 0.77 \) (Dogahreh, 2013), \( r = 0.88 \) (Sosic et al, 2008), \( r = 0.72 \) (Bravo et al, 2017). Relative to the Brief Fear of Negative Evaluation (BFNE) Scale, the correlation coefficient was 0.43 (Tavoli et al, 2009) and 0.62 (Bravo et al, 2017). In German undergraduates, the SPIN correlated significantly with the SPAI \( (r = 0.862) \), STAI-Trait \( (r = 0.778) \), STAI-State \( (r = 0.433) \) (Wieser et al, 2018).

The SPIN correlated significantly with the SOPHS (Social phobia screener) \( (r=0.73) \) (Batterham et al, 2016).

High correlations were obtained between the SPIN and Liebowitz SAS on fear \( (r = 0.73) \) and avoidance subscales \( (r = 0.60) \) in Korean students (Cho et al, 2018).

The SPIN correlated at \( r = 0.71 \) against the Swedish Social Anxiety Scale for Social Media Use (Erliksson et al, 2020).

*Discriminant Validity:* Batterham et al (2016) found the SPIN discriminated well between those with and those without SAD, with 77% and 71% sensitivity and specificity.

*Divergent Validity:* A report by Connor et al (2000) showed lack of correlation between the SPIN score and the general health score on the SF-36. On the Marks Fear Questionnaire, a lower correlation was obtained between SPIN and blood-injury fear than for social phobia or agoraphobia on that scale. Antony et al (2006) showed no significant correlation between SPIN and three subscales of the Depression Anxiety and Stress scale.
(DASS-21). Similarly, Chen et al (2011) demonstrated lack of correlation between the SPIN and DASS depression scale. Sosic et al (2008) showed no relationship between SPIN and the SCL-90R scale. Cho et al (2018) found lower correlations between the SPIN and Penn State Worry Inventory \((r = 0.46)\) and Beck Depression Inventory \((r = 0.54)\) than against measures of SAD. No difference was found in SPIN score between those with a positive and a negative history of trauma exposure (Kvedaraite et al, 2019).

**Biological validity:** In students who were grouped into High Social Anxiety (HSA) and Low Social Anxiety (LSA) partly on the basis of their SPIN scores, Wieser et al (2018) reported that the HSA group was more biased (hypervigilant) towards interpreting angry faces in the context of neutral, happy and angry facial images, whereas the LSA group tended more to detect happiness faces. A physiological difference was found in the N2pc EEG component. Lopez-Mourelo et al (2016) expected to find a relationship between autism and social anxiety. Lopez-Mourelo et al (2016) demonstrated that among females with autism and SAD, but not males, those with the permutation \(FMR1\) autism gene showed greater SPIN scores than those without (14.9 vs 7.6), as was the case for the entire group without regard for gender (12.9 vs 8.3). Hardie et al (2016) found that left handedness was related to higher scores on the SPIN.

**Mini-SPIN**

**Convergent Validity:** In Brazilian students, Osorio et al (2010) showed significant correlations between the M-SPIN and the following scales: Beck Anxiety Inventory \((r = 0.52, 0.23\) and 0.30 in three different cohorts), the SSPS \((r = 0.54, 0.22, 0.30)\). More highly significant correlations were found relative to the SPIN, BSPS, Social Anxiety in Public Speaking scales, In an Australian study conducted in an anxiety disorders clinic, Seeley-Wait et al (2009) reported significant correlations between the Mini-SPIN and the Social Interaction Anxiety Scale \((r = 0.81)\) and Social Phobia Scale \((r = 0.77)\). Weeks reported a US anxiety disorders clinic study, in which the Mini-SPIN correlated with the LSAS \((r = 0.46)\), SIAS \((r = 0.57)\), SPS \((r = 0.34)\) and Brief FNE \((r = 0.44)\). Garcia-Lopez et al (2015) found correlations of \(r = 0.63\) and 0.79 for the Mini-SPIN vs the SPAI, and \(r = 0.52/ 0.58\) relative to the FNE in two different samples. A correlation of \(r = 0.66\) was found between the Mini-SPIN and SOPHS in an Australian sample (Batterham et al, 2016). The Mini-SPIN correlated at Rho = 0.704, p <
0.001) versus the LSAS in a sample of German subjects (Wiltink et al., 2017).

Construct Validity: Fogliati et al (2016) reported correlations at baseline of 0.30 against the PHQ-9, 0.34 versus the GAD-7, 0.38 versus the K-10 and 0.35 against the Sheehan Disability Scale. These correlations became substantially larger after treatment had been administered. Significant correlations were found in a large German sample relative to the PHQ-9 depression, GAD-7 anxiety and PHQ-15 somatization (Rho = 0.485, Rho = 0.455, Rho = 0.266, all P < 0.001) (Wiltink et al, 2017). High correlations were noted between the Mini-SPIN and a diagnosis of Avoidant Personality Disorder (APD) in Japanese subjects with Hikikomori – for men and women these values were r=0.657 and 0.586 (p<0.0001) (Hayakawa et al, 2018). The Mini-SPIN correlated (r = 0.39) with a measure of loneliness in Norwegian schoolchildren (Morin, 2020).

Divergent Validity: Relative to non-social anxiety measures, the Mini-SPIN either failed to correlate significantly or correlated at a lower level than was the case for scales of social anxiety. Weeks et al (2007) showed correlations of 0.28, 0.23, -0.07 and 0.38 for the Liebowitz Disability Scale (LDS), the Disability Profile (DP), the Quality of Life Index (QOLI) and the Sheehan Disability Scale (SDS).

Divergent validity was shown with a non-significant relationship between the Mini-SPIN and the physical illness subscale of the SF-36 (Wiltink et al, 2017).

Biological Validity: In the Japanese study of patients with Hikikomori (HK), the Mini-SPIN and uric acid correlated at r = 0.40 in a small number of males with HK, but no other comparisons were significant (Hayakawa et al, 2018).

Discriminant validity: Discriminant validity can be shown if a scale such as the Mini-SPIN does distinguish between those with more vs those with less severe social anxiety. The establishment of a cutoff score separating those with and without SP is also a form of discriminant validity, and indeed was the main purpose behind development of the scale. Various authors have presented consistent findings in regard to accuracy of the scale’s cutoff score. Connor et al (2001) originally reported a score of 6 or greater was
most likely to equate to a diagnosis of SP, at which point the diagnostic efficiency was 88%. Subsequently, this cutoff has been replicated in different populations and countries by Seeley-Wait et al (2009) (AUC = 0.97), Weeks et al (2007) (efficiency = 88%), Ranta et al (2007). Osorio et al (2010) noted that 6 was acceptable in their population of Brazilian university students, but that 7 was slightly superior. In Spanish adolescents, Garcia-Lopez et al (2015) reported a cutoff of 5 to be optimal. Ranta et al (2007) noted that, when establishing a cutoff to distinguish between those with subthreshold SP and those with no SP, a cutoff score of 5 was preferable. Likewise, when differentiating between SP with avoidant personality disorder (APD) and SP alone, Seeley-Wait et al (2009) found a score of 9 to provide better separation than a score of 6 (AUC = 0.61, although not a strong separation). Means-Christensen et al (2003) found the SPIN scores to be significantly higher in those with clear SP (38.1), compared to those with ambiguous SP (32.9) and no SP (10.8) based on the CIDI assessment.

The Mini-SPIN scores for those with SP, SSP, other anxiety, depression, disruptive behavior and no SP controls were respectively 7.9, 5.9, 4.2, 4.1, 3.8 and 2.9, suggesting that the scale does distinguish between varying levels of SP in different groups (Ranta et al, 2007). Seeley-Wait et al (2009) reported mean scores of 8.8 and 1.8 for those with SP and those with no SP, and 9.3 vs 8.3 for SAD with APD and SP alone. Garcia-Lopez et al (2015) found scores of 6.54 and 1.93 in SP and Healthy Controls. Osorio et al (2010) observed mean scores of 7.4 and 1.9 in males with and without SP, and 7.2 and 2.4 in females.

The Mini-SPIN discriminated well between those with and those without SAD, as diagnosed by clinical interview ((74% sensitivity and 73% specificity) (Batterham et al, 2016). Fogliati et al (2016) showed that a score of 8 separated between those with and those without SAD at baseline with an AUC value of 0.85, and a score of 6 best separated the groups (AUC = 0.80) when assessed after treatment at three months. The scale also showed differences in score between those with SAD and those with other anxiety or depressive states (8.57 vs 4.48).

Predictive Validity, Treatment and Change over Time

SPIN
Predictive Validity & Sensitivity to Change: Cutoff scores on the SPIN have been identified for predicting whether or not a subject has SP. Scores vary, with most in the range of 19-25. The optimal cutoff appears to be dependent of factors such as the sample, country where the study was conducted, and the mix of the control group, e.g. whether it contained healthy volunteers, psychiatric disorders other than SP. These scores are given in Table 2.

The SPIN has demonstrated significantly greater change in score in response to an active treatment versus a placebo, when that treatment was superior on other measures while it failed to show any difference in situations where other measures had failed to separate between two treatments. In randomized controlled trials, the average reduction in score for active treatments was 47% from baseline, compared to 10% for placebo (Table 3). Effect sizes were high (0.88 – 2.33) in the three reports which compared an active to an inactive treatment.

Mini-SPIN

There are limited data for the Mini-SPIN in relation to treatment.

One study by Moseley et al (2015) showed that integrated treatment was superior to treatment as usual on drinking patterns for patients with alcohol use problems and comorbid anxiety or depression, but that no difference was found for anxiety or depression.

A trial by Newby et al (2014) demonstrated reduction on Mini-SPIN over time from a course of internet-based CBT in a sample of 707 subjects with anxiety or depression. The score decreased from 6.16 (3.10) to 4.13 (2.83), with an effect size of 0.69.

A second study by Dear et al (2016) compared four types of internet-delivered CBT in 233 patients with SAD. Pre- to post-treatment scores showed a drop in SAD from 9.5 to 6.1, and 9.3 to 6.3, and comparable changes in the other two treatment arms. Within group ES values were 1.25 and 1.11, with further gains during long term follow up.

Fogliati et al (2016) demonstrated a reduction in score from 8.3 to 5.2 (ES = 1.06) and 4.1 to 2.3 (ES = 0.64) at three months in a group with SAD and a
group with symptoms of social anxiety and other psychiatric comorbidity, all of whom (n=752) received CBT.

Haslam et al (2016) enrolled 83 young adults with social isolation in G4H, a five-module intervention targeting social group relationships. The Mini-SPIN declined from 3.57 to 3.15 (ES = 0.52, p < 0.001).

In a large German clinical sample of n = 1082, the effect size from pre- to post-treatment was 0.37, which was close to the effect size of 0.40 with the Liebowitz Social Anxiety Scale (LSAS) (Wiltink et al, 2017).

An effect size of 2.24 was obtained from treatment of 12 Korean students with SAD (Cho et al, 2018).

A mean score of 3.04 (1.09) was reported in 87 volunteers with SAD, and scores were reduced in two samples following an internet intervention: 3.28 to 2.83 and 2.72 to 2.19, with effect sizes of 0.41 and 0.59 (Arndt et al, 2020).

Table 3. Changes in SPIN Score Associated with Treatment

<table>
<thead>
<tr>
<th>First author</th>
<th>N</th>
<th>Interventions</th>
<th>Pre and post scores</th>
<th>% change</th>
<th>ES * or p value</th>
<th>Sample</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pande et al (1999) and Connor et al (2000)</td>
<td>69</td>
<td>Gabapentin Placebo</td>
<td>43.0 27.4 40.8 36.7</td>
<td>39 10</td>
<td>0.002</td>
<td>SAD Drug was also superior to PBO on all three subscales</td>
<td>USA</td>
</tr>
<tr>
<td>Stein et al (1999)</td>
<td>92</td>
<td>Fluvoxamine Placebo</td>
<td>38.0 2.7 3 40.0 34.0</td>
<td>28 15</td>
<td>0.02</td>
<td>SAD</td>
<td>USA</td>
</tr>
<tr>
<td>Zhang et al (2005)</td>
<td>16</td>
<td>Levetiracetam Placebo</td>
<td>43.6 29.1 40.7 33.6</td>
<td>33 17</td>
<td>NS</td>
<td>SAD No differences found between treatments on any measure</td>
<td>USA</td>
</tr>
<tr>
<td>Connor et al (2006)</td>
<td>40</td>
<td>Botulinum toxin (BT-A) Placebo (PBO)</td>
<td>39.8 18.2 41.6 22.8</td>
<td>54 45</td>
<td>NS</td>
<td>All subjects had SAD with axillary hyperhidrosis (HH), and received paroxetine-CR with adjunct BT-A or PBO for HH. BT-A superiot to PBO on HH but not on general measures of SAD</td>
<td>USA</td>
</tr>
<tr>
<td>Study</td>
<td>N</td>
<td>Intervention</td>
<td>Baseline Measures</td>
<td>Follow up Measures</td>
<td>p-value</td>
<td>ES</td>
<td>Location</td>
</tr>
<tr>
<td>-------------------------------------------</td>
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<tr>
<td>Vaishnavi et al (2007)</td>
<td>15</td>
<td>Quetiapine Placebo</td>
<td>47.3 33.9</td>
<td>28</td>
<td>P&lt;0.01</td>
<td>1.79</td>
<td>USA</td>
</tr>
<tr>
<td>Hartling et al (2015)</td>
<td>82</td>
<td>CBT Waitlist control</td>
<td>29.9 22.7</td>
<td>24</td>
<td>0.01</td>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td>Antony et al (2006)</td>
<td>74</td>
<td>CBT No control group</td>
<td>43.0 14.6</td>
<td>89</td>
<td>ES = 0.77</td>
<td></td>
<td>Canada</td>
</tr>
<tr>
<td>Kivity and Huppert (2016)</td>
<td>124</td>
<td>Cogn reappraisal practice</td>
<td>41.7 36.1</td>
<td>13</td>
<td>ES = 0.88</td>
<td></td>
<td>Israel</td>
</tr>
<tr>
<td>Nader-Mohammadi Moghadam et al (2015)</td>
<td>45</td>
<td>Psychodynamic therapy, Sertraline, Waitlist</td>
<td>35.4 23.0</td>
<td>35</td>
<td>1.19</td>
<td></td>
<td>Iran</td>
</tr>
<tr>
<td>Ebrahiminejad et al (2016)</td>
<td>25</td>
<td>MBCT No treatment control</td>
<td>26.1 21.5</td>
<td>18</td>
<td>P&lt;0.05</td>
<td></td>
<td>Iran</td>
</tr>
<tr>
<td>Tulbure et al (2016)</td>
<td>76</td>
<td>CBT Waitlist control</td>
<td>45.1 27.9</td>
<td>38, 56</td>
<td>ES = 1.27, 2.33</td>
<td></td>
<td>Romania</td>
</tr>
<tr>
<td>Roushani et al (2016)</td>
<td>32</td>
<td>Transdiagnostic treatment</td>
<td>30.5 21.2</td>
<td>31</td>
<td>P&lt;0.001</td>
<td></td>
<td>Iran</td>
</tr>
<tr>
<td>Lazarov et al (2017)</td>
<td>20</td>
<td>Music reward therapy Control</td>
<td>47.7 31.7</td>
<td>43</td>
<td>P&lt;0.0001</td>
<td>1.24</td>
<td>Israel</td>
</tr>
<tr>
<td>Adler et al (2017)</td>
<td>12</td>
<td>SAD in emotion focused treatment</td>
<td>41.7 28.3</td>
<td>7 of 11 subjects obtained clinically significant change</td>
<td></td>
<td></td>
<td>Israel</td>
</tr>
<tr>
<td>Huppert et al (2018)</td>
<td>24</td>
<td>CBT Attentional bias modifcin</td>
<td>43.3 42.4</td>
<td>44</td>
<td>Significant within trt grps</td>
<td></td>
<td>Israel</td>
</tr>
<tr>
<td>Cho et al (2018)</td>
<td>12</td>
<td>Korean students</td>
<td>42.5 20.2</td>
<td>52%</td>
<td>ES = 2.24, p&lt; 0.001</td>
<td></td>
<td>Korea</td>
</tr>
<tr>
<td>Petrochilos (2020)</td>
<td>78</td>
<td>Multidisciplinary trt for FNSD pre post and 6 month</td>
<td>25</td>
<td>25</td>
<td>NS</td>
<td>SPIN caseness rates 59% baseline and 41% at 6 months</td>
<td></td>
</tr>
</tbody>
</table>
Thew et al (2019) treated with internet CBT | 6 | SAD patients | 43.3 | 57% | ES = 1.61 | Hong Kong

- ES= Effect Size
- NS= Not Significant
- P= Probability

**Test Retest Reliability**

Connor et al (2000) showed acceptable test-retest reliability for the SPIN (r=0.78-0.89). Others have also demonstrated the same, e.g. Chen et al (2011) (Intraclass correlation coefficient = 0.942), Dogaheh (2013) (r = 0.89, Johnson et al (2006) (r = 0.86), Radomsky et al (2006) (r = 0.79 and 0.86), Ranta et al (2007b) (r = 0.81), Tsai et al (2009) (r = 0.73), Cho et al (2018) (r = 0.81).

Test-retest reliability for the Mini-SPIN has been given as r = 0.70 (Seeley-Wait et al (2009), and r = 0.82 at two assessments separated by 1-4 weeks (Fogliati et al, 2016). Similarly, Wiltink et al (2017) reported a test-retest correlation Rho = 0.61.

**Translations of the SPIN and/or Mini-SPIN**

Approved translations of the SPIN currently exist in the following languages:

Amharic, Arabic, Bahasa Indonesian, Bengali, Chinese, Croatian, Czech, Danish, Dutch, Finnish, French (France, Canada), German, Greek, Gujarati, Hebrew, Italian, Japanese, Korean, Latvian, Lithuanian, Nepali, Norwegian, Polish, Portuguese (Brazil), Punjabi, Romanian, Russian, Serbian, Sinhala, Spanish, Swedish, Tagalog, Tamil, Turkish, Urdu, Welsh.

Translations of the Mini-SPIN exist in Arabic, Czech, Danish, Dutch, Finnish, German, Japanese, Korean, Norwegian, Portuguese (Brazil), Spanish and Swedish.

Some unauthorized translations of these scales may exist. To minimize further use of these, any person who is considering either the use of a translation or the creation of a new translation is requested to contact Dr.
Davidson at mail@cd-risc.com. It is impossible to vouch for the accuracy, validity or reliability of these unauthorized translations, some of which have been taken directly from the publication by Connor et al (2000), which does not provide the complete scale.

**Citations that Mention the SPIN or Report Original Research**


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**Citations to the Mini-SPIN**


