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Reliability Generalization of Social Appearance Anxiety Scale: A Meta Analysis Study*

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ABSTRACT

The Social Appearance Anxiety Scale (SAAS) is one of the self-report scales that measure the anxiety that occurs when people form a negative body image about their body and appearance. This study provides a reliability generalization about the internal consistency estimates of the Social Appearance Anxiety Scale, which consists of 16 items and a single factor developed by Hart et al. (2008). As a result of the search in the identified databases, 96 studies were found. In 4 of these studies, the scale was not used, 23 did not report the reliability coefficient and 1 study could not be accessed. Reliability generalization study was conducted with 68 studies including the reliability coefficient of the relevant scale. It was concluded that the average reliability coefficient was .937 [.930 - .943]. As a result of moderator analyses, it was concluded that there was a statistically significant difference in Cronbach's alpha coefficient according to the subcategories of "language of the scale" and "country of the participants" variables, but there was no statistically significant difference according to the subcategories of "language of the article", "sample type" and "field of study" variables and "average age" variable. With this study, it was concluded that it would not be appropriate to generalize, that is, to use reliability induction, since the reliability coefficients of the Social Appearance Anxiety Scale obtained in different languages and different countries differ. It is recommended that the authors calculate reliability estimates for the data sets they have and report the reliability coefficients obtained.

Keywords: Social appearance anxiety, reliability, reliability generalization, cronbach alpha, meta-analysis

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1. INTRODUCTION

Being a social and emotional being, human beings communicate and interact with other people in the society they live in. This situation has resulted in individuals paying attention to their appearance since the early ages. Individuals have created beauty materials with materials such as clay, paint and henna that they found in nature and aimed to be more attractive in terms of appearance with these materials (Chaudhri and Jain, 2009). The first evaluations people make about each other in life are related to physical appearance. Evaluations about physical appearance directly affect the feelings about the other person in the interaction (Hart, Leary and Rejeski, 1989). In social life, interpersonal relationships and business life, it is stated that people with good looks are in a more advantageous position (Sampson, 1995). People who are aware of this situation are aware of the importance of physical appearance in order to make a good impression on other people and make efforts to look better. At the same time, people also have a perception of their own physical characteristics. With the effect of this perception, people develop a sense of self. As a result of the incompatibility between the self-perception and the ideal body image in the mind, negative body image thoughts occur. These people state that they find themselves less attractive than other people and that they are uncomfortable with and ashamed of their body (Grogan, 2021). Having a negative body image about one's physical appearance and body is called social appearance anxiety (Doğan, 2010). People who are not interested in how their body characteristics are evaluated by others have low levels of social appearance anxiety. However, people who have negative and irrational evaluations of their physical appearance experience social appearance anxiety (Hart et al., 1989).

* This study is a systematic literature review examining the reliability coefficients of the Social Appearance Anxiety Scale. Data were not collected from any group of students or teachers in any way; data were obtained only by accessing the studies in the literature. Therefore, no application was made to the Ethics Commission for this study.

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Social appearance anxiety is defined as the fear of being evaluated negatively because of one's appearance (Levinson et al., 2013). In social appearance anxiety, the individual is preoccupied with his/her own physical appearance. He/she fears that his/her appearance (body and face, height, weight, etc.) may be evaluated negatively (Boursier et al. 2020; Üstündağ ve Karaaslan, 2023). There are opinions stating that social appearance anxiety is a broader concept and that there is a level of social anxiety surrounding the general appearance of the individual as well as the body shape (Koskina et al., 2011). Individuals with social appearance anxiety have thoughts that their appearance will be evaluated negatively. The culture of the society in which they live, the situations experienced by the individual, personal factors and past experiences affect social appearance anxiety and include the behavior of creating the impression that other people want and avoiding unwanted impressions (Amorose & Hollembeak, 2005; Sezgin ve Uzun, 2023). Individuals with positive body perception like their bodies and are satisfied with themselves. As a result, their communication with other individuals is also positive. These individuals have developed characteristics such as establishing sincere and healthy relationships, taking responsibility and acting autonomously. On the other hand, individuals who are dissatisfied with their own body and body image may feel a lack of self-confidence, think pessimistically and need to be approved by other individuals (Jobsky, 2014).

Many scales have been developed over time to measure physical and social appearance. Some of these scales are Body Dysmorphic Disorder Questionnaire (Lekakis et al., 2016), Body Shape Scale (Beebe, 1995), Social Interaction Anxiety Scale (Mattick and Clarke, 1998), Social Physique Anxiety Scale (Scott et al., 2004), Brief Fear of Negative Evaluation Scale (Leary, 1983), Negative Affect Scale (Watson et al, 1988), Multidimensional Body-Self Relations Questionnaire-Appearance Scales (MBSRQ-AS) (Cash, 2000), Appearance Schemas Inventory (ASI) (Cash and Labarge, 1996), Body-Image Ideals Questionnaire (BIQ) (Cash and Szymanski, 1995), Appearance Anxiety Inventory (AAI) (Veale et al., 2014), Social Appearance Anxiety Scale (SAAS) (Hart et al., 2008). The Social Appearance Anxiety Scale (SAAS) is a scale that stands out among these scales and has been translated into many languages and validity and reliability studies have been conducted. In addition to its original language English, the SAAS has been adapted into at least 7 different languages including Chinese (Yu and Zhao, 2016), Persian (Goodarzi et al., 2021), Italian (Dakanlis et al., 2016), Turkish (Dogan, 2010), Urdu, Portuguese (Donofre et al., 2021), and German (Reichenberger et al., 2022). Hart et al. (2008) developed the Social Appearance Anxiety scale consisting of 16 items and a single factor to measure social appearance anxiety. The SAAS was created to assess the individual's fear of situations in which his/her general appearance and body shape may be evaluated. Participants indicate their level of agreement with each statement on a Likert-type scale ranging from 1 (not at all) to 5 (extremely). According to the results of the Exploratory Factor Analysis conducted to examine the dimensional structure of the scale, it was seen that 16 items were included under a single factor and the factor loadings of the items were between 0.66 and 0.97. Confirmatory Factor Analysis results for the one-factor measurement model established with the data obtained from 853 individuals indicate a good fit ($\chi 2(104)$) = 381.21; $p<.001$; RMSEA =.056; CFI = .99; TLI = .99). It is also stated that similar factor structure and good fit values were maintained in the application of the developed scale in different samples. The reliability coefficients of the three different measurements made with the scale were .94, .95 and .94, respectively. Test-retest reliability was reported to be good (.84) (Hart et al., 2008).

The aim of this study is to present a meta-analytic reliability generalization (RG) of the reliability coefficients obtained from the Social Appearance Anxiety scale. Meta-analysis is a convenient method for statistically integrating reliability estimates obtained from different administrations of a test (Hedges, 1992). The main purpose of meta-analytic reliability generalization is to inform practitioners and researchers about the expected reliability value of scores from a particular scale and the effect of scale format and administration conditions on the reliability value (Hedges, 1998; Sánchez-Meca et al., 2021; Yörük and Sen, 2023). An RG meta-analysis allows us to obtain an estimate of the average reliability of test scores and to examine which features of the test, studies, and participant samples can account for heterogeneity among reliability coefficients (Henson & Thompson, 2002; Rodriguez & Maeda, 2006; Sanchez-Meca, Lopez-Lopez, & Lopez-Pina, 2013; Özdemir et al., 2020; Aslan et al., 2022). The literature review revealed that no meta-analytic RG study has been conducted on the Social Appearance Anxiety scale.

2. METHOD

In this section, the type of the study, the data collection process, the process of determining the criteria, the validity and reliability of the measurement results related to the coding form, and the data analysis are mentioned.

1.1. Research Type

In this study, in which the reliability coefficients of the social appearance anxiety scale were discussed, the reliability generalization method using meta-analysis was used. Reliability generalization based on meta-analysis was first conducted by Vacha-Haase (1998). According to Vacha-Haase, reliability generalization aims to determine the amount and sources of variability of reliability coefficients between different measurements and studies. In other words, with reliability generalization based on meta-analysis, it is examined whether the reliability coefficient obtained for the measurement tool determined within the scope of the study differs between studies.

1.2. Data Collection Process

In this study, Web of Science, SAGE Journals, Springer, Taylor & Francis, Ulakbim databases were searched between August and September 2022 in order to access the studies using the Social Appearance Anxiety Scale. The keywords "social appearance

anxiety" and "reliability" were used in the search. As a result of scanning the databases, a total of 123 studies were reached in the first stage. Then, the same studies were removed and the full texts of the remaining 96 studies were analyzed. Then the inclusion criteria were determined. The inclusion criteria for meta-analysis are as follows:

- Studies using the "Social Appearance Anxiety Scale" developed by Hart et al. (2008),
- Studies conducted between 2008 and 2022,
- Studies reporting Cronbach's Alpha reliability coefficient.

It was determined that there were 68 studies that met the specified inclusion criteria and the research was conducted with the data obtained from the 68 studies. In global academic discourse, it is advisable to employ the flowchart as outlined in the PRISMA statement and adhere to the PRISMA guidelines when conducting systematic review and meta-analysis studies. This ensures the accurate execution and enhanced presentation and reporting of such studies (The PRISMA Group, 2009). Figure 1 illustrates the flowchart created to enhance the transparency of the current research.

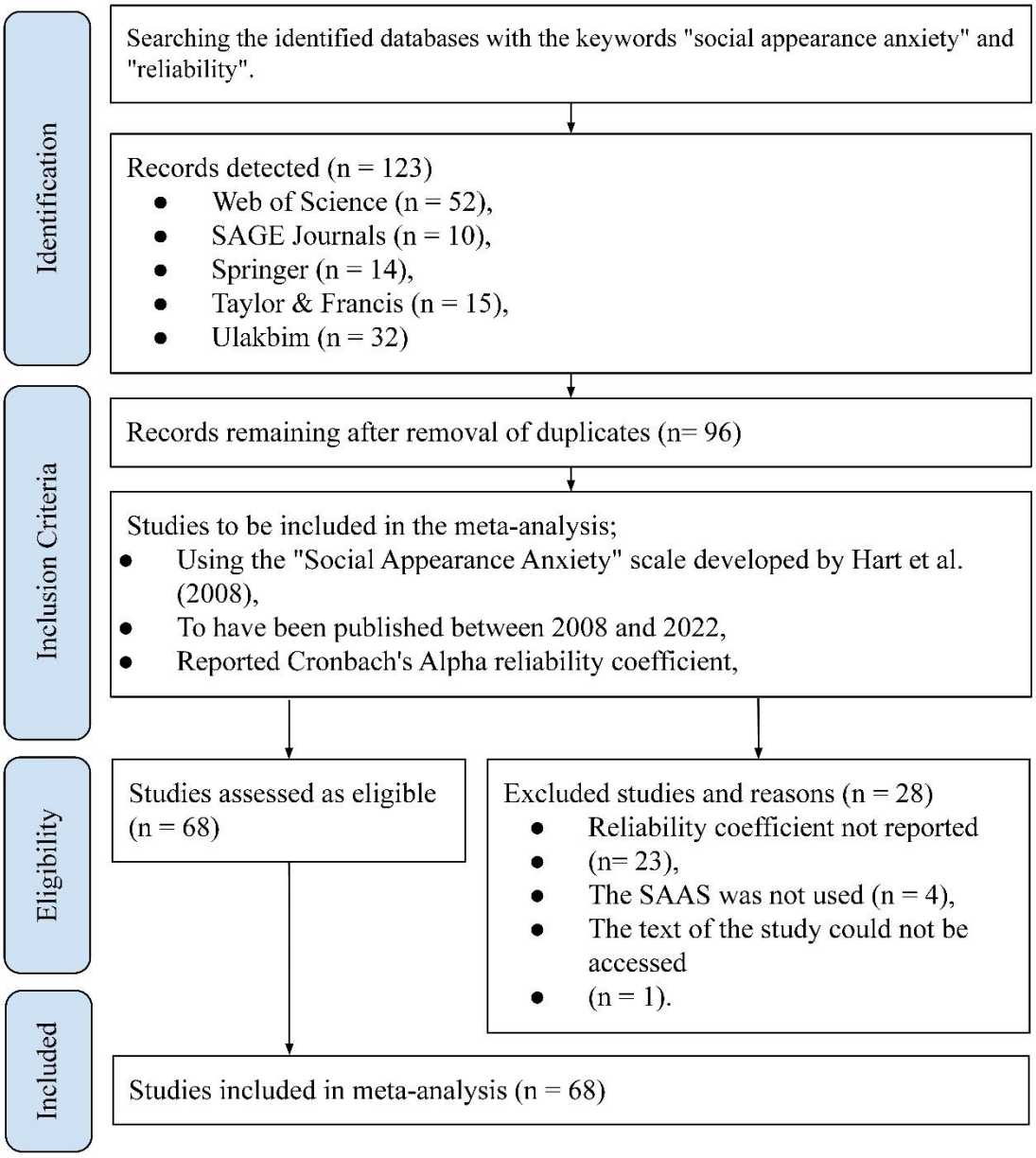

Figure 1. Flow Diagram

1.3. Data Analysis

In order to code the studies reached as a result of the review, previous RG studies were examined and moderator variables were created as follows: (a) language of the scale, (b) language of the study, (c) sample type, (d) field of study, (e) continent of the participants, and (f) average age. All of these characteristics are seen as characteristic features found in RG research in the literature. A data coding sheet was developed to standardize the coding procedure and the coding system is shown in Table 1.

Table 1.
Coding System of Studies

Variable	Variable Type	Coding Method
Study Code	Categorical	Number assigned to studies in sequence.
Authors	Categorical	Indicates the surnames of the authors.
Year	Categorical	Indicates the year of the study.
Title	Categorical	Indicates the title of the study.
Language of the Scale	Categorical	Indicates the language of the scale used in the study. 1= English, 2= Not English
Language of the Study	Categorical	Indicates the language in which the study was published. 1= English, 2= Turkish
Sample Type	Categorical	Sample type of the study 1=Adolescent, 2=University Student, 3=Adult
Field of study	Categorical	Indicates the field of study of the study. 1=Social Science., 2=Health Science, 3=Sports Science
Continent of the participants	Categorical	Indicates the country where the study was conducted. 1=Asia, 2=Europa, 3=USA
Average Age	Continuous	Indicates the average age of participants in the studies.

Descriptive statistics of 68 studies included in the meta-analysis are shown in Table 2 according to variables.

Table 2.
Summary of Characteristics of Included Studies

Variable		n	%
Language of the Scale	English	34	50,0
	Not English	34	50,0
	Total	68	100,0
Language of the Study	English	60	88,2
	Turkish	8	11,8
	Total	68	100
Sample Type	Adolescent	5	7,4
	University Student	27	39,7
	Adult	24	35,3
	Total	68	100
Field of Study	Social Science	42	61,8
	Health Science	20	29,4
	Sports Science	6	8,8
	Total	68	100
Continent of the Participants	Asia	33	48,5
	Europa	11	16,2
	USA	24	35,3
	Total	68	100

All these characteristics in Table 2 are seen as the characteristic features found in the RG studies in the literature. A data coding sheet was developed to standardize the coding procedure and the coding system is shown in Table 1.

It should be noted that only Cronbach's alpha coefficient was used as the dependent variable in this study since a meta-analytic RG study was conducted with the internal consistency estimates reported for the SAAS. Before generalizing reliability, two steps, transformation and weighting, should be considered. Since Cronbach's alpha values reported in the literature tend to be greater than zero and generally reliability coefficients take values close to 1, it is recommended that they cannot be used directly in meta-analysis because they do not show a normal distribution (usually negative/left skewed) (Beretvas & Pastor, 2003). Therefore, a transformation of the raw values using Fisher's z, Hakstian-Whalen (Hakstian & Whalen, 1976) or Bonett's transformation (Bonett, 2002) is required. The transformed values can be used to obtain a pooled estimate of internal consistency using one of the proposed weighting models. Within the scope of the study, firstly, the effect sizes of the studies included in the meta-analysis were examined to determine whether they met the assumption of normal distribution. Since Cronbach's alpha reliability values had a left-skewed distribution, Bonett's transformation formula was used to normalize the distribution and make the variance constant (Bonett, 2002). After the transformation, the normal distribution graph obtained by considering the effect sizes of the studies was examined and it was concluded that the assumption of normal distribution was met.

The Q statistic (Cochran, 1954) and the I^2 statistic (Higgins and Thompson, 2002), which is a function of the Q statistic, were used to determine whether the studies evaluated within the scope of meta-analysis showed a heterogeneous distribution. If the p value of the Q statistic is significant and the I^2 value is greater than 75%, it is considered as evidence of high heterogeneity (Higgins et al., 2003). Considering that the random effects model, which takes into account both the variation within studies

(variance) and the variation between studies (Thompson & Sharp, 1999), is a more realistic representation of the real world (Field, 2003b), the random effects model (REM) was preferred within the scope of the research. For the estimation of between-study variance under REM, the Sidik-Jonkman estimator, which has better features and produces better results than other estimators, was preferred.

3. RESULTS

Within the scope of this part of the study, meta-analysis was conducted to calculate the overall effect size of Cronbach's Alpha coefficient related to the reliability of SAAS. Again within the scope of this section, moderator analyses were utilized to determine the sources of the change in the average Cronbach's Alpha value. In this section, firstly, publication bias findings and then heterogeneity, effect size and moderator analysis findings are presented.

3.1. Results Regarding Publication Bias

As scope of the research, prior to computing the average effect size for the meta-analysis, efforts were made to identify any indications of publication bias in the studies analyzed within the scope of the examination. To achieve this objective, Mullen, Muellerleile, and Bryant's (2001) equation, funnel plot, Egger's linear regression test, Kendall's tau value, and Duval and Tweedie's trim-and-fill method were used.

The basis of a good meta-analysis is a good literature review. A challenge faced by literature review and meta-analysis studies is the presence of publication bias, wherein statistically significant results are more likely to be published than non-significant ones. This can lead to a skewed representation in published studies, not capturing the entirety of research in a given field. To mitigate publication bias, it is crucial to conduct a comprehensive investigation that includes both published and unpublished studies. Factors contributing to publication bias may include narrow search criteria, reliance on easily accessible studies, preference for free databases, and the duplication of publishing significant findings (Borenstein et al., 2013).

Mullen, Muellerleile, and Bryant (2001) highlighted that the robustness of meta-analysis results against future studies can be assessed by examining whether the value calculated using the formula N/(5k+10) is greater than 1. Applying this formula to the total population of 32,723 individuals, it was determined that the obtained value exceeded 1. The interpretation of values greater than 1 suggests a very low publication bias in this meta-analysis study.

Secondly, the Funnel Plot and Egger's test are used to examine publication bias. The Funnel Plot is presented in Figure 2.

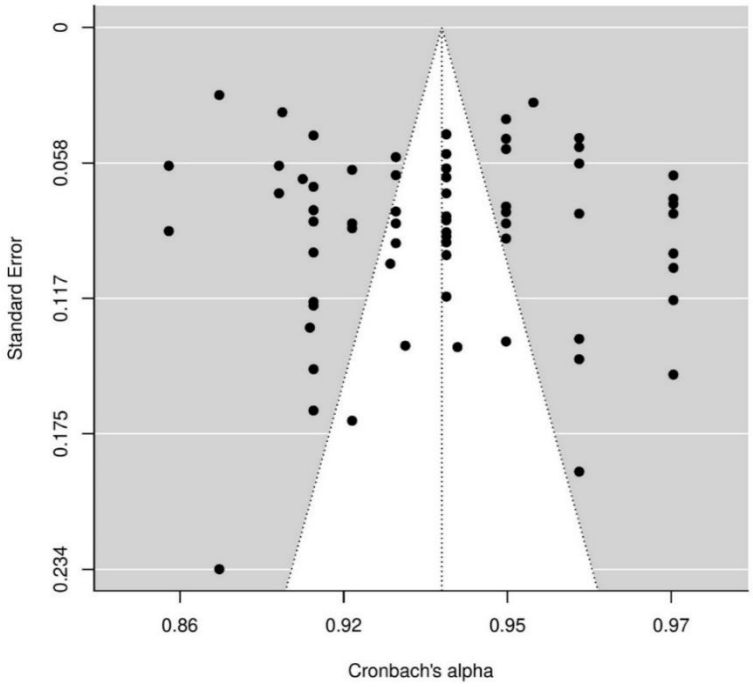

Figure 2. Funnel Plot of Publication Bias of Studies

As can be seen in Figure 2, the reliability coefficients of the studies included in the research are mostly gathered in the upper parts of the graph. Accordingly, it was determined that the standard error values were low and showed a symmetrical distribution according to Cronbach's alpha values. The fact that the reliability coefficients calculated in the publications spread symmetrically on both sides of the vertical line in the middle of the funnel plot and that the publications are gathered in the region where the error is low on the standard error axis is interpreted as the absence of publication bias (Yildirim & Sen, 2020). Interpretations made using the funnel plot are subjective. To ensure a more objective interpretation, Egger's regression test

was employed. The non-significant result of Egger's Linear Regression test (EggerValue= 0.1574, p=0.8749>0.05) provides further evidence suggesting the absence of publication bias. Furthermore, the Begg and Mazumdar rank correlations statistic was scrutinized to assess its contribution to the absence of asymmetry in the funnel plot. The analysis of the Begg and Mazumdar rank correlations statistic concluded that there is no significant asymmetry in the funnel plot (Kendall's Tau=-0.0531, p=0.5163>0.05).

Subsequently, the Duval and Tweedie trimming and filling test result was examined, revealing no difference between the observed and actual effect sizes. In summary, the tests conducted on the asymmetry of the funnel diagram collectively indicate its symmetry, providing no evidence of publication bias.

Within the study's scope, the meta-analysis's numerical output regarding Fail-Safe N, a measure associated with the p-value, was analyzed. The p-value for Fail-Safe N being less than the alpha value (p<0.001) suggests that the study is robust with low susceptibility to bias. Additionally, the p value for the Number of Error Protections was found to be less than the alpha value of 0.05 (FSN=7,025,073, p<0.001), indicating that the study is robust and possesses a high level of reliability.

3.2. Results on Pooled Reliability Cofficient

Following the process of searching for evidence of publication bias related to the studies included in the sample of the study, the average effect size should be calculated within the scope of the preferred random effects model, taking into account the sampling frame of the study. Table 3 shows the pooled reliability coefficient and the upper and lower confidence interval values for the pooled reliability coefficient.

Table 3.
Pooled Reliability Coefficient Results

Pooled Reliability Coefficient	Number of Studies	Standard Error	Z	p	95% Confidence Interval for Pooled Reliability Cofficient
0.939	68	0.049	57.482	<.0001	[0.869, 0.972]

When Table 3 is examined, it is concluded that the Cronbach's alpha value or generalized effect size value of the SAAS is approximately 0.94 with an error of 0.049 and the result obtained is statistically significant (z=57.482, p<.001). The lower limit of reliability was calculated as 0.87 and the upper limit as 0.97 at 95% confidence level. These results indicate that alpha values vary between 0.87 and 0.97 with 95% probability. Accordingly, it is concluded that the Social Appearance Anxiety scale has been measured in a sufficiently reliable manner in 68 studies conducted in the literature. The forest plot based on the random effects model for the 68 studies included in this meta-analysis is given in Figure 3.

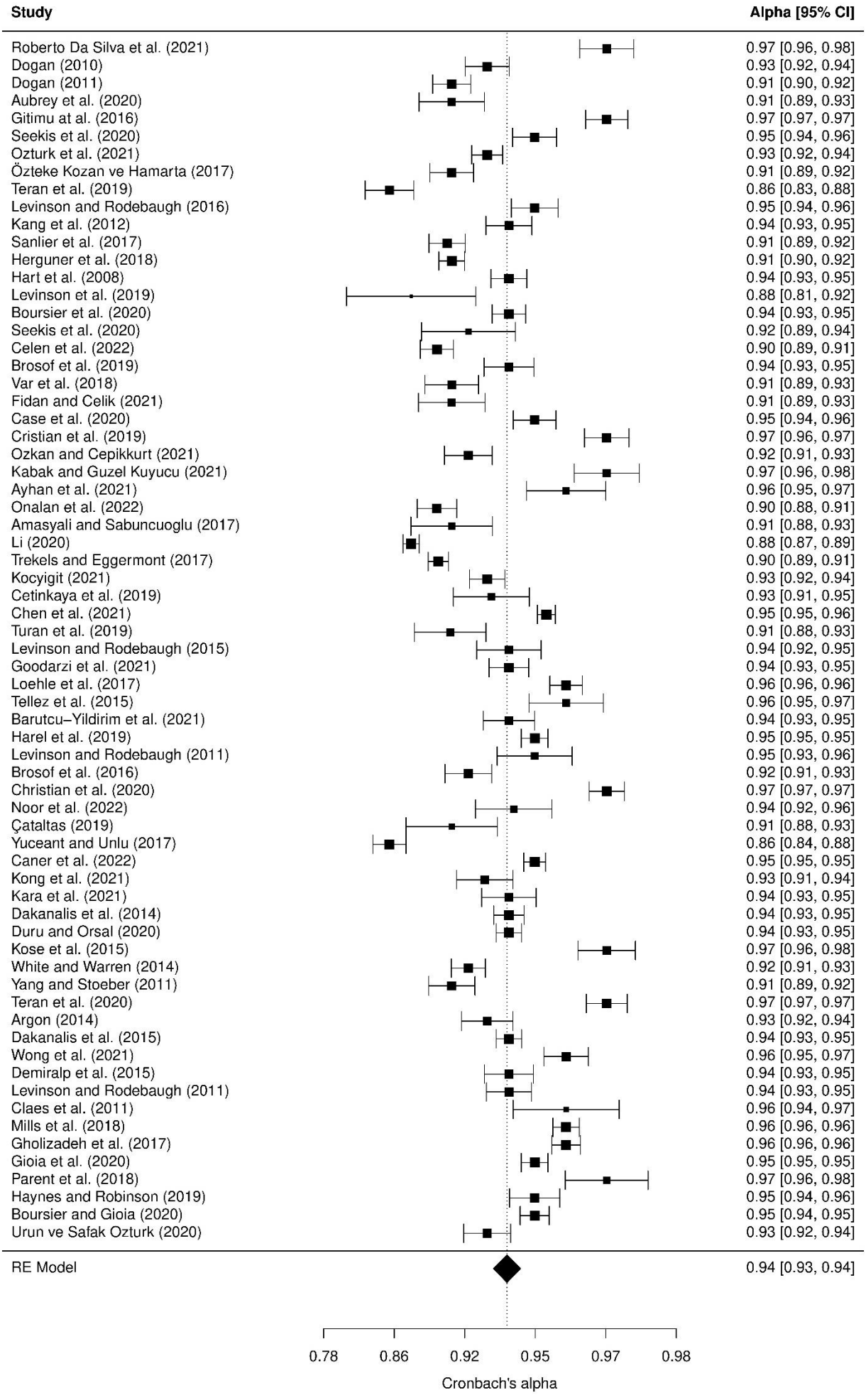

Figure 3. Forest Plot According to Random Effects Model

When the data on the reliability values of the studies included in the study are considered, it is observed that the reliability values of the studies vary between 0.86 and 0.97. When the statistical results of the reliability values of the studies are evaluated holistically, it can be said that the reliability of all 68 studies constituting the sample is at a sufficient level. The forest plot also includes study weights. The size of the square representing each study in the forest plot shows the weight of the study. When the study weights in the forest plot are examined, it can be said that the weight of the study conducted by Li (2020) is the highest and the weight of the study conducted by Levinson et al. (2019) is the lowest.

3.3. Heterogeneity Analysis

After estimating the pooled reliability coefficient, it should be checked whether the studies show a heterogeneous distribution. Obtaining different reliability coefficients from the included studies may be due to the fact that the studies were conducted with different protocols, as well as the differentiation between subgroups. Within the scope of the study, Cochran Q, I^2 average reliability lower and upper limits were utilized to collect evidence of heterogeneity between reliability coefficients. Table 4 shows the results of the heterogeneity analysis.

Table 4.
Results of Heterogeneity Analyses

Q	**df**	***p***	***I²***
2375.484	67	<0.0001	% 97.06

When analized Table 4, Cochran's Q Test yields a statistically significant result (Q(df=67)=2375.484, p<.0001). Consequently, the observed change in reliability values of the scale exceeds what would be anticipated from sampling error alone. This suggests that the actual effect size pertaining to reliability varies across studies. The I^2 statistic, another metric indicating heterogeneity, is calculated as 97.06% in Table 4. This I^2 value signifies the degree of inconsistency in findings within the meta-analysis, reflecting the extent to which confidence intervals from different studies overlap (Borenstein et al., 2009). The relatively large I^2 value obtained in this study indicates substantial variability in the reliability values of the scale among individual studies (Higgins et al., 2003). In addition to the Q and I^2 statistics, the 95% confidence interval for the average effect size, with a lower limit of 0.86 and an upper limit of 0.97, provides insight into the wide variability of reliability values between populations (based on standard deviation). Considering the statistically significant Q statistic, the relatively high I^2 value, and the considerable width of the prediction interval, it is inferred that there exists significant heterogeneity warranting further examination. To address this heterogeneity, moderator analyses were employed in the research to elucidate sources of variation in the reliability values across individual studies.

3.4. Results Related to Moderator Analyses

In the previous stage of this meta-analysis, it was concluded that examining the sources of the change in the reliability values of individual studies was statistically significant, that is, statistically worth examining. In this framework, the final aim of the study was to determine whether the reliability values of the SAAS differed statistically when categorical (language of the scale, language of the article, sample type, field of study, continent of the participants) and continuous (average age) variables were taken into consideration. For this purpose, first, Analog ANOVA was performed by considering categorical variables and then meta-regression was performed by using continuous variables. The results of the Analog ANOVA are presented in Table 5.

Table 5.
Results of Subgroup Analyses

Variable		**N**	**Pooled Reliability Cofficient**	**95% Confidence Interval**	**df**	**Q_b**	**p**
Language of the Scale	English	34	0.946	[0.878, 0.977]	1	7.291	**0.007***
	Non-English	34	0.931	[0.869, 0.964]			
Language of the Article	Turkish	8	0.925	[0.900, 0.943]	1	2.523	0.112
	English	60	0.941	[0.868, 0.974]			
Sample Type	Adolescent	7	0.932	[0.829, 0.973]	2	3.396	0.183
	University Student	27	0.937	[0.872, 0.969]			
	Adult	24	0.946	[0.884, 0.975]			
Field of Study	Social Sciences	42	0.943	[0.885, 0.972]	2	3.513	0.173
	Health Sciences	20	0.934	[0.848, 0.972]			
	Sports Sciences	6	0.925	[0.781, 0.975]			
Continent of the Participants	Asia	33	0.928	[0.860, 0.963]	2	12.434	**0.002***
	Europa	11	0.945	[0.898, 0.970]			
	USA	24	0.949	[0.883, 0.977]			

When the first row of Table 5 is analyzed, it is concluded that the reliability coefficients of the SAAS in English and non-English languages differ statistically significantly (Q=7.291, p=007<.0001). Accordingly, whether the scale language is English or not

can change the reliability of the SAAS. When the pooled reliability values cofficients were analyzed, it was concluded that the reliability values of the SAAS were higher in the studies in which the English language SAAS was used.

When the second row of Table 5 is analyzed, it is concluded that the reliability coefficients of SAAS do not differ statistically significantly according to the language of the article (Q=0.253, p=0.112>.0001). Accordingly, whether the language of the article is English or Turkish does not change the reliability of the SAAS. When the third row of Table 5 was analyzed, it was concluded that the reliability coefficients of the SAAS did not differ statistically significantly according to the sample type (Q=3.396, p=0.183>.0001). Accordingly, whether the sample consists of adolescents, university students or adults does not change the reliability of the SAAS. When the fourth row of Table 5 is analyzed, it is concluded that the reliability coefficients of the SAAS do not differ statistically significantly according to the field of study (Q=3.513, p=0.173>.0001). Accordingly, whether the field of study is social sciences, health sciences or sports sciences does not change the reliability of the SAAS. When the last row of Table 5 is examined, it is concluded that there is a statistically significant difference in the reliability coefficients of the SAAS when the individuals constituting the sample are from Asia, Europe or America (Q=12.434, p=0.07<.05). Accordingly, whether the participant's continent is Asia, Europe or USA can change the reliability of the SAAS. When the pooled reliability cofficients were analyzed, it was concluded that the SAAS reliability values were higher for studies in which European and American individuals were participants. Table 6 shows the meta-regression results of the moderator analysis for continuous variables.

Table 6.
Meta Regression Results

	Cofficient	**Standard Error**	**p**	**R^2**	**Q_E**
Average Age	0.008	0.004	0.058	% 4.3	1800.6125***

Note. *** <0.0001

When Table 6 is examined, it is observed that the average age variable is not statistically significant within the scope of the model based on the random effects model. In other words, at 0.05 significance level, the average age variable is not a statistically significant predictor of the pooled reliability coefficient. When Table 6 is analyzed, it is observed that the contribution of average age variable to the explained variance is 4.3%. The QE value in Table 6 is the Q value reported for the residual value and when Table 6 is analyzed, it is seen that this value is statistically significant (QE =1800.61; p<0.0001). This means that the assumptions of the fixed effect model are violated, that is, the actual reliability value may vary even for studies with participants of the same age in their samples.

4. DISCUSSION, CONCLUSION AND SUGGESTIONS

The aim of this meta-analytic reliability generalization study is to obtain the pooled reliability coefficient of the Social Appearance Anxiety Scale developed by Hart et al. (2008) and to examine the moderating variables that may be the source of variability between individual studies. For this purpose, meta-analysis was conducted for 68 studies that used the Social Appearance Anxiety Scale and met the inclusion criteria. The pooled reliability coefficient for the 68 studies was determined as .939 [.869-.972]. As a result of the reliability analysis of the original form of the scale, the internal consistency coefficient was found to be .94, .95 and .94 for three different samples and the test-retest reliability coefficient was found to be .84. As a result of the adaptation study conducted by Doğan (2010), the internal consistency coefficient was found to be .93, the reliability coefficient obtained by halving the test was .88 and Cronbach's alpha coefficient was .93. According to psychometric theory, Cronbach's alpha coefficients above .70 are acceptable for exploratory research, but coefficients higher than .80 are recommended for general research and these values should be higher than .90 in clinical practice (Nunnally & Bernstein, 1994). Within the scope of this study, when the reliability analysis results obtained within the scope of the study in which the original form of the scale was developed and the adaptation study were analyzed holistically, it was concluded that the reliability estimates were at a high level (DeVellis, 1991; Cortina, 1993) and relatively close to each other. As a result, it can be said that the average reliability coefficient obtained as a result of the study is at an acceptable level for both exploratory, general and clinical research.

Overestimation of the true population effect leads to the problem of "publication bias". Publication bias is basically a function of p-values, not the reliability of test scores, and given this definition, meta-analytic reliability generalization studies should not be affected by this problem. However, there is a special type of publication bias that is typical for meta-analytic reliability generalization studies and this phenomenon is referred to as "reliability induction". This term refers to the very common practice among researchers of continuing the study by considering reliability coefficients from previous administrations of the test (e.g., previous psychometric studies of the test) rather than reporting an estimate based on the scores obtained in the current study. Reliability induction can be considered as one of the dubious measurement practices and is defined as "making dubious judgments about the validity of measurement results for studies and, consequently, the validity of research results". It has long been known that estimates of the reliability of measurement results vary with varying sample characteristics, study conditions, and score distributions, and it is a view advocated by most researchers (Crocker & Algina, 1986; Pedhazur & Schmelkin, 1991; Thompson, 2003). As a result of the heterogeneity analysis conducted within the scope of the research, it was concluded that the heterogeneity between the studies was statistically significant. Since the reliability coefficients of the Social Appearance Anxiety Scale took different values in different samples, it was concluded that it would not be appropriate to generalize, that is, to use reliability induction. Considering this situation, heterogeneity sources were examined with moderator

analyses within the scope of the study. Within the scope of moderator analyses, five categorical (scale language, article language, sample type, study area and country of the participants) and one continuous variable (average age) were defined as independent variables. In this context, it was examined whether Cronbach's alpha coefficient showed a statistically significant difference according to the subcategories of language of the scale, language of the article, type of sample, field of study and country of the participants. As a result, it was concluded that Cronbach's alpha coefficient differed statistically significantly according to the subcategories of "language of the scale" and "country of the participants" variables. It was concluded that Cronbach's alpha coefficient did not vary in a statistically significant way according to the subcategories of the categorical variables "language of the article", "type of sample" and "field of study" and the average age variable, which was considered as a continuous variable. Cronbach's alpha coefficient for the categories constituting the language variable of the scale was found to be statistically significantly higher for studies published in English than for studies not published in English. Cronbach's alpha coefficient for the categories constituting the continent variable of the participants was higher for American participants than for Asian and European participants. It is thought that the high Cronbach's alpha coefficient estimation can be explained by the fact that the original version of the scale was in English and the participants were selected from the American continent during the development of the scale. At this point, researchers who want to use a version of the scale in a language other than the original English version may be advised to follow the cross-cultural adaptation procedures (back translation, cross-validation, factor analysis, etc.) very carefully and completely or to apply a pre-validated adaptation (Lee, Yin, & Zhang, 2010; Dilek and Gelbal, 2023).

Researchers may also be advised to conduct a small-scale study on a carefully selected group of existing studies that are structurally similar to the future study in order to estimate expected reliabilities (Bonett, 2010). In addition, researchers reporting Cronbach's alpha coefficient should test the assumption of tau equivalence or report a reliability measure that does not assume invariant factor loadings. To examine differences in performance on items, a study can be conducted to determine whether measurement parameters are equal across groups in the categories of moderator variables (Vassar & Bradley, 2010).

Within the scope of this study, it can also be concluded that poor reporting practices regarding the studies are very high when the screening process is taken into consideration. Since the results of the studies are only as good as the validity and reliability of the measurement tools used to collect data, incomplete reporting should be considered problematic practices. During the screening process, the authors of this study noticed that reliability coefficients were not reported or reliability induction (i.e., reporting reliability scores from previous studies) was not applied in the vast majority of studies. The fact that these data are not reported within the studies negatively affects the findings of the studies because the absence of these data reduces the likelihood of replication of the study. In addition to the general lack of reporting of reliabilities of measurement outcomes within primary studies, there is also a lack of use of more advanced statistical techniques, such as HLM, which help to account for the influence of data structure, which is often an artifact of study designs. Researchers conducting meta-analytic reliability generalization studies rely too heavily on the results of moderator analyses such as ANOVA and meta-regression. This slows down the progress of the methodology and, more importantly, the field, and imposes unnecessary limitations on the questions that can be asked and subsequently answered through meta-analytic reliability generalization. Authors are encouraged to calculate reliability estimates for the data sets at their disposal and report the resulting reliability coefficients. It is thought that transparent reporting practices such as this will encourage researchers to consider the reliability of measurement results when interpreting the results obtained from studies and provide critical information to make more meaningful and informed judgments.

4.1. Limitations

Cronbach's alpha values obtained within the scope of the research are limited to the literature review. It is possible that studies with reports that do not have high reliability values have not been published. In addition to this, the fact that some moderator variables could not be reached within the scope of some studies can be considered as another limitation. The publication language of the studies can also be considered as another limitation. Studies in which Cronbach's alpha coefficients were not reported also stand out as a limitation. Third, due to the small number of studies reporting McDonald's Omega and test-retest coefficients, it was not possible to conduct moderator analyses to investigate potential variables related to the heterogeneity shown by these reliability estimates.

Research and Publication Ethics Statement

This study is a systematic literature review examining the reliability coefficients of the Social Appearance Anxiety Scale. Data were not collected from any group of students or teachers in any way; data were obtained only by accessing the studies in the literature. Therefore, no application was made to the Ethics Commission for this study.

Contribution Rates of Authors to the Article

Researchers contributed equally at all stages of the research.

Statement of Interest

The authors have not declared any potential conflicts of interest regarding the research, authorship, and publication of this article.

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