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Title: Evaluating social fears in late adolescence: Study with a Portuguese Sample

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Abstract

This work intends to psychometrically evaluate a measure of social fears for late adolescents, who may differently perceive social fear stimulus. A community sample of 794 late adolescents was recruited and assessed, using the Social Anxiety and Avoidance Scale for Adolescents. Internal structure analysis indicates that late adolescents adopt a unique perspective on social experiences. Internal consistency and convergent validity relating to thoughts typical of social anxiety were found. The instrument may be useful for evaluating social fears throughout adolescence.

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Evaluating social fears in late adolescence: Study with a Portuguese Sample

Social fears are a normative and distinctive feature of adolescence. They tend to increase over time (Westenberg, Drewes, Goedhart, Siebelink, & Treffers, 2004), and frequently associate with avoidance of anxious-provoking social events, especially in late adolescence (Sumter, Bokhorst, & Westenberg, 2009).

Late adolescents face specific developmental challenges that may shape the expression of their social fears. They need to express and perform according to their new found and unique identity, while establishing intimate and rewarding relationships (Loevinger, 1997). Whereas peers, and fears associated with them, lose prominence from early to late adolescence (Levpuscek, 2004; Peleg, 2012), fears relating to social performance and formal interactions become salient (Bokhorst, Westenberg, Oosterlaan, & Heyne, 2008; Westenberg, Gullone, Bokhorst, Heyne, & King, 2007). Evaluating specific social fears in different age groups may therefore be informative (Sumter et al., 2009), requiring valid instruments. Since it has been found that the same measurement models for social fears fit the data differently for different age groups (Bokhorst et al, 2008), it may be that some items are perceived disparately by, for example, early and late adolescents, under the influence of socio-cognitive maturation, which significantly predicts social evaluation fears (Westenberg et al., 2004).

This work proposes to psychometrically evaluate the Social Anxiety and Avoidance Scale for Adolescents, for late adolescents. This measure was designed and used to grasp social experiences of adolescents between 12 and 18 years old (Cunha, Pinto-Gouveia, & Salvador, 2008). For this research, an exploratory analysis on the fear components arising from late adolescents' responses alone will be performed, in addition to confirming if fear components proposed to fit early, middle and late

adolescents fit similarly well as those arising from the current late adolescent sample.

Indicators of reliability and convergent validity will be analyzed.

Method

Participants

Participants were 794 students. Boys and girls had similar mean ages ($t_{(787)}$ = -0.30; p = .76) and were distributed similarly by school year ($\chi^2_{(2,1)}$ = 1.11; p = .58), but not by socioeconomic status ($\chi^2_{(2,1)}$ = 19.77; p < .001). More girls descended from low socioeconomic status, and more boys presented a medium and high socioeconomic status. A subsample of 679 adolescents also completed the Portuguese version of the Social Thoughts and Beliefs Scale (STABS, Vagos, Pereira, & Beidel, 2010). These sample groups had similar mean ages ($t_{(791)}$ = = 0.22; p = .82) and their students were similarly distributed by sex ($\chi^2_{(1,1)}$ = 0.29; p = .87), and socioeconomic status ($\chi^2_{(2,1)}$ = 2.89; p = .24), but not by school year ($\chi^2_{(2,1)}$ = 13.57; p < .001). More students from the complete than the subsample attended the 10th grade, and the reverse was found for the 11th and 12th grade (Table 1).

Instruments

The *Social Anxiety and Avoidance Scale for Adolescents* (SAASA) consists of 34 items representing social experiences typical of adolescence, which are evaluated using anxiety (from 1 = *none* to 5 = *very much*) and avoidance (from 1 = *never* to 5 = *almost always*) scales. It has shown good internal consistency, test-retest reliability, and convergent and divergent validity, with each scale being composed of six non-coincident dimensions: interaction with the opposite sex, assertive interaction, observation by others, interaction in new social situations, performance in formal social situations, and eating and drinking in public (Cunha et al., 2008).

The STABS uses 21 items to evaluate if the persons' thinking resembles thoughts associated with social anxiety (from 1 = *never* to 5 = *always characteristic*). It has shown excellent internal consistency and temporal stability, convergent and divergent validity in community samples (Fergus, Valentiner, Kim, & Stephenson, 2009), and discriminant validity in clinical samples (Turner, Johnson, Beidel, Heiser, & Lydiard, 2003). Using exploratory factor analysis on a late adolescents' community sample, two subscales were found for its' Portuguese version (Vagos et al., 2010), social interaction and public performance. Both shown very good internal consistency values for the current sample (α = .91 and .83 respectively).

Procedure

The sample was recruited from secondary schools, after the national ethics committee, the executive boards of the schools, parents, and students themselves consented to participate. Confidentiality of the data was explicit and instruments were presented counterbalanced and filled using about 20 minutes of classroom time.

Mplus (Muthén & Muthén, 2010) was used for internal structure analysis. Exploratory factor analysis with varimax rotation was performed on the 34 items of the anxiety and avoidance scales separately, to examine fear components arising from the present sample. Items were included if they had $\lambda \geq .32$ in only one factor and cross-loadings $\leq .32$. Items not matching these criteria were dropped (Tabachnick & Fidell, 2001). Because the current exploratory model differed from the one originally proposed (Cunha et al., 2008), confirmatory factor analysis were subsequently conducted to compare fit indicators. Measures only included items with $\lambda \geq .32$; cross-loadings $\leq .32$ were omitted. MPlus was also used to compute correlations between measures of anxiety, avoidance and social thoughts, as indicators of convergent validity. R (3.0.1; R

Development Core Team, 2013) was used to calculate ordinal alpha values (Gaderman, Guhn and Zumbo, 2012), as measures of internal consistency.

Results

Exploratory factor analysis, internal consistency and convergent validity

For the anxiety scale, a six factor exploratory was selected (see Table A in supplementary material) because it presented superior fit (*i.e.* lower RMSEA values) than the next simplest model, and similar fit to the next most complex model (*i.e.* overlap of the RMSEA confidence intervals; Table 2; Tabachnick & Fidell, 2001). A six factor solution was also considered for avoidance (see Table B in supplementary material), given its' goodness of fit, and the pertinence of comparing similar constructs for anxiety and avoidance as dual indicators of social anxiety.

Results from the current sample show that only the constitution of interaction with the opposite sex coincided with the original anxiety model (see Table 3). Item 34 loaded on observation by others, denoting the exposure involved rather than the type of behavior used in answering back to a colleague. Items 11, 15 and 16 represented assertive interaction, referring to negative assertion and initiating assertiveness (Rakus, 1991). Items 5, 9, 10, and 30 were excluded from the scale ($\lambda \leq .32$ for all factors), as were items 13 and 19 (cross-loadings $\geq .32$).

For avoidance, results from the current sample show that only the constitution of eating and drinking in public and interaction in new social situations match the original structure (see Table 4). Differences were mostly due to item exclusion, either by cross-loadings (item 19) or by low loading in all factors (items 9, 10, 11, 12, 15, 30, and 33). Only assertive interaction was changed by item relocation: items 13 conveyed positive assertion and item 18 denoted expressing of and dealing with personal limitations (Rakus, 1991).

All factors achieved adequate internal consistency values (ordinal alpha values ≥.70; Tables 3 and 4) and correlated significantly amongst themselves and with the STABS. Corresponding dimensions of anxiety and avoidance also correlated significantly (Table 5).

Confirmatory factor analysis

The current exploratory factor solution (see Table 3 and 4) seemed theoretically reasonable but was different from the original exploratory model (Cunha et al., 2008). Consequently, both measurement models were tested and their fits were compared. The current models achieved acceptable CFI and TLI adjustment indices, but the original ones did not (Tabachnick & Fidell, 2001). The RMSEA values were lower for the current models, and the confidence intervals for the current and original models did not overlap (Table 2), indicating the better fit of the current ones.

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Discussion

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This work psychometrically evaluated the SAASA for late adolescents, to better understand their expression of social fears in comparison to that reported by a combined sample of early, middle and late adolescents (Cunha, et al., 2008). The exploratory analysis of items produced the same fear components being evaluated by different compositions of items; the same items may be evaluating different social experiences for various age-groups. For anxiety, two items (11 and 15) moved from interaction in new social events to assertive interaction, and one item (34) moved from assertive interaction to observation by others. For avoidance, one item (13) moved from interaction with the opposite sex to assertive interaction, and one originally excluded items loaded on assertive interaction (18). These changes increase the correspondence between the anxiety and avoidance measures, facilitating the evaluation of these frequently associated constructs (Sumter et al., 2009).

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Several items were excluded from the original to the current measurement model. Four of them were simultaneously excluded from the anxiety and avoidance scales (9, 10, 19 and 30), questioning their utility for evaluating social experiences in late adolescence. Items 9, 10 and 30 refer to general conduct or hygienic rules that may have become internalized, no longer representing pertinent social events. Item 19 seems subject to idiosyncratic interpretation, not illustrating one only single construct.

Adequate internal consistency and convergent validity indicators were found for the current measures of social fears, which better fitted the data from the current late adolescents' sample then the original measurement model. Thus, the original model may be useful when comparing wider groups of adolescents, but the current one may be preferable for exclusively evaluating late adolescents and accurately reflecting their perspective on social fear stimulus. Assertive interaction suffered the most noticeable changes, with more items now representing challenges concerning personal expression and exposure, and the preoccupation that these will foster fruitful interactions (Loevinger, 1997). These more formal interactions may particularly prompt anxiety in late adolescence (Westenberg et al., 2007).

Age-group comparisons were not possible with the current sample. Given that gender and age-group differences have been found for levels of and developmental trends for social fears (Bokhorst et al., 2008; Sumter et al., 2009 Westenberg et al., 2004; Westenberg et al., 2007), quantitative (*i.e.* multiple-group comparison) and qualitative (*i.e.* focus group) methods may help design developmentally tailored assessment of such fears. This will further the preliminary evidence found on the SAASA being useful for evaluating and describing social fears throughout adolescence.

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Table 1

Socio-demographic markers for the complete and sub-sample

	Complete sample[a]		Sub-sample[b]	
	n	%	n	%
Sex				
Male	304	38.3	261	38.4
Female	487	61.3	416	61.3
School year				
10th grade	269	33.9	215	31.7
11th grade	269	33.9	245	36.1
12th grade	253	31.9	217	32
Socioeconomic status				
Low	216	27.2	186	27.4
Medium	377	47.5	328	48.3
High	161	20.3	137	20.2
Age				
M (SD)	16.69 (1.14)		16.68 (1.14)	

[a] Three adolescents did not provide information on their gender or school year (0.4%); forty adolescents did not provide information as to evaluate their socioeconomic level (5%).

[b] Three adolescents did not provide information on their gender or school year (0.3%); twenty-eight adolescents did not provide information as to evaluate their socioeconomic level (4.1%).

Table 2

Adjustment indexes for exploratory and confirmatory factor analyses on the anxiety and avoidance scales of the Social Anxiety and Avoidance Scale for Adolescents

	$\chi2$	df	CFI	TLI	RMSEA (CI)
Anxiety					
EFA - Five factor solution	1017.10[*]	401	0.967	0.954	0.044 (0.041; 0.047)
EFA -Six factor solution	754.65[*]	372	0.979	0.969	0.036 (0.032; 0.040)
EFA -Seven factor solution	666.69[*]	344	0.983	0.972	0.034 (0.030; 0.038)
CFA - Original measurement model	1605.82[*]	512	0.941	0.936	0.052 (0.049; 0.055)
CFA - Current measurement model	928.85[*]	335	0.962	0.957	0.047 (0.044; 0.051
Avoidance					
EFA -Five factor solution	851.127[*]	401	0.967	0.954	0.038 (0.034; 0.041)
EFA -Six factor solution	711.919[*]	372	0.975	0.963	0.034 (0.030; 0.038)
EFA -Seven factor solution	610.87[*]	344	0.981	0.968	0.031 (0.027; 0.035)
CFA - Original measurement model	1368.32[*]	419	0.925	0.917	0.053 (0.050; 0.057)
CFA - Current measurement model	760.319[*]	284	0.954	0.948	0.046 (0.042; 0.050)

Note: df = degrees of freedom; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; CI = confidence interval; EFA = Exploratory Factor Analysis; CFA= Confirmatory Factor Analysis

[*] p < .001

Table 3

Confirmatory factor loading on the anxiety subscale of the SAASA, for the original and the current measurement models, and sample means, standard deviations and ordinal Alpha for each factor

		Original	Current
Factor 1: Eating and drinking in public (M = 2.66; DP = 1.2; ordinal α = .88)			
#1	Eating in public	.834	.854
#2	Drinking in front of other people	.772	.930
#10	In a bus or train, being sited in front of other people	.861	-
Factor 2: Interaction in new social situations (M = 9.11; SD = 3.18; ordinal α = 0.80)			
#6	Phoning a colleague I don't know very well	.653	.696
#7	Talking to someone I don't know very well	.728	.808
#8	Meeting strangers	.628	.688
#11	Expressing disagreement or disapproval to a colleague I don't know very well	.767	-
#12	Making eye contact with someone I don't know very well	.667	.731
#13	Expressing my feelings to the person I like	.607	**-**
#15	Performing, for the first time, a new task or role in front of colleagues	.679	**-**
#19	Asking someone out for the first time	.717	**-**
Factor 3: Interaction with the opposite sex (M = 7.89; SD = 3.42; ordinal α = .90)			
#14	Being alone with a colleague from the opposite sex	.754	.749
#17	Mingling in a group where there are mainly people from the opposite sex	.797	.804
#20	Making a compliment to someone of the opposite sex	.791	.776
#21	Having a conversation with someone of the opposite sex	.881	.888
# 22	Talking with other colleagues	.812	.815
Factor 4: Assertive interaction (M = 11.53; SD = 4.12; ordinal α = .83)			
#9	Urinating in a public toilet	.516	-
#11	**Expressing disagreement or disapproval to a colleague I don't know very well**	-	**.776**
#15	**Performing, for the first time, a new task or role in front of colleagues**	-	**.687**
#16	Saying "no" to a colleague who has asked me to do something I don't want to	.609	.616
#18	Asking someone for a favor	.672	.671
#23	Asking a colleague to change a way of behaving which annoys me	.665	.662
.#27	Complaining when someone tries to jump the queue	.637	.638
#30	Being late or early to a meeting or class	.583	-
#34	Answering back to a colleague that is trying to make fun of me	.705	-
Factor 5: Performance in formal social situations (M = 8.83; SD = 3.41; ordinal α = 0.82)			
#4	Reading aloud in front of the class	.625	.632
#5	Writing while being observed	.580	-
#26	Having an oral test or exam	.632	.648
#28	Being asked to solve a problem on the blackboard	.773	.787

#29	Taking the initiative of asking a question or for an explanation in a class or meeting	.809	.832
Factor 6: Observation by others (M = 11.29; SD = 4.63; ordinal α = 0.88)			
#3	Going to a party given by a colleague	.746	.730
#24	Making exercises during gym class	.714	.712
#25	Changing in the shower room	.768	.753
#31	Participating in a group sport	.718	.714
#32	Crossing the hall, corridors or going to the canteen/ school bar when it is full of students	.787	.779
#33	Participating in school parties	.656	.647
#34	**Answering back to a colleague that is trying to make fun of me**	-	**.713**

Note: Original = measurement model proposed by Cunha et al. (2008); Current = measurement proposed by exploratory factor analyses in the present work; Underlined items were excluded from the original to the current measurement model; Items in bold were included from the original to the current measurement model.

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Table 4

Confirmatory factor loading on the avoidance subscale of the SAASA, for the original and the current measurement models, and sample means, standard deviations and ordinal Alpha for each factor

		Original	Current
Factor 1: Eating and drinking in public (M = 4.49; SD = 2.27; ordinal α = 0.87)			
#1	Eating in public	.894	.864
#2	Drinking in front of other people	.863	.903
#3	Going to a party given by a colleague	.842	.824
Factor 2: Interaction in new social situations (M = 6.77; SD =2.53; ordinal α = 0.72)			
#6	Phoning a colleague I don't know very well	.632	.632
#7	Talking to someone I don't know very well	.843	.845
#8	Meeting strangers	.607	.606
Factor 3: Interaction with the opposite sex (M = 7.95; SD = 3.65; ordinal α = 0.90)			
#13	Expressing my feelings to the person I like	.414	-
#14	Being alone with a colleague from the opposite sex	.809	.825
#17	Mingling in a group where there are mainly people from the opposite sex	.741	.749
#19	Asking someone out for the first time	.668	-
#20	Making a compliment to someone of the opposite sex	.714	.714
#21	Having a conversation with someone of the opposite sex	.902	.916
#22	Talking with other colleagues	.801	.817
Factor 4: Performance in formal social situations (M = 10.05; SD =4.29; ordinal α = 0.81)			
#4	Reading aloud in front of the class	.613	.666
#5	Writing while being observed	.559	.606
#15	Performing, for the first time, a new task or role in front of colleagues	.742	-
#26	Having an oral test or exam	.618	.674
#28	Being asked to solve a problem on the blackboard	.732	.794
#29	Taking the initiative of asking a question or for an explanation in a class or meeting	.695	.730
#33	Participating in school parties	.547	-
Factor 5: Assertive interaction (M = 12.73; SD = 4.15; ordinal α = 0.71)			
#11	Expressing disagreement or disapproval to a colleague I don't know very well	.667	-
#13	**Expressing my feelings to the person I like**	-	**.406**
#16	Saying "no" to a colleague who has asked me to do something I don't want to	.501	.507
#18	**Asking someone for a favor**	-	**.539**
#23	Asking a colleague to change a way of behaving which annoys me	.546	.560
#27	Complaining when someone tries to jump the queue	.559	.568
#30	Being late or early to a meeting or class	.227	-
#34	Answering back to a colleague that is trying to make fun of me	.661	.688
Factor 6: Observation by others (M = 6.36; SD = 3.21; ordinal α = 0.83)			
#9	Urinating in a public toilet	.397	-

#24	Making exercises during gym class	.767	.780
#25	Changing in the shower room	.787	.798
#31	Participating in a group sport	.712	.709
#32	Crossing the hall, corridors or going to the canteen/ school bar when it is full of students	.765	.765

Note: Original = measurement model proposed by Cunha et al. (2008); Current = measurement proposed by exploratory factor analyses in the present work; Underlined items were excluded from the original to the current measurement model; Items in bold were included from the original to the current measurement model.

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Table 5

Correlation between dimensions of the Social Anxiety and Avoidance Scale for Adolescents and Social Thoughts and Beliefs Scale

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Eating and drinking in public	.702	.486	.662	.547	.515	.664	.308	.268
(2) Interaction in new social situations	.513	.908	.535	.606	.494	.437	.413	.417
(3) Interaction with opposite sex	.554	.682	.918	.714	.561	.739	.326	.359
(4) Assertive interaction	.647	.747	.746	.841	.624	.722	.511	.529
(5) Performance in formal social situations	.536	.687	.630	.739	.962	.618	.405	.464
(6) Observation by others	.673	.671	.746	.807	.716	.907	.322	.343
(7) Discomfort in social interactions	.430	.434	.505	.527	.534	.578	-	-
(8) Discomfort in public performance	.455	.582	.547	.621	.690	..618	-	-

Note: Correlations for avoidance are presented above the diagonal and correlations for anxiety are presented below the diagonal; the diagonal line presents correlations between corresponding dimensions for anxiety and avoidance; all correlations reported were $p < 0.001$, two-tailed.