WEP
Warwick
Evans
Publishing

Transactions on Social Science, Education and Humanities Research
ISSN: 2960-1770, eISSN: 2960-2262 | Volume 10
HADC 2024

Social Anxiety and Fear of Being Misunderstood When Communicating Online

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Abstract. Social anxiety is characterized by a negative interpretation bias toward social cues, such that neutral/ambiguous social events are interpreted negatively and mildly adverse social events are exaggerated (Chen et al., 2020). We set out to explore the relationship between social anxiety and late adolescents' preferences for the clarity of their online messages. Our findings present a complex picture of how social anxiety might impact the way individuals communicate online. The relationship between social anxiety and the clarity of online messages among late adolescents is intricate. The present study aimed to investigate how individuals in late adolescence (i.e., junior high school students) with varying levels of social anxiety feel and worry about the possibility of their messages being misunderstood by others when communicating online.

Keywords: Social Anxiety, interpreted negatively, Late adolescents.

1. Introduction

Social anxiety is characterized by a negative interpretation bias toward social cues, such that neutral/ambiguous social events are interpreted negatively and mildly adverse social events are exaggerated (Chen et al., 2020). Previous studies have shown that individuals with heightened levels of social anxiety negatively interpret not only ambiguous face-to-face social situations (Amin et al., 1998), but also ambiguous online communications (Byron, 2008). However, to the best of our knowledge, no study has investigated whether individuals with higher levels of social anxiety would also tend more to worry their online messages to be misinterpreted by receivers. In general, people tend to underestimate how likely their online messages would be misunderstood (Kruger et al., 2005). However, given their negative interpretation bias, individuals with higher levels of social anxiety may in contrast overestimate this likelihood, thus showing greater fear of being misunderstood during online communications. The present study aimed to investigate how individuals in late adolescence (i.e., junior high school students) with varying levels of social anxiety feel and worry about the possibility of their messages being misunderstood by others when communicating online.

Late adolescents with higher levels of social anxiety were believed to have greater fear of being misunderstood when communicating online (as proxied by greater tendencies to use euphemisms, modal particles, exclamations, and emojis to disambiguate the tone and emotional valence of their text messages).

2. Method

2.1. Study type

Observational Study - Data was collected from study subjects that are not randomly assigned to a treatment. This includes surveys, natural experiments, and regression discontinuity designs.

2.2. Blinding

No blinding was involved in this study.

2.3. Study design

The study had a cross-sectional (correlational) design.

2.4. Data collection procedures

The first writer recruited participants from her social circle, which included her classmates and friends outside of school. The recruitment process was completed within a week.

2.5. Sample size

Participants were Chinese junior high school students. The first author recruited participants through her social network, including classmates and friends outside of school. The recruitment process was completed within one week. The target sample size was 131.

2.6. Sample size rationale

The study aimed to obtain enough power (>0.80) to detect a medium-sized correlation at the alpha level of 0.05 (two-tailed). Lovakov & Agadullina (2021) suggested that a medium effect size in social psychology studies should correspond to r=0.24. Given these parameters, a power analysis using G*Power 3 indicated that a minimum sample size of 131 would be required.

2.7. Measured variables

Social anxiety was assessed with the Chinese version of the Interaction Anxiousness Scale (IAS; Leary, 1983). The IAS comprised 15 items involving a broad range of anxiety provoking situations, each scored 1-5, resulting in a total score ranging from 15 to 75, with higher scores indicating higher levels of dispositional social anxiety. Fear of being misunderstood was measured by a self-developed scale, the Online Message Preference Scale (OMPS). The OMPS consisted of 8 scenarios (e.g., “Your friend asks you to do him/her a favor. But on the due date, you realize that you forgot. Now you want to send a message to explain it and offer to make it up to him/her”). After each scenario, three possible messages were presented, and respondents were instructed to arrange the order of the messages according to their preference (e.g., “What would you likely send to her/him? Please arrange the following messages in the order in which you would most likely send them”). We manipulated the ambiguity of the tone and emotional valence of the three messages by adding different numbers of euphemisms, modal particles, exclamations, and emoticons. For example, “Sorry, I forgot. Is it too late if I do it now?” was the most neutral and ambiguous and may sound half-hearted, whereas “Oh sooo sorry! I forgot about it 😩. Would it be too late if I did it now?” was more exaggerated and less ambiguous and may sound more sincere. For each scenario, a score of 3, 2, or 1 was given depending on whether the most exaggerated (i.e., the least ambiguous) message is ranked first, second, or third. Total scores ranged from 8 to 24, with higher scores indicating greater fear of being misunderstood.

2.8. Statistical models

To test the main hypothesis, zero-order correlation analysis was conducted.

2.9. Inference criteria

We used the standard alpha level of 0.05.

3. Results

3.1. Descriptive Statistics

Table 1. Descriptive statistics of age and three types of measuring scales

Descriptive Statistics			
	age	**OMPS**	**IAS**
Valid	114	114	114
Missing	0	0	0
Mean	18.061	18.544	45.167
Std. Deviation	2.922	4.557	5.573
Minimum	15.000	8.000	27.000
Maximum	26.000	24.000	62.000

Table 2. Binomial test of sex

Binomial Test					
Variable	**Level**	**Counts**	**Total**	**Proportion**	**p**
sex	0	85	112	0.759	< .001
	1	27	112	0.241	< .001

Note. Proportions tested against value: 0.5.

A total of 114 high school students took part in the study, with two participants choosing not to disclose their genders. Out of the remaining 112 participants, 85 are identified as females, constituting 75.9% of the sample, while the remaining 27 are males, making up 24.1% of the group. The participants' average age is 18.061 years, with a standard deviation of 2.922 and a range spanning from 15 to 26 years old.

The mean score of the eight OMPS is 18.544 with a standard deviation of 4.557 and a range from 8 to 24. The mean score of the IAS is 45.167 with a standard deviation of 5.573 and a range from 27 to 62.

3.2. Confirmatory analysis

We conducted a linear regression analysis to examine the correlation between social anxiety disorder symptoms and the extent of the semantic clarity of Wechat messages they will send to others. The predictor is social anxiety disorder symptoms (as measured by the IAS) and the extent of the semantic clarity of Wechat messages they will send to others (as measured by the scores of the semantic clarity of Wechat messages they will send out) is the outcome variable. In analysis, the semantic clarity of Wechat messages they will send to others did not significantly correlate with social anxiety disorder symptoms ($r=0.009$, $p=0.922$). However, after excluding the reverse questions in the survey, the relation between the semantic clarity of Wechat messages they will send to others and social anxiety disorder symptoms strengthened, but the two variables still are not significantly correlated ($r=0.07$, $p=0.457$).

Table 3. Correlation between symptoms of social anxiety disorder and the extent of the semantic clarity of Wechat messages they will send to others

Pearson's Correlations				
Variable		OMPS	IAS	IAS_noR
1. OMPS	Pearson's r	—		
	p-value	—		
2. IAS	Pearson's r	0.009	—	
	p-value	0.922	—	
3. IAS_noR	Pearson's r	0.070	0.948	—
	p-value	0.457	< .001	—

3.3. Exploratory analysis

A positive correlation is evident between the degree of social anxiety and the preference for semantically clear responses in OMPS6, with a significant correlation coefficient of 0.186 (p=0.048). Furthermore, a strong and positive association is observed between the clarity of semantics chosen in OMPS1 and the corresponding choices made in OMPS2, exhibiting a correlation coefficient of 0.660 (p<0.001). Additionally, it is noteworthy that the relationships between OMPS5 and OMPS8 with IAS change from positive to negative upon the incorporation of reverse questions into the analysis.

Table 4. The correlations between the scores of SAD symptoms and that of three types of measuring scales

Pearson's Correlations											
Variable		IAS	IAS_noR	OMPS1	OMPS2	OMPS3	OMPS4	OMPS5	OMPS6	OMPS7	OMPS8
1. IAS	Pearson's r	—									
	p-value	—									
2. IAS_noR	Pearson's r	0.948	—								
	p-value	< .001	—								
3. OMPS1	Pearson's r	-0.103	-0.059	—							
	p-value	0.277	0.532	—							
4. OMPS2	Pearson's r	-0.028	-0.013	0.660	—						
	p-value	0.770	0.895	< .001	—						
5. OMPS3	Pearson's r	0.022	0.069	0.396	0.512	—					
	p-value	0.817	0.467	< .001	< .001	—					
6. OMPS4	Pearson's r	0.104	0.117	0.466	0.481	0.338	—				
	p-value	0.271	0.215	< .001	< .001	< .001	—				
7. OMPS5	Pearson's r	-0.019	0.043	0.355	0.364	0.520	0.409	—			
	p-value	0.845	0.651	< .001	< .001	< .001	< .001	—			
8. OMPS6	Pearson's r	0.186	0.254	0.356	0.338	0.512	0.281	0.436	—		
	p-value	0.048	0.006	< .001	< .001	< .001	0.002	< .001	—		
9. OMPS7	Pearson's r	-0.064	-0.037	0.511	0.329	0.324	0.437	0.334	0.283	—	
	p-value	0.498	0.694	< .001	< .001	< .001	< .001	< .001	0.002	—	
10. OMPS8	Pearson's r	-0.036	0.031	0.291	0.383	0.371	0.122	0.316	0.479	0.271	—
	p-value	0.703	0.742	0.002	< .001	< .001	0.195	< .001	< .001	0.004	—

4. Results (for replicating the experiment above)

4.1. Descriptive Statistics

Table 5. Descriptive statistics of age, sex and three types of measuring scales

	AGE	IAS	EX	OMPS
Valid	266	266	266	266
Missing	0	0	0	0
Mean	16.989	54.534	24.549	19.139
Std. Deviation	1.097	8.409	6.358	7.138
Minimum	15.000	20.000	7.000	8.000
Maximum	20.000	80.000	35.000	32.000

Table 6. Binomial test of sex

Variable	Level	Counts	Total	Proportion		p	
SEX		1		136	266	0.511	0.759
		2		130	266	0.489	0.759

Note. Proportions tested against value: 0.5.

266 high school students participated in the study. In the 266 participants, 136 are females and 130 are males, which can also be displayed as 51.1% are females and 48.9% are males. The mean age of the 266 participants is 16.989 with a standard deviation of 1.097 and a range from 15 years old to 20 years old.

The mean score of the OMPS is 19.139 with a standard deviation of 7.138 and a range from 8.000 to 32.000. The mean score of the IAS is 54.534 with a standard deviation of 8.409 and a range from 20.000 to 80.000. The mean score of the external questions is 24.549 while the standard deviation is 6.358 ranging from 7.000 to 35.000.

4.2. Confirmatory analysis

We conducted a linear regression analysis to examine the correlation between social anxiety disorder symptoms and the extent of the semantic clarity of Wechat messages they will send to others. The predictor is social anxiety disorder symptoms (as measured by the IAS) and the extent of the semantic clarity of Wechat messages they will send to others (as measured by the scores of the semantic clarity of Wechat messages they will send out) is the outcome variable. In analysis of the OMPS questions, the semantic clarity of Wechat messages they will send to others did not significantly correlate with social anxiety disorder symptoms ($r=0.004$, $p=0.945$). However, according to the external questions, it shows significant positive correlation between the semantic clarity of Wechat messages they will send to others did not significantly correlate with social anxiety disorder symptoms ($r=0.461$, $p<0.001$).

Table 7. Correlation between symptoms of social anxiety disorder and the extent of the semantic clarity of Wechat messages they will send to others

Pearson's Correlations				
Variable		IAS	EX	OMPS
1. IAS	Pearson's r	—		
	p-value	—		
2. EX	Pearson's r	0.461	—	
	p-value	< .001	—	
3. OMPS	Pearson's r	0.004	-0.074	—
	p-value	0.945	0.227	—

4.3. Exploratory analysis

Although the overall data of the OMPS questions doesn't significantly coorelate with social anxety disorder symptoms, but if we specifically look at OMPS 2, we would find that OMPS2 is significantly negatively related with social anxiety disorder symptoms (r=-0.123, p=0.045). The senario in OMPS2 is "You asked a friend for help not long ago, you want to ask how your friend is processing. How would you choose to send a message? Please list the following options in the order that you are most likely to send to and least likely." The options are designed from the least semantic clear to the most. The more the score is, the more likely the participant is choosing a semantic clear options to answer. And since there are significant negative correlation between the OMPS score and the IAS score, the more semantic is chosen, the less social anxiety he or she is. This may be a result of this special senario which includes asking others for help. According to the self-determination theory, motivation is heightened when individuals' fundamental needs are considered. Among these essential human needs, autonomy holds significant importance, and this significance becomes particularly pronounced during the adolescent phase (APA PsycNet, 2023).

Table 8. The correlations between the scores of SAD symptoms and that of three types of measuring scales

		Pearson's Correlations															
Variable		**IAS**	**OMPS 1**	**OMPS 2**	**OMPS 3**	**OMPS 4**	**OMPS 5**	**OMPS 6**	**OMPS 7**	**OMPS 8**	**EX 1**	**EX 2**	**EX 3**	**EX 4**	**EX 5**	**EX 6**	**EX 7**
1. IAS	Pearson's r	—															
	p-value	—															
2. OMPS 1	Pearson's r	-0.018	—														
	p-value	0.766	—														
3. OMPS 2	Pearson's r	-0.123	0.546	—													
	p-value	0.045	< .001	—													
4. OMPS 3	Pearson's r	-0.005	0.370	0.459	—												
	p-value	0.929	< .001	< .001	—												
5. OMPS 4	Pearson's r	0.038	0.406	0.447	0.405	—											
	p-value	0.542	< .001	< .001	< .001	—											
6. OMPS 5	Pearson's r	0.032	0.272	0.402	0.280	0.475	—										
	p-value	0.601	< .001	< .001	< .001	< .001	—										
7. OMPS 6	Pearson's r	0.050	0.402	0.427	0.531	0.503	0.400	—									
	p-value	0.419	< .001	< .001	< .001	< .001	< .001	—									
8. OMPS 7	Pearson's r	0.020	0.392	0.416	0.463	0.469	0.308	0.609	—								
	p-value	0.749	< .001	< .001	< .001	< .001	< .001	< .001	—								
9. OMPS 8	Pearson's r	0.030	0.378	0.340	0.429	0.401	0.447	0.363	0.311	—							
	p-value	0.629	< .001	< .001	< .001	< .001	< .001	< .001	< .001	—							
10. EX 1	Pearson's r	0.334	-0.006	-0.008	-0.079	-0.016	0.042	-0.005	-0.068	-0.096	—						
	p-value	< .001	0.922	0.903	0.197	0.792	0.497	0.940	0.268	0.119	—						
11. EX 2	Pearson's r	0.281	0.104	0.025	0.003	0.090	-0.042	0.120	0.079	0.028	0.309	—					
	p-value	< .001	0.089	0.690	0.963	0.142	0.498	0.050	0.200	0.654	< .001	—					
12. EX 3	Pearson's r	0.333	0.071	0.035	-0.097	0.052	-0.012	-0.016	0.069	0.013	0.425	0.359	—				
	p-value	< .001	0.249	0.566	0.113	0.394	0.843	0.792	0.259	0.829	< .001	< .001	—				
13. EX 4	Pearson's r	0.313	-0.089	-0.149	-0.168	-0.123	-0.100	-0.081	-0.035	-0.136	0.323	0.311	0.417	—			
	p-value	< .001	0.149	0.015	0.006	0.046	0.103	0.189	0.570	0.027	< .001	< .001	< .001	—			
14. EX 5	Pearson's r	0.343	-0.041	-0.102	-0.114	-0.042	-0.036	-0.075	-0.040	-0.121	0.551	0.259	0.407	0.487	—		
	p-value	< .001	0.503	0.095	0.062	0.491	0.555	0.224	0.519	0.048	< .001	< .001	< .001	< .001	—		
15. EX 6	Pearson's r	0.337	-0.038	-0.133	-0.125	-0.003	-0.035	-0.036	-0.022	-0.136	0.463	0.367	0.377	0.442	0.574	—	
	p-value	< .001	0.538	0.030	0.041	0.956	0.570	0.559	0.723	0.026	< .001	< .001	< .001	< .001	< .001	—	
16. EX 7	Pearson's r	0.356	0.036	-0.100	-0.117	-0.033	-0.030	-0.008	-0.016	-0.034	0.421	0.384	0.575	0.382	0.549	0.492	—
	p-value	< .001	0.563	0.103	0.057	0.589	0.627	0.893	0.796	0.582	< .001	< .001	< .001	< .001	< .001	< .001	—

5. Discussion

For the for the first experiment, according to personal observation in daily life, mostly around high school students, including myself, a social anxiety disorder may affect the preference of WeChat messages of different extents of clarity of semantics. We hypothesize that late adolescents with higher levels of social anxiety will have a greater fear of being misunderstood when communicating online (as proxied by more significant tendencies to use euphemisms, modal particles, exclamations, and emojis to disambiguate the tone and emotional valence of their text messages). Two variables are

measured: Social anxiety disorder symptoms and late adolescents' preference for semantically transparent Wechat messages to send out in different scenarios.

In the conformation analysis, the study found no significant correlation between the semantic clarity of WeChat messages that late adolescents intend to send and their social anxiety disorder symptoms, with a correlation coefficient of 0.009 ($p=0.922$). Intriguingly, upon the exclusion of the reverse questions from the survey, the relationship between the semantic clarity of WeChat messages and social anxiety disorder symptoms exhibited a strengthened but still statistically insignificant correlation, denoted by a correlation coefficient of 0.07 ($p=0.457$). This unexpected outcome may be attributed to several factors. One possibility is that participants may not have meticulously reviewed the survey and consequently responded carelessly. Alternatively, the rebellious tendencies commonly associated with teenagers (Brennan, 2021) may have contributed to the observed pattern. Furthermore, the lack of statistical significance in both cases could potentially be attributed to the sample size not being sufficiently large to detect a significant relationship.

Furthermore, the exploratory analysis revealed a compelling trend: a noteworthy positive correlation between the degree of social anxiety and the propensity to select semantically clear responses in the context of OMPS6 (which pertains to choosing a means of expressing gratitude when a friend praises one for their achievements). This correlation is statistically significant ($r=0.186$, $p=0.048$), suggesting that in the specific scenario of OMPS6, the preference for semantically clear messages among late adolescents is significantly linked to their level of social anxiety.

For future research endeavors, enhancements to the self-constructed survey questions within the OMPS framework are advisable. It is crucial to enlist a more dedicated and engaged participant pool to bolster the statistical significance of the outcomes. Furthermore, the scenarios presented in OMPS should be articulated in a manner that encourages teenagers to better relate to them, by avoiding over-specificity. In addition, the response choices within OMPS should undergo revisions aimed at improving the differentiation of teenagers with varying degrees of social anxiety. Specifically, the inclusion of additional response options featuring emojis can be considered. Explicit questions addressing specific aspects related to the study variables may also be incorporated to enhance the overall significance of the findings.

6. Discussion

For the second experiment, based on personal observations in daily life, particularly among high school students, which include the author, it appears that social anxiety disorder can influence the choice of clarity in WeChat messages to varying degrees. The working hypothesis suggests that late adolescents with elevated levels of social anxiety may exhibit a heightened fear of being misunderstood in online communication. This fear is indicated by a greater inclination to employ euphemisms, modal particles, exclamations, and emojis in their text messages to ensure the unambiguous conveyance of tone and emotional expression. The study measures two primary variables: the symptoms of social anxiety disorder and the inclination of late adolescents to opt for semantically clear WeChat messages in diverse communication scenarios.

In conformation analysis, according to the data of OMPS, the semantic clarity of Wechat messages late adolescents will send out did not significantly correlate with social anxiety disorder symptoms ($r=0.004$, $p=0.945$). However, considering the external questions, the relation between the semantic clarity of Wechat messages they will send to others and social anxiety disorder symptoms are significantly correlated ($r=0.461$, $p<0.001$). This result is not expected. The reason that the relation of the semantic clarity of Wechat messages late adolescents prefer to send out and social anxiety disorder symptoms is not significant can be discussed in two parts. On one hand, The effect does not appear to be present; hence, it was not detected. This suggests that individuals with high social anxiety may not necessarily have a greater inclination than those with low social anxiety to choose a communication style devoid of ambiguity. There could be various underlying reasons for this phenomenon. For instance, individuals with high social anxiety may possess the desire to reduce the

likelihood of being misunderstood, but they may struggle to discern which linguistic choices effectively mitigate misunderstanding, possibly implicating theory of mind abilities. Theory of Mind pertains to the capacity to ascribe mental states to both oneself and others, comprehending that individuals possess beliefs, desires, intentions, and viewpoints that diverge from one's own (Ruhl, 2023). Alternatively, they might be aware of which linguistic choices are effective in reducing misunderstanding but could be hesitant to employ them due to shyness or other social factors. The second possibility is one in which the effect does indeed exist, but it remains undetected due to insufficient sensitivity of the measurement tools. For instance, the implicit test OMPS in question relies on online language style, which can be influenced by various other factors such as age, gender, and communication habits developed through interactions with friends, among others.

Furthermore, the exploratory analysis revealed a noteworthy finding within the context of OMPS2. It indicates that as the level of semantic clarity in messages decreases among teenagers, a corresponding decrease in social anxiety symptoms is observed. This observation may be illuminated by the principles of self-determination theory.

For future studies, it is advisable to exercise rigorous control over a comprehensive range of variables during the survey process, encompassing factors such as age, life experience, and education level, among others. Additionally, an exploration of the data through the utilization of statistical tools with varying sensitivity levels could offer valuable insights.

7. Conclusion

In this research, we set out to explore the relationship between social anxiety and late adolescents' preferences for the clarity of their online messages. Our findings present a complex picture of how social anxiety might impact the way individuals communicate online. The relationship between social anxiety and the clarity of online messages among late adolescents is intricate. While our study didn't show a significant relationship using the OMPS questions, external questions revealed a different perspective. Future research should further investigate this phenomenon and consider the multifaceted nature of social anxiety and communication preferences among adolescents.

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