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Psychometric Properties of the Persian Version of the Weinstein Noise Sensitivity Scale

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Auditory environmental pollution, generally referred to as noise, is probably the most widespread stressor. Noise sensitivity has strong implications on individual responses to noise. Weinstein Noise Sensitivity Scale (WNSS) is the only available tool to assess the total noise sensitivity, yet not validated in the Iranian population. A Persian version of WNSS was developed during the standard approach. This study investigated the reliability (internal consistency, split-half and test-retest) and construct validity of WNSS in 287 non-industrial employees (clerks and sales people) aged 17 to 76 years old in Tehran, using several validated psychological scales including Beck Depression Inventory (BDI), Zung Scale for Anxiety (SAS), Eysenck's Personal Inventory (EPI), Buss and Perry's aggression (AQ), job satisfaction and general noise annoyance questionnaires. Cronbach's alpha was found to be 0.62 for part I, 0.68 for the part II and 0.78 for the total WNSS scores. Test-retest reliability was 0.66. Two factors emerged from Velicer's MAP test, i. e., the need for privacy and the adjustment to noises. The main factor in principal components analysis explained 17.277% of the total variance. Construct validity was assessed through correlation of WNSS scores with other questionnaire measures. A meaningful relationship was found between total test score and job satisfaction ($p<0.01$), neuroticism ($p<0.01$), self-reported noise annoyance at work place ($p<0.01$) and at home ($p<0.01$). The relationship, however, was not

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significant for the total test score and depression. WNSS Persian version is a valid scale to be used in Iranian settings.

Keywords: noise, sensitivity, psychometric properties

Auditory environmental pollution, generally referred to as noise, is probably the most widespread stressor. Individual differences in noise tolerance are notoriously large (e.g. Ekehammar and Dornic, 1990), and the need to study them is obvious. Not only do people differ in their initial responses to a noise problem, but they also appear to differ greatly in their ability to adjust to noise over a longer period of time. Surveys around airports, for example, show many people in the areas of highest noise exposure who seem practically oblivious to the noise, while even in the most distant zones polled, there are individuals who find the aircraft sounds extremely annoying (Ouis, 2001).

The propositions imply that there are individual differences in sensitivity to noise consistent across situations and that there are different patterns of adjustment. Information concerning the extent to which people can adapt themselves to noise is largely unavailable.

Stansfeild, Sharp, Gallacher & Babisch (1993) found that noise-sensitive individuals are likely to be more annoyed by traffic noise than people who are less noise-sensitive. Their findings were similar to the results from a previous study conducted by Ohrstrom and Bjorkman (1988). Noise sensitivity, a prominent reaction modifier, has been associated with greater vasoconstriction in reaction to noise (Rovekamp, 1993), increased heart rate, and depression (Ohrstrom, 1989). Raw and Griffiths (1988) found that self-rated sensitivity to noise was apparently the most important individual characteristic for predicting dissatisfaction with road traffic noise. They also confirmed that sensitivity to traffic noise was independent from noise level.

In a study conducted by Weinstein (1978), a significant correlation was found between the sensitivity to noise and the need for privacy. Furthermore, noise-sensitive individuals had lower scores on tolerance, sociability, well-

being and extraversion. Also, the study revealed that noise-sensitive people are probably critical to their surroundings and complain about stimulating situations.

Moreover, the rate of sensitivity to noise and extraversion are likely to be positively related and greater sensitivity to noise is linked to greater neuroticism (Ghanatabadi, 2002). Zimmer and Ellemeier(1997) showed that sensitivity to noise is not a state, but a trait over time. Their study revealed that there was a strong relationship between sensitivity to noise on the one hand, and aggression, depression, fear, and stress on the other.

There are difficulties associated with the measurement of noise sensitivity. Weinstein (1978), looking at noise sensitivity as a relatively stable personality trait, developed a self-report questionnaire - Weinstein Noise Sensitivity Scale (WNSS) - consisting of items that deal with affective reactions to noise in a variety of situations. Respondents were asked to state their agreement or disagreement using a 6-point Likert scale for different items related to sensitivity to noise in daily life. The WNSS was shown to have satisfactory predictive validity in field research (Weinstein, 1978; Topf, 1985) and in laboratory settings (Dornic, Laaksonnen, & Ekehammer, 1989).

The current study aimed to assess the reliability and validity of the a Persian translation of Weinstein Noise Sensitivity Scale (WNSS) through the study of the relationship between noise sensitivity and some psychological variables.

Method

Materials

Like the original version, the Persian translation of the scale is comprised of 21 items presented on a 6-point scale: strongly agree (0), agree (1), slightly agree (2), slightly disagree (3), disagree (4) and strongly disagree (5). The unweighted sum of all items (after reversed coding of 13 items) is the person's total noise-sensitivity score; the higher score represents more sensitivity.

The translation and back translation were made by two of the authors, one of whom had not seen the original English text. The final translation was fixed by consensus. After the first translation, to standardize the Weinstein Noise Sensitivity Scale, first a preliminary form of the questionnaire was evaluated in a pilot study (50 interviews), and after getting their opinion about the clarity or ambiguity of the items some modifications were made (questions number 9 and 17 were changed) (appendix A). The original items No. 9 and No. 17 were:

9- How much would it matter to you if an apartment you were interested in renting was located across from a fire station?

17- Motorcycles ought to be required to have bigger mufflers.

The reason why question 9 was changed is the fact that one of the criteria when renting a house or apartment in Tehran is that it should be away from schools and other noisy places. Since there aren't very many fire stations in the city, people's attention is not drawn to them very much. It is to be mentioned that bigger mufflers (question 17) for many participants implies the beauty of the motorcycle, and not the further reduction of noise. That is why this item was also changed.

Two hundred and eighty seven questionnaires were answered and collected, following the investigators direct reference to stores and administration offices in five areas of Tehran: north, south, east, west, and center. Each of the individuals filled in the WNSS and six more scales on Buss and Perry's Aggression Questionnaire (AQ) (29 items) (1992), Zung Scale for Anxiety (SAS) (20 items) (1971), job satisfaction (19 items) and Eysenck`s Personal Inventory (EPI)(57 items) as well as Beck Depression Inventory (BDI)(13 items) (1961) and one including general questions. All of these questionnaires were standardized for residents of Tehran.

Procedure

In this study, the participants were clerks and salespeople (252 males and

35 females) with a mean age of 34.17 (range 17–76). Subjects were randomly selected from the shops or administration offices (sites) and to have a variety of subjects, only one subject was taken from each site.

To study the time consistency of WNSS, a rebound method was applied to 100 subjects, and to reduce error (time-to-time fluctuation) in this procedure, the retest was given 9 weeks later.

Statistical analyses

The Velicer's MAP (Minimum Average Partial) test, Scree test and Kaiser's rule test (Eigen Value>1) were used to determine the number of factors. Principal components analysis was performed as the method of factor extraction and the correlation matrix was used to describe the relationship between variables in question. Varimax method was selected for rotation. The Pearson product-moment correlation coefficient (*r)* was calculated to assess the test-retest reliability. The values of Cronbach's alpha (α) for WNSS and its subscale factors were calculated.

Results

Reliability

The WNSS item means ranged between 2.17 and 4.73 with an average of 3.57 (theoretical item mean = 2.5). The total scale score mean was 74.93 (SD = 13.42, range = 36-105). The total score distribution was almost symmetrical (skewness = -0.41) and mesokurtic (kurtosis = -0.06), and close to a normal distribution.

Cronbach's alpha was 0.78 and the split-half reliability coefficient between odd and even items was 0.77. The figures for Cronbach's alpha for parts 1 and 2 (odd and even items) were 0.62 and 0.68, respectively. "Alpha if item deleted" showed that Cronbach's alpha increases by omitting items number 1, 12 and 17 and would be equal to 0.80.

The inter-item correlations varied between -0.05 and 0.41, with an average

of 0.15 .The item-total correlations were all positive, varying between 0.04(Item 17) and 0.71 (Item 21). The test-retest reliability in a 9-week interval was proved to be satisfactory (r=0.66). Individual items had good Pearson correlation coefficients, with the lowest for item No 9 (*r*=0.06) and the highest for item No 13 (r = 0.56).

Validity

The major factor in principal components factor analysis (eigenvalue =3.628, initial eigenvalue=4.319) explained 17.277 % of the total variance, while the next variables explained less than 11.380 % (eigenvalue=2.390, initial eigenvalue= 1.699).

Velicer's MAP test, Scree test and Kaiser's rule test (EV>1) determined 2, 3, and 6 factors, respectively. To determine the number of factors, three major indicators including eigenvalue, percent of variance of each component, and rotated component matrix coefficients were considered. Finally, two factors were selected (Table1).

Table1

Descriptives, Internal Consistency and Test-Retest Reliability, Eigenvalue and Split-Half of WNSS

	Mean	S.D	Cronbach's alpha	Test-retest reliability	eigenvalue	Split-half reliability
Factor1 (need for Privacy)	45.80	9.00	0.78	0.57	3.628	0.73
Factor2 (adjustment to noises)	25.28	6.51	0.60	0.58	2.390	0.55
Total score	74.93	13.42	0.78	0.66	----	0.77

Kaiser-Meyer-Olkin (KMO) was 0.82 and Bartlett's test of sphericity was 994.40. KMO showed that factor analysis was suitable for analyzing WNSS.

The factor analysis of cases revealed that all items (except for item 20) have loaded on the two factors (Table 2).

Table 2
Component Matrix Coefficients of Factor 1 and Factor 2

Item	factor 1 (need for privacy)	factor 2 (adjustment to noises)	h^2
1- I wouldn't mind living on a noisy street if the apartment I had was nice.	-0.064	0.493	0.247
2- I am more aware of noise than I used to be .	-0.064	0.188	0.131
3- No one should mind much if someone turns up his stereo full blast once in a while.	-0.064	0.311	0.104
4- At movies, whispering and crinkling candy wrappers disturb me.	0.467	0.051	0.221
5- I am easily awakened by noise.	0.572	-0.033	0.328
6- If it's noisy where I'm studying, I try to close the door or window or move someplace else.	0.550	0.127	0.318
7- I get annoyed when my neighbors are noisy.	0.581	0.076	0.344
8- I get used to most noises without much difficulty.	0.135	0.617	0.399
9- How much would it matter to you if an apartment you were interested in renting was located across from a school?	-0.046	0.554	0.309

10- Sometimes noises get on my nerves and get me irritated.	0.552	0.164	0.332
11- Even music I normally like will bother me if I'm trying to concentrate.	0.289	0.387	0.233
12- It wouldn't bother me to hear the sounds of everyday living from neighbors (footsteps, running water, etc).	0.019	0.372	0.139
13- When I want to be alone; it disturbs me to hear outside noises.	0.545	0.281	0.375
14- I'm good at concentrating no matter what is going on around me.	0.278	0.625	0.467
15- In a library, I don't mind if people carry on a conversation if they do it quietly.	0.116	0.561	0.328
16- There are often times when I want complete silence.	0.411	0.059	0.172
17- Motorcycles ought to be required to have proper mufflers for suitable reduction of their noise.	0.403	-0.161	0.188
18- I find it hard to relax in a place that's noisy.	0.677	0.143	0.479
19- I get mad at people who make noise that keeps me from falling asleep or getting work done.	0.596	0.170	0.384
20- I wouldn't mind living in an apartment with thin walls.	0.165	0.295	0.114
21- I am sensitive to noise.	0.606	0.194	0.405

In Table 2, component matrix coefficients of factor above 0.30 have been reported. The correlation between the two factors was 0.264 and with WNSS total score were 0.87 (factor1) and 0.75 (factor2), respectively.

The Pearson correlation coefficients between the factors and the total scores of the noise-sensitivity and other psychology tests are given in Table 3.

Table3

Correlations between Factors and Different Psychological Tests Given to Individuals (n=287)

	Job satisfaction	Anxiety	Extraversion	neuroticism	Depression	Aggression	Self-reported noise annoyance at work place	Self-reported noise annoyance at home
Factor1 (need for Privacy)	-0.15 **	0.11*	-0.09	0.28**	0.02	0.16**	0.26**	0.14**
Factor2 (adjustment to noise)	-0.08	0.01	-0.06	0.01	0.02	-0.14**	0.15**	0.04
Total score	-0.13**	0.08	-0.08	0.16**	0.01	0.03	0.27**	0.13**

** Correlations were significant at the 0.01 level (2-tailed)

* Correlations were significant at the 0.05 level (2-tailed)

Discussion

The total score scale mean and its range (M = 74.93, SD = 13.42, Range = 36-105) are not similar to those reported for Weinstein's (1978) college sample (M= 54.6, SD = 12.1, Range= 25-89) or those reported by Ekehammer (1990) for a University of Stockholm sample (M= 57.5, SD= 12.61, Range= 25-90). Zimmer and Ellermeier (1997) reported the figures for the German WNSS as follows: M = 63.7, SD = 14.2 and range = 7-94. The reliability estimates were not of the same magnitude as those reported by Ekehammar & Dornic (1990) (α=0.84, split-half reliability=0.85) and Zimmer (1997) (α=0.85, test-retest reliability=0.87).

Cronbach's alpha for the total scores was equal to 0.78, and this is a very good value (Nunnally & Bernstein, 1994).

One may suggest that omitting items number 1, 12 and 17 will increase the internal consistency of WNSS. Regarding economic problems and the high price of houses or renting costs in Tehran, both sensitive and non-sensitive subjects answered item number 1 the same. On the basis of field observations, it seemed that the reason for the low correlation of the item-total for item number 12 had been the variety of examples (footsteps, running water, etc) indicated in this item. Changing the examples may increase the item-total correlation. There is a negative attitude towards motorcycles in Iran as they largely contribute to traffic accidents and noise pollution. Therefore, most subjects were agreed on the use of proper mufflers for suitable noise reduction (item No.17).

Stevens (1996) suggested that the number of participants per variable is a more appropriate way to determine sample size (ranging from 5 to 20 participants per variable) (Henson & Roberts, 2006). In this study, the ratio of number of participant (287) to variables (21) was more than 13:1, which was suitable for factor analysis. When communalities (Table 2) are high (greater than 0.60) and each factor is defined by several items (typically four or more), sample sizes can actually be relatively small (Henson & Roberts, 2006). In this

study, however, the sample size (287) was higher than minimum standard recommended by the mentioned studies.

The total eigenvalue and the rotated component matrix coefficients showed that there were two dominating factors for the scale and consideration of scree plot confirmed that the first factor had the highest value of variance.

The total variance defined by the first and the second factors (17.277 and 11.380 percent, respectively) compared with what has been recommended by Stevens (1996) (>75%) is very low. Achieving total variance of 75% is questioned by the results of psychological research (Hanson & Roberts, 2006). Total variance in this study is comparable with the results from similar studies.

For instance, for the German version of the questionnaire, the eigenvalue was 5.73, with a total variance equal to 27.3%; these figures were 5.65 and 26.4% in the Swedish version, respectively (Zimmer & Ellermeier, 1997).

Orthogonal category (Varimax) was selected as the rotation strategy. In confirmatory factor analysis (CFA), if theory suggests factors are correlated, oblique rotation would be preferable for the measurement model. In exploratory factor analysis (EFA), as used in this research, the researcher does not have a theoretical basis for knowing how many factors there are or what they are, much less whether they are correlated. We assume that the measured variables are indicators of several different factors, a measurement model which implies orthogonal rotation.

In order to make sure that extracted factors are independent from each other and if selection of Varimax for rotation of factors is correct, first the factors were rotated by "direct oblimin" method (delta=0) and the regression matrix of factors was determined (Table 4).

Table 4- Factors Correlation Matrix

factors	1(need for privacy)	2(adjustment to noise)
1	1.000	0.264
2	0.264	1.000

As it can be seen in Table 4, the correlation coefficient between the two factors is low ($r<0.264$), and therefore, Varimax would be the most suitable method for this analysis.

As previously mentioned, Kaiser's rule test, Scree test, and Minimum Average Partial test were used to determine the number of retaind factors . The Kaiser's rule test and the Scree test usually over-extract the number of factors. Hence, the number of extracted factors by MAP test (2 factors) was selected as the number of factors of WNSS.

It is noteworthy that EV>1 is selected as the default for a number of software programs such as "SPSS". But some errors could be resulted by using this method and even Scree test method. Considering the fact that WNSS is consisting of 21 questions, 4 or 6 as the number of factors extracted from the Kaiser's rule test and Scree test, respectively, seem to be high.

The factors were named based on the content of the items. Factors 1 and 2 were named “the need for privacy” and “the adjustment to noises”, respectively. Thompson and Daniel (1996) suggested that "factors should be given names that do not invoke the labels of observed variables because the latent constructs are not observed variables themselves (Henson & Roberts, 2006). The component matrix coefficients of the items (Table 2) show that such naming is, to a great extent, correct.

As it can be seen in Table 2, only item number 20 does not have a loading on either of the two factors. It is interesting that the extracted factors are completely independent from each other.

It can be seen in Table 3 that an increase in the value of Factor 1 leads to an increase in anxiety, aggression, neuroticism, self-reported noise annoyance at work place and at home, and a decrease in job satisfaction. No significant correlations were found between this factor and depression and extraversion. Moreover, Factor 2 is negatively correlated with aggression but positively with noise annoyance at work. The results show that the total score of WNSS test increases, likewise the rate of neuroticism and self-reported annoyance at work

station and at home; which in turn leads to decrease in job satisfaction. Although many of the correlations are statistically significant, this doesn't mean the relationships are important from a practical perspective. But the directions of these correlations were the same as those presented in previous studies (Zimmer & Ellermeier, 1997., Weinstein, 1978). In addition, the decreased correlations between validation measures could be due to the poor psychometric properties of these measures. However, significant correlations between factors and WNSS total score indicated a suitable factor structure.

The findings of present study showed that the first factor (need for privacy) - in comparison to the second factor (adjustment to noises) - had higher correlations with psychological factors including neuroticism, anxiety, job satisfaction, aggression, and noise annoyance (Table3). The significant correlation between need for privacy and noise annoyance at home and workplace emphasized on the role of psychological factors in experience of noise annoyance. Some studies revealed that psycho-social factors affect annoyance. However, noise annoyance relates to attitudinal factors, individual factors and characteristics of noise (Job, 1988., Green & Field, 1991).

The positive correlation between need for privacy and variables including neuroticism, anxiety and aggression and negative correlation with job satisfaction showed that need for privacy is a defensive mechanism against environmental threats. Newell (1994) showed that when the individual's well-being was threatened by environmental context; they need privacy more than others. Some studies also showed that lack of privacy has a relation to antisocial behavior and aggression (Glaser, 1964., Heffron, 1972).

Some research workers focused on the relationship between Intro-extroversion and noise annoyance (Belojevic, Jakovljevic & Aleksic, 1997). Introverted individuals normally have higher level Psycho-physio activity than the extroverted (Stansfeld, 1992), and their higher excitation leads to deeper reactions to environmental noise. Therefore, the performance of introverted individuals was influenced more by noise more than extroverted persons. It

seems the more the need for privacy, the more the annoying aspect of the noise.

Some limitations may have influenced the results of this study. A few individuals, who had probably a lower sensitivity to noise than the others refused to answer, which possibly resulted in an over estimation. In addition, the uniformity of individual variables such as education and gender, led to a broad range of total scale scores. Increasing of sample size may improve the results of this study. Further studies are warranted to determine the predictive validity of WNSS in field research.

The study showed that WNSS yielded acceptable reliability estimates. The results do not completely support those of other studies on the relationship between sensitivity to noise and depression (Zimmer, 1997). However, the correlations between the total WNSS score on the one hand and job satisfaction, neuroticism, and discomfort at work and at home on the other are remarkable, which probably confirms the validity of the WNSS.

References

Beck, A.T., Ward, C., & Mendelson, M. (1961). "Beck Depression Inventory (BDI)". *Arch Gen Psychiatry*, **4**: 561-571**.**

Buss, A.H. Perry, M. (1992). The Aggression Questionnaire, *Journal of Personality and Social Psychology,* **63**, pp. 452–459**.**

Belojevice, G., Jakovljevic, B., Aleksic, O. (1997). Subjective reaction to traffic noise with regard to some personality traits. *Environment International*, **23(2)**, 221-226.

Dornic, S., Laaksonen, T., & Ekehammar, B. (1989). Noise sensitivity: general self-report VS noise effect in laboratory situations. Technical reports from the project "Human information processing under stress", Department of psychology, University of Stockholm.

Ekehammar, B. & Dornic, S. (1990). Weinstein's noise sensitivity scale: Reliability and Construct validity. *Perceptual and Motors Skills*, **70**, 129-130.

Glaser, D. (1964). The Effectiveness of a Prison and Parole System. Indianapolis: Bobbs-Merrill.

Ghanatabadi, N. (2002). The evaluation of effects of noise on mental performance of students. *M.S Thesis (in Farsi)*. Tehran University of Medical Sciences.

Green, D. M. & FIDELL, S. (1991). Variability in the criterion for reporting annoyance in community noise surveys. *Journal of the Acoustical Society of America*. **89**, 234-243.

Heffron, M. H. (1972). The naval ship as an urban design problem. *Naval Engineers Journal.* **12,** 49–64.

Henson, R.K., Roberts, J. K. (2006). Use of exploratory factor analysis in published research: Common errors and some comment on improved practice. Educational and Psychological Measurement, **66(3),** 393-416.

Job, R. F. S. (1988). Community response to noise: a review of factors influencing the relationship between noise exposure and reaction. *Journal*

of the Acoustical Society of America ,**83**, 991-1001.

Newell, P. B. (1994). A systems-model of privacy. *Journal of Environmental Psychology.* **14,** 65–78.

Nunnally, J.C. & Bernstein, I.H. (1994). *Psychometric Theory* (3rd ed.). New York: McGraw-Hill.

Ohrstrom, E. (1989). Sleep disturbances, psycho-social well-being and medical symptoms- A pilot survey among persons exposed to high levels of road traffic noise. *Journal of Sound and Vibration*, **133**, 117-128.

Ohrstrom, E. & Bjorkman, M. (1988). Effects of noise-disturbed sleep __ a laboratory study on habituation and subjective noise sensitivity. *Journal of Sound and Vibration,* **122**, 277-290.

Ouis, D. (2001). Annoyance from road traffic noise: A review. *Journal of Environmental Psychology,* **21**, 101-120.

Raw, G.J. & Griffiths, I.D. (1988). Individual differences to road traffic noise. *Journal of Sound and Vibration*, **121**, 463-471.

Rovekamp, A.J.M. (1993). Physiological effects of environmental noise on normal and more sound-sensitive human beings. In: Rossi, G., ed. Noise as a public health problem*: Proceedings of the 4th international congress*, Vol.1.Centro Richerche E. studi Amplifon, Milano, Italy; 605-614.

Stansfeld, S.A. (1992). Noise, noise sensitivity and psychiatric disorder: epidemiological and psychophysical studies. *Psychological Medicine, Monograph supplement*, 22.

Stansfeild, S.A., Sharp, D.S., Gallacher, J. & BABISCH, W. (1993). Road traffic noise, noise sensitivity and psychological disorder. *Psychological Medicine*, **23**, 977-985.

Stevens, J. (1996). Applied multivariate statistics for the social sciences (3rd.edition). Mahwah,NJ: Lawrence Erlbaum.

Tope, M. (1985). Personal and environmental predictors of patient disturbance due to hospital noise. *Journal of Applied Psychology*, **70**, 22-28.

Weinstein, N.D. (1978). Individual differences in reaction to noise: A

longitudinal study in a college dormitory. *Journal of Applied Psychology*, **63**, 458-466.

Zimmer, K. & Ellermeier, W. (1997). Eine deutsche version der larmempfindlichkeitsskala von Weinstein. *Zeitschrift fur Larmbekampfung,* **44**, 107-110.

Zung, W.W. (1971). A rating instrument for anxiety disorders, *Psychosomatics* **12** (6), pp. 371–379.

Appendix A

Items on the Noise-Sensitivity Scale

1- I wouldn't mind living on a noisy street if the apartment I had was nice.

2- I am more aware of noise than I used to be .[a]

3- No one should mind much if someone turns up his stereo full blast once in a while.

4- At movies, whispering and crinkling candy wrappers disturb me.[a]

5- I am easily awakened by noise.[a]

6- If it's noisy where I'm studying, I try to close the door or window or move someplace else.[a]

7- I get annoyed when my neighbors are noisy.[a]

8- I get used to most noises without much difficulty.

9- How much would it matter to you if an apartment you were interested in renting was located across from a school?

10- Sometimes noises get on my nerves and get me irritated.[a]

11- Even music I normally like will bother me if I'm trying to concentrate.[a]

12- It wouldn't bother me to hear the sounds of everyday living from neighbors (footsteps, running water, etc).

13- When I want to be alone; it disturbs me to hear outside noises.[a]

14- I'm good at concentrating no matter what is going on around me.

15- In a library, I don't mind if people carry on a conversation if they do it quietly.

16- There are often times when I want complete silence.[a]

17- Motorcycles ought to be required to have proper mufflers for suitable reduction of their noise.[a]

18- I find it hard to relax in a place that's noisy.[a]

19- I get mad at people who make noise that keeps me from falling asleep or getting work done.[a]

20- I wouldn't mind living in an apartment with thin walls.

21- I am sensitive to noise.[a]

Note. All items are presented on a 6-point scale ranging from agree strongly (0) to disagree strongly (5).

[a] Item scored in opposite direction before responses are summed.

Appendix B

۱- در صورتی که منزلم زیبا باشد اهمیتی نمی دهم که در یک خیابان شلوغ واقع شده باشد.

۲- اخیرا نسبت به صدای مزاحم بیشتر توجه می کنم.

۳- هیچکس نباید در منزل اگر گاهی صدای استریو زیاد شود ناراحت شود.

۴- در سینما پچ پچ کردن و مچاله کردن کاغذ شکلات، آرامش مرا به هم می زند.

۵- در اثر صدا خیلی زود از خواب بیدار می شوم.

۶- در صورتیکه به هنگام مطالعه صدایی از بیرون بیاید سعی می کنم در و پنجره را ببندم و یا به محل دیگری بروم.

۷- هر گاه همسایگان صدای زیادی ایجاد کنند ناراحت می شوم.

۸- به راحتی به صداهای مزاحم عادت می کنم.

۹- اهمیتی نمی دهم که منزل مورد نظرم جهت اجاره در کنار مدرسه قرار داشته باشد.

۱۰- گاهی اوقات صدا به اعصابم فشار می آورد و مرا آشفته می کند.

۱۱- هرگاه قصد تمرکز حواس داشته باشم حتی موسیقی که معمولا علاقه به شنیدن آن دارم برایم ناراحت کننده است.

۱۲- صدای روزمره همسایگانم مانند صدای پا، تلویزیون، ریزش آب و... مرا ناراحت نمی کند.

۱۳- در صورتی که بخواهم تنها باشم، صداهای بیرون آرامش مرا به هم می زند.

۱۴- بدون توجه به اینکه در اطرافم چه می گذرد، می توانم به خوبی تمرکز کنم.

۱۵- برایم مهم نیست که در یک کتابخانه افراد به آرامی با یکدیگر صحبت کنند.

۱۶- اغلب مواقع دلم می خواهد که در اطرافم سکوت کامل برقرار باشد.

۱۷- بهتر است موتور سیکلت ها از اگزوزهای مناسبتری برای کاهش صدا استفاده کنند.
۱۸- حفظ آرامش در محیط پر صدا برایم مشکل است.
۱۹- از اینکه افرادی با ایجاد صدا مرا از به خواب رفتن و یا انجام کار باز دارند عصبانی و خشمگین می شوم.
۲۰- برایم مهم نیست که در منزلی با دیوارهای نازک زندگی کنم.
۲۱- نسبت به صدا حساس هستم.

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