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Validity and Reliability of the Solidarity in Pandemics Scale

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ABSTRACT

This study developed a measure of solidarity levels during pandemics, the Solidarity in Pandemics Scale (SPS). This was achieved using a study group of 842 individuals aged between 18 and 65 from different segments of society who had experienced the COVID-19 pandemic and differed in age, gender, and socioeconomic status. Exploratory factor analysis was used to establish the construct validity of the scale, producing a 15-item scale with a one-dimensional structure that explained 34.36% of the variance. Confirmatory factor analysis using a different study group revealed that all items have significant *t*-values, and the model established according to model fit indexes has meaningful and acceptable fit values. The internal consistency of the scale results was calculated using the Cronbach Alpha coefficient, and a reliability of .85 in terms of internal consistency was obtained. Test-retest reliability results as another indicator of reliability were found to be .85. Scores on the Altruism Scale were compared with those on the SPS to evaluate the scale's criterion validity, and a significant relationship was found between the two scale scores. This analysis indicates that the Solidarity in Pandemics Scale is a valid and reliable psychometric tool.

Keywords:
Solidarity, pandemics, solidarity in pandemics, scale development, validity, reliability

1. Introduction

Pandemics can significantly affect the sociological structure of a society. They cause individuals to experience a range of emotions, such as fear, anxiety, anger, rage, or empathy, and these emotions have the power to shape their social reactions (Blasi et al., 2020; Zou, 2020). Fear, which is frequently evoked by pandemics, is a natural survival-related biological response to threat (Darwin, 1981) and can be contagious (Mobbs et al., 2015). Studies state that high levels of fear can cause major behavioral changes (Harper et al., 2020; Witte & Allen, 2000; Maddux & Rogers, 1983). Heightened fear can make individuals prone to defensive reactions (Blondé & Girandola, 2019), and anxiety and fear can also provoke hostile feelings and behaviors.

Placing blame for a pandemic on specific ethnic groups or social classes can lead to hostile behaviors toward those groups. During historical plague epidemics in Europe, certain ethnic groups, poor individuals, and beggars were held responsible for the spread of the plague, and anger was directed toward them (Cohn, 2012). Prejudice and attacks against individuals of Far Eastern origin during the COVID-19 pandemic are further examples of this hostility (Jakovljevic et al., 2020). Fear and anxiety drove people to loot markets, taking more

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stock than they actually needed (Stiff, 2020). Seeing others as competitors for limited supplies causes individuals to focus solely on their own interests (Van Bavel et al., 2020).

Conversely, pandemics and social disasters may also be periods when prejudices decrease and solidarity comes to the fore, as they trigger the perception of a shared destiny (Kokudo & Sugiyama, 2020). When every member of a society faces the same risk, individuals support each other to eliminate the threat. They reorganize into a single community with a common destiny, and this brings strong cooperation, partnerships, and channels of solidarity. The preliminary aim of this reorganization is to ensure equality for all and participating in activities that contribute to the well-being of others is valued (Dovidio et al., 2007).

There are many examples of individuals devotedly trying to help others in emergencies and disasters. This solidarity is expressed through charity among individuals or through civil or state institutions and organizations. According to a CIVICUS report (November, 2020), after the declaration of COVID-19 as globally pandemic, many civil societies declared a state of emergency and met the needs of their populace not only for basic supplies (food, clean water, toilet paper, etc.) but also for information about protecting themselves from COVID-19 and stopping the spread of the virus. After the initial shock of panic and crisis, people with a sense of solidarity calm down and look for solutions not just for themselves but also for others. Experiencing a common catastrophe encourages the emergence of a common sense of identity, an "us," and recognition of a common anxiety. This perspective leads people to act for the common good (Genschel & Jachtenfuchs, 2021). During the COVID-19 pandemic, solidarity has emerged not only in individuals but also at the country level, meeting urgent needs for information and supplies (WHO, 2021). This phenomenon, defined as social solidarity, was discussed in detail by Durkheim. He saw social order and solidarity as important to the functioning of society (Durkheim, 2006). Within his framework, solidarity within small or large communities enables individuals to maintain their continuity, and therefore communities develop solidarity when facing threatening situations.

Solidarity within a society can be expressed in various ways. It can be seen in explicit actions like collecting money for people in need or more subtly, for instance, by wearing face masks. Cheng (2020) argued that the use of masks for public health is an example of solidarity because it is done not only for the individual's own health but also for that of other individuals in the society. Various expressions of solidarity during COVID-19 pandemic have been documented. People have offered mental support to sick people and/or healthcare workers (Erikan, 2020, March); anonymous philanthropists have paid off the grocery-store debts of people living in low-income neighborhoods (CNNTURK, 2020, January); and municipalities have provided food to people in need (Hurriyet, 2021, January). As well as its direct effects, solidarity is seen as a way of preventing the rise of negative feelings such as hostility, discrimination, or alienation during pandemics. These negative feelings could be directed toward those of different ethnic or age groups and result in group-directed hostility. Prohibitions, especially for young and old people, may cause those groups to be held responsible for the spread of the virus. Ayalon et al. (2020) highlighted the discrimination faced by the elderly during pandemics and drew attention to the importance of enhancing intergenerational solidarity during the COVID-19 pandemic for preventing ageism.

Although a pandemic is medically defined, it is a phenomenon with psychological and sociological aspects, and it shapes societies with these aspects. Threat and uncertainty affect the mental well-being and social perspectives of individuals who have gone through a pandemic (Karataş, 2020). Most of the measures taken in a pandemic are within the framework of social life and, therefore, have major repercussions for socialization and awareness of the existence of others. Solidarity, which is an important part of socialization, shows a distribution from regional to global in pandemics. The World Health Organization has proposed that global solidarity is one of the most powerful ways of stopping the COVID-19 pandemic (WHO, 2020).

Because continuing a psychically and mentally healthy life is the second most important aim after being alive, post-traumatic growth is an essential factor to consider in disasters. People should be able to go on with their lives and maintain the functional construct of society. Karataş (2020) found that individuals who felt a sense of solidarity during the COVID-19 epidemic were more likely to grow after trauma and stated that achieving post-traumatic growth is an important variable for healthy, developing societies. Altın (2020) stressed the importance of solidarity in supporting the elderly, especially in the current pandemic, and emphasized how effective solidarity is in supporting this group, who have a higher risk of death and may live far from relatives.

By protecting those in need, people can view themselves as constructive rather than devastated (Bayerts, 1999). This perspective helps them achieve post-traumatic growth (Rime et al., 2010).

The abovementioned studies indicate that solidarity is extremely important to every dimension of society's well-being. Studying solidarity in a scientific context is thus sociologically and psychologically valuable. A means of measuring solidarity is needed to enable such study, and indeed, some such tools exist, such as the Intergenerational Normative Solidarity Scale (Öztürk & Hazer, 2016), Altruism Scale (Ümmet, et. al., 2013), and Personal and Social Responsibility Scale (Filiz & Demirhan, 2015). However, we believe the literature will benefit from a scale that is focused on the level of solidarity in individuals during pandemics and that recognizes the importance of online support systems. We therefore aimed to develop such a scale, using the definition of solidarity current since the 19th century; that is, unity with humanity and mutual support (Bayertz, 1999).

2. Methodology

2.1. Research Model

This is a scale-development study for a measurement tool to determine the level of solidarity of individuals during pandemics.

2.2. Study Group

Because this study aimed to develop a scale, a study group was formed considering the steps of scale development and the structure of the scale. The structure of the scale dictated that the study group include individuals differing in gender, age (ranging from 18 to 65), and socioeconomic status, who had experienced a pandemic. Data were collected online using a Google document between November 2020 and January 2021. Data collection proceeded through four stages relating to four steps of scale development, each with different numbers of participants.

The first of these stages was the exploratory factor analysis (EFA), which was performed to reveal the factor structure of the scale. Comrey and Lee (1992) indicate that factorization based on 50 observations would be very weak; 100, weak; 200, unstable; 300, good; 500, very good; and 1000 and above, ideal. After removing outliers, the study group for the first stage totaled 410, which is adequate based on that guidance. The group was 33.2% (136) male and 66.8% (274) female. In the second stage, a working group was formed to test the accuracy of the structure via confirmatory factor analysis (CFA). The size of the study group is important for producing accurate results via the CFA estimation method. Although there is no consensus on optimal group size in the literature, a minimum of 10 times the number of items or a minimum 200 participants is commonly adopted (Kline, 2005). After removing outliers, the second-stage study group consisted of 316 individuals, which is sufficient according to the abovementioned rule of thumb. The gender split of the group was 20.9% (66) male and 79.1% (250) female. Finally, in the third and fourth stages, the criterion validity and test–retest reliability of the scale were evaluated separately in 63 and 53 individuals, respectively. Thus, the total study group comprised 842 individuals. Table 1 lists the stages of the study, detailing the number of participants and the procedures performed with their data.

Table 1. *Study Stages*

Stage	Scale/Scales Applied	Statistical Procedures Performed	Number of Individuals
1	SPS	EFA to assess construct validity and test of internal consistency	410
2	SPS	CFA to assess structure validity	316
3	SPS and AS	Calculation of the relationship between the scores of two scales to assess criterion validity	63
4	SPS	Calculation of the relationship between first and second applications to assess test-retest reliability	53

SPS: Solidarity in Pandemics Scale; AS: Altruism Scale; EFA: exploratory factor analysis; CFA: confirmatory factor analysis

2.3. Data Collection Tools

Demographic form: This form gathered demographic data from participants, including their gender, age, grade, and perceived income. It contained brief information about the data collection process and requested informed consent for participation.

Solidarity in Pandemics Scale (SPS): This scale was developed by the authors. It consists of 15 items probing solidarity in pandemics, with responses made on a five-point Likert scale. There are no reverse-coded items, and higher scores indicate higher levels of solidarity.

Altruism Scale (AS): This scale was used to assess criterion validity. It was developed by Rushton et al. (1981) and consists of 20 items answered on a five-point Likert-type scale. This study used the version adapted to the Turkish culture by Tekeş and Hasta (2015). The scale contains no reverse-coded items, and higher scores indicate higher levels of altruism. The Turkish version of the scale has Cronbach's Alpha values of .81 and .70 for the helping and philanthropy subscales, respectively. The scale has a split-half correlation coefficient of .74 and test-retest reliability of .83.

2.4. Procedure and Data Analysis

The first step of the scale-development process was to explore the relevant literature in Turkey and abroad regarding the structure of the concept of solidarity and solidarity in pandemics and its possible indicators. Based on this literature review, the researchers wrote 23 essay items thought to represent the concept of solidarity during pandemics and to cover its full scope. The number of items for the trial was kept relatively high to avoid problems of low internal consistency (DeVellis, 2014). The 23-item trial questionnaire was sent to six experts, two of whom were experts in guidance and psychological counseling, two in assessment and evaluation, and two in the Turkish language, for their opinions. Items judged by the experts as unrepresentative of the concept of solidarity, unsuitable for the structure of the Turkish language, or ambiguous were revised or removed from the scale. The content validity of the items was calculated separately for all items as one minus the ratio of the number of positive opinions received from experts to half of the number of experts (Veneziano & Hooper, 1997). Any item with a content validity rating of less than .80 was removed from the scale. The resulting trial scale consists of 21 items. Item responses are given on a five-point Likert-type rating scale (``strongly disagree "1," disagree "2," undecided "3," agree "4," and strongly agree "5").

Prior to the operations performed at each stage, erroneous values were corrected and outliers were excluded. First, EFA was conducted to obtain evidence for the construct validity of the scale. Items with factor load values below the threshold value of .32 (Kline, 2011; Tabachnick & Fidell, 2007) were excluded from the scale. Cronbach's Alpha coefficient was then used to assess the reliability of the scale in terms of internal consistency. The range from .70 to .80 (Cortina, 1993; Crocker & Algina, 1986; Streiner, 2003) was taken as an acceptable lower limit for this coefficient. Additionally, test item correlations were used to obtain evidence on item validity, and independent-samples *t*-tests were used to reveal whether each item could distinguish between those with the feature to be measured or not.

In the second stage, CFA was used to test the scale structure obtained in the first stage. The significance of the *t*-values obtained as a result of the analysis indicates the compatibility of the items in the scale with the model, whereas the fit indices provide information about whether the model obtained is compatible with the theory as a whole (Munro, 2005; Schumacker & Lomax, 2010; Waltz, Strickland & Lenz, 2010). We used these indicators to gather evidence regarding whether the scale would give the same structure in groups with similar characteristics.

The third stage was to evaluate the criterion-based validity by calculating the Pearson correlation coefficient between SPS scores and AS scores. The AS measures altruism, protecting another person's welfare without expecting anything in return. Because both altruism and solidarity consist of activities, beliefs, and thoughts benefiting others, high levels of correlation were expected between scores on these two scales. Finally, in the fourth stage, test–retest reliability was assessed by having the same individuals complete the SPS twice two weeks apart and calculating the Pearson correlation coefficient between the scores obtained from the two applications.

2.4. Ethical

Ethics committee approval for the study was received from the ethical committee of Okan University, Turkey, on 11/11/2020. The privacy of all participants was protected, and confidentiality requirements for data collection and analysis were strictly followed. Thus, this research study complies with research publishing ethics. The authors declare no conflicts of interest.

3. Findings

3.1 Scale Structure and Validity

Before EFA was performed, the suitability of the data for structure-detection via that method was assessed by calculating the Kaiser–Meyer–Olkin (KMO) coefficient and performing Bartlett's test of sphericity. The KMO value was .84, where values of .80 and above can be considered to indicate perfect fit (Büyüköztürk, 2002). The chi-square test statistic ($\chi 2$ = 1574.49, SD = 105, p = 0.00) obtained through Bartlett's test of sphericity was statistically significant. These results indicate that the data are suitable for factor analysis.

Alpha factorization was next used to determine how the items were factored, in line with criteria in the literature. These criteria are the factor's eigenvalue being at least 1 (Thompson, 2004), with a higher eigenvalue indicating more variance (Tabachnick & Fidell, 2014); sharp drops, high acceleration, and relative flattening after the cut-off point in a plot drawn on the basis of eigenvalues (Fabrigar et al., 1999); common variances of the items of at least .40 (Field, 2005); and no two items having a load below .10 on the same factor (Büyüköztürk, 2002; Çokluk et al., 2010). These requirements can be summarized as having at least three items under any factor and the items that load the factor being consistent in terms of meaning and content (Velicer & Fava, 1988). Based on the criteria, six of the 21 items were removed from the scale, and the remaining 15 items were found to represent a single-factor structure compatible with the theoretical framework. The total variance explained by this structure is 34.36%. For social sciences, 30% explained variance can be considered sufficient for a one-dimensional structure (Çokluk et al., 2012). The factor loadings and common factor variances of the items are given in Table 2.

Table 2. *Factor Structure and Factor Loadings of The Scale*

Item No.	Factor Load	Factor Common Variance
M10	.741	.542
M9	.733	.531
M14	.716	.509
M12	.707	.506
M13	.684	.460
M4	.631	.402
M8	.598	.364
M15	.543	.291
M20	.531	.284
M11	.504	.250
M3	.500	.243
M17	.484	.233
M18	.480	.228
M21	.440	.203
M5	.424	.196
Total Variance Explained %34.36		

Confirmatory factor analysis (CFA) was used to verify the unidimensional structure of the 15 items revealed by EFA. The CFA was carried out on the data of the 316 individuals in the second-stage study group. The goodness-of-fit indices were improved by making modifications that were selected by examining the contents of the items based on modification suggestions. The analysis was completed by defining error covariances among items M10-M9, M14-M13, M18-M17, M21-M20, M9-M8, and M17-M15. Table 3 compares the goodness-of-fit indices to the criteria commonly used in the literature (Tabachnick & Fidell, 2007) and indicates the conclusions reached regarding fit.

Table 3. *Comparison of Perfect and Acceptable Values For Fit Indices With The Fit Index Values Obtained*

Investigated Fit Indices	Perfect Fit Values	Acceptable Fit Values	Achieved Fit Indexes	Result
χ2/sd	0 ≤ χ2/sd ≤ 2	2 ≤ χ2/sd ≤ 3	2.56	Acceptable Fit
GFI	.95 ≤ GFI ≤ 1.00	.90 ≤ GFI ≤ 95	.92	Acceptable Fit
AGFI	.90 ≤ AGFI ≤ 1.00	.85 ≤ AGFI ≤ .90	.88	Acceptable Fit
CFI	.95 ≤ CFI ≤ 1.00	.90 ≤ CFI ≤ .95	.96	Perfect Fit
NFI	.95 ≤ NFI ≤ 1.00	.90 ≤ NFI ≤ .95	.93	Acceptable Fit
NNFI	.95 ≤ NNFI ≤ 1.00	.90 ≤ NNFI ≤ .95	.95	Perfect Fit
IFI	.95 ≤ IFI ≤ 1.00	.90 ≤ IFI ≤ .95	.96	Perfect Fit
RMSEA	.00 ≤ RMSEA ≤ .05	.05 ≤ RMSEA ≤ .08	.070	Acceptable Fit
SRMR	.00 ≤ SRMR ≤ .05	.05 ≤ SRMR ≤ .10	.055	Perfect Fit
PNFI	.95 ≤ PNFI ≤ 1.00	.50 ≤ PNFI ≤ .95	.74	Acceptable Fit
PGFI	.95 ≤ PGFI ≤ 1.00	.50 ≤ PGFI ≤ .95	.64	Acceptable Fit

χ2=215.13, SD=84, for RMSEA %90 Probability Confidence Interval = (0.059; 0.082)

As demonstrated in Table 3, seven of the 11 indicators are acceptable, and four of them fit perfectly. The significance of the standardized analysis values of each item in the scale was assessed by examining *t*-values. The *t*-values vary between 6.08 and 13.63. As they are all higher than 2.58, they can be interpreted as meaningful at the p < .01 level (Kline 2011). Thus, the goodness-of-fit values and *t*-values indicate that all of the items should be included in the scale and confirm the structure as a whole. The measurement model of the one-dimensional structure and the factor loads (ranging .36–.71) are given in Figure 1.

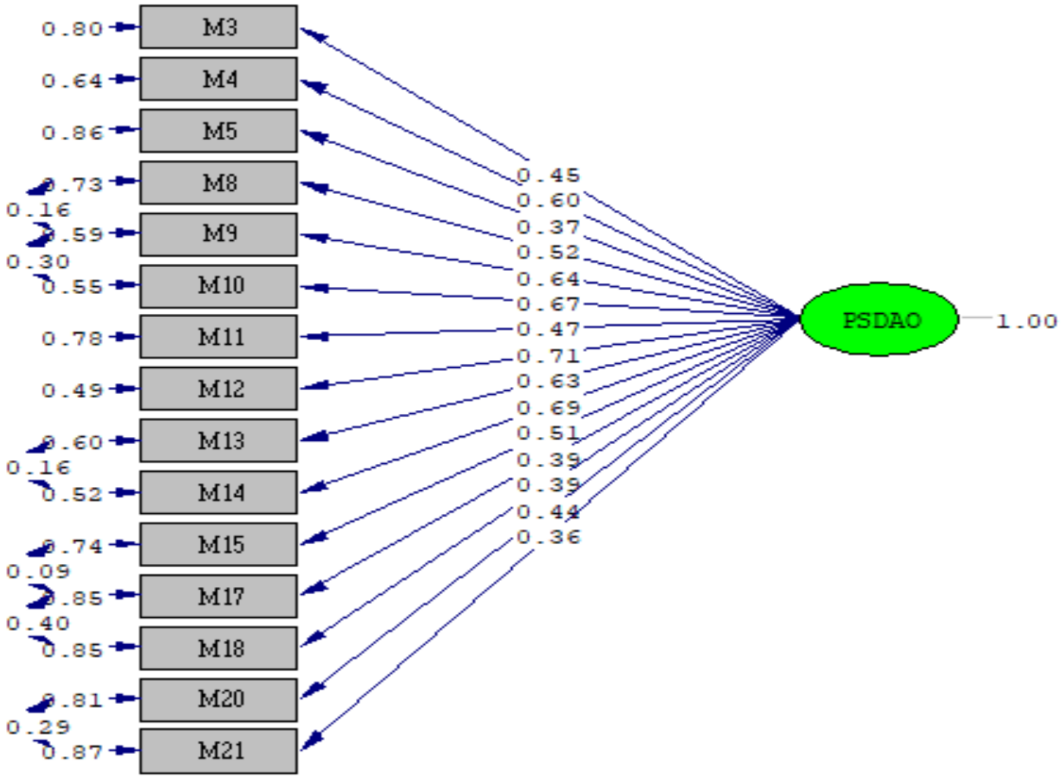

Figure 1. *SPS Measurement Model*

To determine the criterion-based validity, the SPS and the AS, which is thought to serve a similar purpose to the SPS, were applied to the 63 individuals in the third-stage participant group. Pearson correlation analysis was performed on the results obtained from the two scales and found a positive, significant relationship between them ($r = .54$, $p < .01$). This result indicates that the SPS has criterion-based validity.

3.2 Scale Reliability

Cronbach's Alpha was used to determine the reliability of the scale in terms of internal consistency, and the test–retest method was used to determine its reliability in terms of stability. The Cronbach's Alpha reliability coefficient calculated by applying the scale to the second study group is .85. Generally, higher values of alpha indicate greater internal consistency between items in a scale, with a close approach to 1 desirable (Erkuş,

2017); therefore, the internal consistency of the scale is sufficient. Moreover, scores on the two applications of the scale two weeks apart demonstrated a strong positive correlation ($r = .85$, $p < .01$), indicating that the scale has good test-retest reliability.

3.3 Item Statistics

Item-total correlations were calculated, and 27% lower-upper group comparisons were made to determine whether the SPS items are good measures and distinguish between individuals. The relevant values are given in Table 4.

Table 4. *Results of Item Analysis*

Item No	Mean	SD	Corrected Item-Total Correlation	Alpha If Item Deleted	t
M3	4.10	1.00	.417	.846	33,42
M4	4.01	0.95	.540	.839	43,52
M5	3.39	1.22	.359	.851	36.07
M8	3.81	1.07	.498	.841	39.15
M9	4.34	0.79	.626	.836	25.45
M10	4.09	0.91	.637	.834	51.31
M11	3.85	1.12	.421	.846	33.20
M12	4.23	.87	.606	.836	25.95
M13	3.83	1.03	.579	.836	34.84
M14	4.06	1.01	.619	.834	35.47
M15	4.45	.72	.441	.845	21.96
M17	4.06	.86	.393	.846	47.48
M18	4.16	.86	.393	.846	29.26
M20	4.10	1.02	.459	.843	31.59
M21	3.73	1.14	.389	.848	34.80

According to Table 4, the item-total correlations of the scale items vary between .389 and .637. These values indicate that the items differentiate individuals regarding the measured property. The differences between the item scores of the 27% lower and upper groups were examined with the independent-samples *t*-tests. The resulting *t*-values ranged from 21.96 to 51.31 and were significant ($p < .01$). The more dissimilar the lower and upper groups of 27% representing the two ends of the distribution, the more sensitive is discrimination (Özgüven, 2011). Therefore, the *t*-values obtained can be considered further proof that the items distinguish between individuals with and without the measured feature.

4. Discussion and Conclusion

Pandemics such as COVID-19 affect social health in terms not only of physiological well-being but also of community mental well-being and social structure (Chakraborty & Maity, 2020; Bostan et al., 2020). Understanding the changes that this causes to communities is of interest for the future. Tools for measuring societal changes are therefore needed so as to investigate these social health effects cross-sectionally and longitudinally. Although survival-related processes such as pandemics mostly trigger changes in negative variables, variables such as solidarity and coexistence should not be ignored. A measurement tool that enables the examination of the solidarity-related structures formed by individuals during pandemics was missing from the literature, and this study aimed to develop such a scale.

The term "solidarity" has been used for different definitions of community tied to different types of bonds. In the past, solidarity was viewed as existing within kinship groups and had a similar meaning to fraternity. However, solidarity is now commonly used to mean a "wide ranging universalistic understanding of a community," similar to "ethical universalism" (Bayertz, 1999; p.5). The wording of the items in the scale aimed at evaluating the level of this sort of solidarity in people who have been through the conditions specific to pandemics. We aimed to evaluate the feeling of responsibility of the community for the individual and that of the individual for the community, like Durkheim's social perspective on solidarity (Durkheim, 2006). Although the scale could have been prepared with a two-factor structure comprising individual responsibility and community responsibility, we believe that, because pandemics are situations that every individual faces

in a community, items should analyze the responsibility of both the individual and the community. A one-factor structure was thus a valid and reliable way to evaluate an individual's overall solidarity level, and the study results paralleled this theoretical framework.

The construct validity of the scale was evaluated via EFA and CFA. The items shown by EFA to have insufficient factor loading (0.32; Kline, 2011) were removed from the scale, and a unidimensional scale with 15 items was created. This one-dimensional scale explains 34.36% of the total variance. The fit indices obtained via CFA confirmed the sufficiency of this single-factor structure with 15 items. Moreover, the *t*-values obtained were significant, indicating that all the items are compatible with the model and should be included in the scale (Byrne, 2010). The scale's criterion validity was assessed by applying the SPS and AS to the same participants and calculating the Pearson correlation between the two sets of scores. A positive average level significant correlation was obtained that was in excess of the .50 level expected for the correlation between two similar factors (Şencan, 2005; Taylor, 2013). Hence, SPS and AS scores demonstrated a good level of correlation, and the scale's criterion validity was confirmed.

The test–retest reliability method was calculated by means of the Pearson correlation coefficient, and a strong positive correlation was observed. Moreover, the Cronbach's Alpha reliability coefficient, which is an indicator of reliability in terms of internal consistency, was .85 ($p < .01$). The literature states that reliability coefficients in the range of α = .70–.80 are acceptable (Crocker & Algina, 1986; Fraenkel, Wallen & Hyun, 2012). These results demonstrate that the reliability of the scale is high.

The degree to which the items predict the total score and are distinctive was investigated by calculating the corrected item-total score correlations and making 27% lower-upper group comparisons. Where 27% lower-upper group comparisons are carried out via independent-sample *t*-tests, the test significance is evidence for the discrimination of the items. For item-total score correlations, those with a value above 0.30 are considered to sufficiently distinguish the measured feature (Erkuş, 2012). The *t*-values obtained were significant for 15 items, and item-total score correlations varied between 0.39 and 0.64. These results demonstrate that the items are distinctive, bolstering the conclusion that the SPS is a valid and reliable tool for measuring solidarity.

Akın (2018) pointed out that, during a historical plague epidemic in Europe, administrative structures, and especially the church, sought to cement society and cope with the destruction caused by plague by trying to strengthen solidarity throughout society by stressing that all its members were in the same sinking ship. People often rely on solidarity to hold society together when faced with a crisis. In pandemics specifically, people need to support each other to get through a period when a virus threatens not just their physical health but also their mental health and social well-being (Ho & Dascalu, 2020; Galang et al., 2021). Similarly, the analysis of the items of the scale developed in this study showed that people tend to help others in every way that they can. Thus, the solidarity of those experiencing the COVID-19 pandemic is significant, and item loadings are high.

The scale items were written to cover a wide spectrum from physical assistance to online help, and the analysis indicated that all these items were significant. This highlights the importance of the online medium for solidarity during crises. Özarslan (2012) reported that after the Van earthquake in Turkey, even individuals who did not experience the earthquake, especially young people, discovered new solidarity systems through supporting the earthquake victims on social media. These solidarity systems led to a distinct change in the social structure. Maryani (2018) noted that changes in communication technology mean that solidarity is now being developed through digital media. Hence, by including different avenues of support (e.g., digital media, social media) and support systems specific to pandemics, we believe that this scale will be a helpful tool for working with the new types of social support that have emerged or gained more attention after the current pandemic.

In this scale, we aimed to stress different aspects of solidarity like social support, economic support, and support to reach the sources of support. Because the impact of social media is growing, especially in recent years, we also included items related to the support given through social media, which can trigger social solidarity. Thus, this scale has unique characteristics that are suitable for the present time period and pandemic.

The strengths of the study are that it presents more than one piece of evidence for the validity and reliability of the scale and has a large number of participants (842). However, most of the participants are women, and all are young adults or adults. These are limitations of the study, and further studies based on age and gender differences would be helpful to understand how different factors affect solidarity levels in pandemics. Another limitation is the small number of participants with low socioeconomic status. Although the data were collected from different cities of Turkey and from people of different socioeconomic statuses, the number of participants with very low socioeconomic status was limited. Even if it may be difficult to reach such people, studies applying the scale in data sets with better coverage of socioeconomic status would be desirable. Finally, the data were collected from members of the Turkish culture, which is considered collectivistic; thus, information gained from the data is applicable only to Turkish culture. Still, we believe this scale will be a very helpful tool for future studies.

5. Recommendations

This study developed a scale for assessing the solidarity levels of adults. Because pandemics affect members of every age group, the development of tools to assess the solidarity levels of children, adolescents, and the elderly would be a beneficial contribution to the field. We believe solidarity is an important phenomenon within societies, so studies are needed that elucidate the factors that influence solidarity levels. We also believe that studies conducted in different cultural groups would be beneficial to understanding the cultural perspective of solidarity.

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