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Measuring student-to-student confirmation in the college classroom: A Turkish adaptation and validation study

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ABSTRACT

Students give attention, offer assistance, and acknowledge each other, thereby recognizing one another as valuable individuals and confirming one another. Given the importance of such student-to-student confirmation for academically and psychologically healthy classrooms, understanding student-to-student confirmation carries importance for the educational and personal well-being of students, and adaptation studies are needed to measure student-to-student confirmation in different groups. For this purpose, this study adapted the Student-to-Student Confirmation Scale to the Turkish context and language. For linguistic equivalence, both forward and backward translations were performed. The data obtained from the adapted version of the scale, which was tested on 648 Turkish undergraduate students (73.3% female, *M*age = 20.95, *range* = 18 – 43), were analyzed using Confirmatory Factor Analysis (CFA). The adapted scale was found to have the same structure as its original one, which was tested on college students of various ethnicities at a large, public, Western university. By providing a valid and reliable scale in Turkish, this study enables the utilization of this scale in non-Western samples. This way, it has the potential to pave the way for cross-cultural comparisons as well as understanding and ameliorating this important concept in non-Western populations.

Introduction

Classrooms have a social structure in which various forms of communication are exchanged. The members of a classroom community affect one another through discussing, agreeing/disagreeing, and encouraging/discouraging one another (Bruce, 2007). That is, positive and negative communications of individuals are what create a classroom climate (Frisby & Martin, 2010). There are two main types of communication among classroom participants: teacher-student and student-student (Hirschy & Wilson, 2002; Johnson, 1981). Previous studies focused on the teacher-student interaction and investigated the various roles of instructors in a classroom community context (Dobransky & Frymier, 2004; Goldschmidt et al., 2010; Harper, 2018; Van de Pol et al., 2010). They demonstrated the pivotal role of teachers in organizing the learning environment and creating a positive classroom climate (Bruce, 2007).

The confirmation literature in the classroom setting therefore starts with the teacher confirmation concept. Ellis (2000, p. 266) describes teacher confirmation as "the transactional process by which teachers communicate to students that they are endorsed, recognized, and acknowledged as valuable, significant individuals." She found four general categories of teacher confirmation: teachers' responses to students' questions and comments, teachers' interest in students as learners, teaching styles, and lack of

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disconfirmation. Effective instruction includes teacher confirmation (Goodboy & Myers, 2008), which has a strong role in college students' cognitive and affective learning (Ellis, 2000; Goodboy & Myers, 2008). In addition, students are more likely to think of their instructors as being competent and worthy of respect, and having reward power if instructors use confirming behaviors conveying that they are endorsed, recognized, and valued as individuals (Turman & Schrodt, 2006). Teacher confirmation behaviors boost student engagement, reduce challenging behavior, improve state motivation and satisfaction, enhance student communication for the relational, practical, and participatory motives, while decreasing excuse-making communication (Goodboy & Myers, 2008). Thus, teacher confirmation seems to boost student engagement, motivation, satisfaction, and communication while reducing challenging behaviors.

These recent studies take students' socialization, learning, and progression to depend primarily on their interactions with teachers and construe peer relationships to have little influence on students, thus not spending much research effort and time on the latter. However, contrary to this assumption, the teacher may not have as much of an impact on the students as they do on one another (Sidelinger et al., 2011). Thus, it is crucial to take into consideration what is happening on the student side of the classroom and consider the value of student interactions, peer acceptance, and other social dynamics in shaping a student's development, emotions, and psychological well-being (Kaur et al., 2019; Kilgo et al., 2019; LaBelle & Johnson, 2021; Paradowski et al., 2021). Thus, students' both in-class involvement and out-of-class interaction (Frisby & Martin, 2010) emerge as valuable and intriguing research topics. Accordingly, certain studies looking into student-student interactions indicated that student-to-student interactions have a positive impact on students' sense of a community within the course (Bickle & Rucker, 2018), student engagement and satisfaction (Muzammil et al., 2020), connection with their classmates (Sollitto et al., 2013), as well as a role to promote social presence and students' sense that their classmates are potential sources of support and encouragement (Brent et al., 2021). These findings showed that student-to-student interaction provides a wide range of benefits for students' social, emotional, academic, and psychological well-being.

More recent work in instructional communication focused on peer relationships and student-to-student connectedness is one of the related concepts. It stands for a socio-psychological outcome of a friendly and cooperative communication environment in the classroom and fosters a sense of community among students (Dwyer et al., 2004; MacLeod et al., 2019) and has emerged as a research topic for almost two decades. These previous studies found that student-to-student connectedness is positively correlated with affective (Johnson, 2009), cognitive (Prisbell et al., 2009), and self-regulated learning (Sidelinger et al., 2012), students in-class involvement (Sidelinger & Booth-Butterfield, 2010) and it lessens the unfavorable correlations between instructor misbehaviors and student engagement (Sidelinger et al., 2011). Even a study showed that a connected classroom environment may lead students to influence an instructor's decisions in a university classroom and instructors are more responsive to student demands (Sidelinger et al., 2012). Recently, research has turned its attention to student-to-student connectedness in online learning environments (Hehir et al., 2021; Stone & Logan, 2018; Stone & Springer, 2019). Nevertheless, there is still much to uncover about the complexities of how students interact with one another within the learning context of the classroom.

Student-to-student confirmation, a newly formed student-centric term, is one of the peer interaction constructs in an educational setting (Johnson & LaBelle, 2016). Confirmation exists in a classroom when a student's response to the course content is acknowledged by fellow students, when assistance is supplied, or when a student receives individual attention from other students. These examples show that a student is a valued and significant member of the class. In other words, it is not only important for students to receive/give assistance, acknowledgement, and individual attention from their peers, but also to weave these dimensions together so that student-to-student confirmation occurs in a classroom.

The first dimension is *acknowledgment*. Confirmation through acknowledgment refers to students demonstrating appreciation or recognition of another's talent, action, or knowledge by making them aware that they performed an exceptional task or have competency in cognitive processes regarding the course such as knowledge, opinions, thoughts, and discussion remarks. Acknowledgement of competence and acknowledgement of ability were two subcategories. Acknowledgment of competence stands for validation that results from acknowledging knowledge, concepts, ideas, opinions, remarks from discussions, or other cognitive processes. When students confirm that their classmates are competent in the subject matter, students regard the recipient students for their contributions to class discussion and the learning of the course material. Acknowledgement of ability refers to students confirming one another by recognizing one another's ability in a certain skill or task, such as musical or athletic abilities and speaking foreign languages (Johnson & LaBelle, 2016; LaBelle & Johnson, 2018).

Assistance is the second dimension. It includes students providing or seeking assistance in the classroom, such as with course comprehension, studying, or other classroom duties. As a result, when a student receives help from another student, his or her learning endeavor is approved by his or her peers. A peer, in turn, confirms the knowledge or skill of the student by offering assistance. The two subcategories of functional assistance and content assistance represent this dimension. Functional assistance occurs when students assist one another in a pragmatic or utilitarian sense. While it frequently manifests through the provision of a tangible product such as lecture notes, it can also manifest itself through intangibles such as reminders and warnings. The second subcategory, content assistance, presents when students provide or get assistance with content, such as helping each other when they do not understand something. Students who ask for assistance in honing their performances also receive confirmation through content assistance, referring to instances such as deepening their understanding of the course material through a peer's help or getting assistance in the development of a certain skill (Johnson & LaBelle, 2016; LaBelle & Johnson, 2018).

Individual attention is the third dimension, and it is pertaining to statements or acts conveyed to the listener that their concept of self is valued and respected, irrespective of their knowledge or academic success. There are two distinct subcategories within this dimension: encouragement and individualization. Encouragement occurs when students give or receive messages that create confidence or display support. Individualization is a subcategory in which students acknowledge another distinctiveness and unique needs unto themselves outside of the classroom by conveying messages of support, kindness, and caring (Johnson & LaBelle, 2016; LaBelle &

Johnson, 2018).

Students in a classroom context where they received confirmation from their classmates enunciated a stronger sense of belonging developed among classmates, because of either a more open and supportive environment or direct interactions (Johnson & LaBelle, 2016). Establishing positive student relationships promotes students' retention of course materials and achievement (Aloia, 2021; Tinto, 2006), assimilation into the classroom, and feelings of classroom connectedness (Dwyer et al., 2004; Sollitto et al., 2013), as well as perceptions of a pleasant learning environment (Frisby & Martin, 2010). Relatedly, students whose messages are confirmed by peers display much greater levels of spoken in-class behavior, thinking about course material, and out-of-class activities related to course content, such as communicating with others about course material, checking notes, and studying (LaBelle & Johnson, 2020). Moreover, peer confirmation in the college classroom can meet each other's psychological requirements for competence and relatedness while also encouraging intellectual resilience and hope, which appears to enhance their intrinsic motivation to learn (Frisby et al., 2020; Shin & Johnson, 2021). In this sense, student-to-student confirmation both boosts psychological well-being among college students and has an indirect influence on well-being by lowering typical indices of poor mental health (LaBelle & Johnson, 2021).

Student-to-student confirmation in the classroom is shaped by students' peer relationships, classroom context, and other factors such as course material and assignments (Johnson & LaBelle, 2016). Additionally, given that instructors' confirmation and behaviors (Ellis, 2004; Shomoossi, 2004), student diversity such as their cultural and socioeconomic backgrounds (Hirschy & Wilson, 2002) influence classroom interaction, students' learning and motivation, and these social factors could also influence student-to-student confirmation. When considering the complex dynamics of classroom interaction (Hirschy & Wilson, 2002), understanding the cultural context and its influences on this dynamic emerges as an important purpose, as these dynamics may pan out differently in different cultural settings (LaBelle & Johnson, 2018).

All studies on student-to-student confirmation were conducted on samples from Western universities and specifically in the United States (Johnson & LaBelle, 2016; LaBelle & Johnson, 2018, 2020, 2021; Shin & Johnson, 2021). Goldman et al. (2014)'s study investigating teacher confirmation revealed distinct variances in cross-cultural samples; the impacts of confirmation are substantially stronger in American and Chinese classrooms than in Turkish settings. Similarly, researchers investigating student-to-student confirmation should investigate how the content, delivery, and impact of students' confirming messages one another vary across intercultural contexts (LaBelle & Johnson, 2018). It is therefore necessary to conduct more research on this phenomenon in a variety of groups in different cultural contexts. Relatedly, the need for culture-centered instructional communication research and the replication of such studies across cultures (Kaufmann & Tatum, 2017) inspired the present study of this concept in a college classroom in a non-Western culture.

Tradition plays an important role in the collectivist Turkish culture, where people act in harmony with the group (Collins, 2015; Hofstede, 2001), so in some ways, students' confirmation may be influenced by Turkish national ideals and identity. Turkish people are depicted as hospitable, friendly, and helpful (Hamid-Turksoy et al., 2014; Keles, 2013). Relatedly, they engage in friendly chats with those in intimate relationships to express their feelings and indicate that their relationship is still going strong. Culturally, Turkish people cherish and attach great importance to these chats (Can & Can, 2010). These cultural characteristics might provide Turkish students with more chances to establish and develop connections with their peers in a collegiate setting (Frisby et al., 2017). On the other hand, Turkish higher education is competitive and emphasizes achievement (Yıldırım, 2006). In addition, Turkish college students typically come from various backgrounds (Dayioğlu & Türüt-Aşik, 2007). While the collectivist background may promote positive confirmation, the competitive higher education context and variations in students' backgrounds may have a negative impact on instructional communication practices (Frisby et al., 2017). Considering these possibilities, it is uncertain how confirmation plays out in Turkish college classrooms. Given the disparities between Turkish and other cultures, a scale that measures culture-centered instructional communication and confirmation in Turkey is a valuable scientific contribution.

As in the international literature, communication at the higher education level in Turkey is mainly focused on the teacher-student relationship (Ataman & Adıgüzel, 2019; Dönmez et al., 2018; Gülbahar & Aksungur, 2018; Keçeci & Taşocak, 2009; Tomul, 2016). However, a few studies (Aygün & Ulak, 2021; İlhan et al., 2018; Küçükoğlu & Köse, 2008) revealed that students' interaction with their classmates is important for academic achievement. These studies relied on either qualitative findings or descriptive statistics. In addition, no research has been conducted on how students interact with one another in the classroom.

According to LaBelle and Johnson (2018), a meticulously generated quantitative assessment of this phenomenon is required to gain a better understanding of the college students' communicative experience with their peers in the classroom. Therefore, they developed the Student-to-Student Confirmation Scale. Based on the student-to-student confirmation literature, an initial pool of 73 items was formed. The validity and reliability of the scale were tested on college students at a large, public Western university. Thereafter, a 25-item finalized version of the scale was created, which included the factors of individual attention, acknowledgement, and assistance.

In the current study, the StSCS LaBelle and Johnson (2018) was adapted to the Turkish language and context to investigate if undergraduate students in Turkey confirm their classmates (see Appendix A). Studies conducted in Turkey have likewise revealed the necessity of such a scale. Küçükoğlu and Köse (2008) suggested improvements to promote effective student-student communication so that teaching and learning processes are successful as a result of the study conducted with a sample group of education faculty students in Turkey. In this regard, a study concluded that creative drama activities positively affect friendship relationships in the classroom (Yeler, 2018). When using the programs created in accordance with the collaborative learning approach, students can use their strong communication skills with one another as an opportunity to increase their level of participation in academic activities (İlhan et al., 2018). Student-to-student confirmation, which means students consider one another as important and valuable individuals, is an indicator of positive student-student communication. Since there is no Turkish scale for measuring this concept, this study fills this gap. This Turkish-adapted scale may serve as a data collection tool before and after the implementation of the aforementioned creative

Fig. 1. Graphic representation of the stages of the scale adaptation process.

drama and collaborative learning-based educational interventions, as well as before and after other interventions in future studies. This adaptation study is significant because it aims to provide a valid and reliable scale for researchers and professionals (instructors, administrators) in Turkey to utilize in determining student-to-student confirmation. Taken together, the aim of this study is to adapt the StSCS to the Turkish context and language by translating it into Turkish and to test its validity and reliability on a sample of Turkish university students.

Methods

Participants and procedure

For linguistic equivalence, 73 English Language Teaching undergraduate students who are proficient in both Turkish and English participated. Then, the final version of the scale was tested on a group of 648 undergraduate students from the Faculty of Education at a public university in Istanbul, Turkey. Of this sample, there were 73.3% female, 26.5% male, and one respondent did not answer. Their average age was 20.95 years old (*range* = 18 – 43 years; *SD* = 2.33). There were students from all undergraduate class levels, comprising 32.4% freshmen, 27.8% sophomores, 17.6% juniors, and 22.2% seniors.

The researchers collected data from 73 participants in the pretest and 648 participants in the final test in person via handing out hard copies of the scale in classrooms. During the data collection process, one of the researchers was present in each classroom to address any questions that could come up. The scale took approximately ten minutes to complete.

Instrument

The original StSCS, developed by LaBelle and Johnson (2018), is a 25-item scale that measures college students' confirmations of their classmates. The scale utilizes a five-point Likert scale that ranges from 1 (strongly disagree) to 5 (strongly agree). The scale was developed after it was tested on 396 college students for exploratory factor analysis, 396 students for confirmatory factor analysis, and 283 college students enrolled at a large, public Western university for construct validity. It had face, criterion-related, and construct validity as well as a three-dimensional factor structure. Its factor loadings have risen from .61 to .93. The Cronbach alpha reliability value is .95 for the 10-item *Individual attention factor*, while .92 for the 9-item *Acknowledgement factor* and .95 for the 6-item *Assistance factor*.

Translation and adaptation process

First, the scale developers' approval for the Turkish adaptation work was requested via email. For linguistic equivalence, translators who are proficient in both English and Turkish were selected. Four people independently translated the scale items into Turkish. The researchers brought together later translations to determine the most appropriate Turkish expressions for each item. Because of translation issues, the expressions in the original language were kept as close to their original form as possible. During this process, they sought advice from academicians where necessary. Then, two different language experts back-translated the Turkish-adapted version of the scale. These back-translations were compared to the original scale in order to see if the two versions of the scale were semantically, conceptually, and idiomatically equivalent (Hambleton, 2005; Van de Vijver & Hambleton, 1996). The Turkish translation was changed when the underlying reasons for the small differences were identified. For instance, we used 'about topics outside the course' instead of 'topics that are not relevant to the course'. Not sure of which was more appropriate, 'they greet me' or 'they recognize me,' following back-translation, we decided on 'they greet me'. The original scale's demographic information part was also modified by taking the scale developers' suggestions into account: some variables were added, such as GPA and region instead of ethnicity.

Next, we shared the scale with the other three language experts, who rated the translated items on a scale of 1–5 and provided comments. The researchers used their evaluations and suggestions to ensure that the translations were relevant, adequate, clear, and concise. This way, we modified certain items based on their feedback. The first item, for instance, included the phrase 'topics that are not related to the class' before the feedback, but we revised it after the feedback as 'topics related to out-of-class'. We replaced 'outside of the classroom' with 'outside of class' in two items (2, 3) after receiving comments. Likewise, upon expert comments, we changed the words 'attest to my ability' to 'appreciate my ability' in two items (16, 17). We conducted a pilot study with 73 students who were competent in both languages to determine the consistency of the items in Turkish. We administered both the original scale and its adapted version to these students. We also investigated the clarity of the statements asking the students whether they understood each statement or not. Thus, we examined the intelligibility of the Turkish version. During the translation and adaptation process, we followed Beaton et al. (2000)'s guidelines for the cross-cultural adaptation process (see Fig. 1).

Data analysis

The researchers utilized Pearson's correlation coefficient to calculate the relationship between the data obtained from the original English scale and the adapted Turkish scale, which was applied to 73 students for linguistic equivalence. Beforehand, the normality was checked, and a normal distribution was found at all three subscales of both English and Turkish scales; their skewness and kurtosis coefficients were between $+1$ and -1 (Mishra et al., 2019). Cronbach's alpha for the English scale was .942 and for the Turkish-adapted version was .962.

A three-factor CFA was used to ensure the structural validity of the Turkish-adapted version of the scale. First of all, the missing data were replaced with the mean value of the associated series. Prior to the CFA, normality and linearity, outliers, and residuals were evaluated as the assumptions (Tabachnick & Fidell, 2007). After satisfying all assumptions, the researchers ran the CFA on 648 participants. Considering that the chi-square index may not be an adequate stand-alone fit index (Hu & Bentler, 1998), a number of additional alternative fit indices were also adopted: Comparative Fit Index (CFI), Incremental Fit Index (IFI), Relative Fit Index (RFI), Normed Fit Index (NFI), Non-Normed Fit Index (NNFI). Standardized Root Mean Residual (SRMR) was also reported. In addition, we employed Item Response Theory (IRT) to assess the items' characteristics such as their difficulties and discrimination ability (Chalmers, 2012). We executed the Graded Response Model because the scale was a five-point Likert scale. Furthermore, we computed the correlation coefficients for the correlation of subscales with each other and with the overall score. For the reliability of the scale, we calculated Cronbach's alpha (α), McDonald's omega (ω), and Guttmann's lambda (λ6). All data were analyzed using IBM SPSS 22, LISREL 8.54, JASP 0.17, and Stata 14.2 programs.

Ethical approval

The researchers obtained ethical approval from the Social and Human Sciences Research Ethics Committee at Yildiz Technical University with the number 20220300313. We also informed the students about the purpose of the study and that they were free to complete the scale, and that their answers would be considered confidential.

Results

Linguistic equivalence

The results of the Pearson correlation analysis for linguistic equivalence revealed that all Turkish subscales and the overall score demonstrated significant ($p < .001$) and strong/very strong positive correlation with their original English versions. The correlation values for the individual attention, acknowledgement, and assistance were .873, .921, and .793 respectively and .910 for the overall score. Besides, the correlations between the items in the two languages ranged from .824 to .479. These moderate to very strong values show that these two versions are well-matched (Schober et al., 2018). Thus, all items were kept in the study.

Descriptive statistics

Table 1 presents the analysis results on mean, standard deviation, skewness, and kurtosis for each item.

Table 1
Descriptive statistics of the Turkish StSCS items.

Item	Mean	SD	Skewness	Kurtosis	Item	Mean	SD	Skewness	Kurtosis
Item 1	3.92	1.10	-1.08	.62	Item 14	2.95	1.06	.06	-.37
Item 2	4.06	1.00	-1.19	1.20	Item 15	3.49	1.04	-.44	-.21
Item 3	4.11	.90	-1.26	1.90	Item 16	3.23	1.06	-.13	-.46
Item 4	3.54	1.04	-.44	-.29	Item 17	3.11	1.06	-.04	-.41
Item 5	3.68	1.10	-.66	-.24	Item 18	2.94	1.09	.04	-.63
Item 6	3.85	1.04	-.79	.13	Item 19	2.91	1.06	.17	-.42
Item 7	3.40	1.12	-.33	-.57	Item 20	3.79	1.08	-.91	.29
Item 8	3.43	1.09	-.37	-.51	Item 21	3.81	1.07	-.97	.41
Item 9	3.97	.96	-1.08	1.12	Item 22	3.75	1.07	-.89	.25
Item 10	3.92	.99	-1.00	.69	Item 23	3.53	1.13	-.53	-.41
Item 11	3.23	1.11	-.20	-.46	Item 24	3.56	1.12	-.58	-.27
Item 12	3.26	1.08	-.23	-.40	Item 25	3.54	1.09	-.58	-.23
Item 13	3.29	1.07	-.26	-.40					

Confirmatory factor analysis

As a result of CFA, there were no items that had factor loadings below 0.30 ($\lambda > 0.30$), and all factor loadings ranged from 0.70 to 0.92 (see Fig. 2). The model was found to be suitable both theoretically and statistically. The fit indices of the three-factor model were

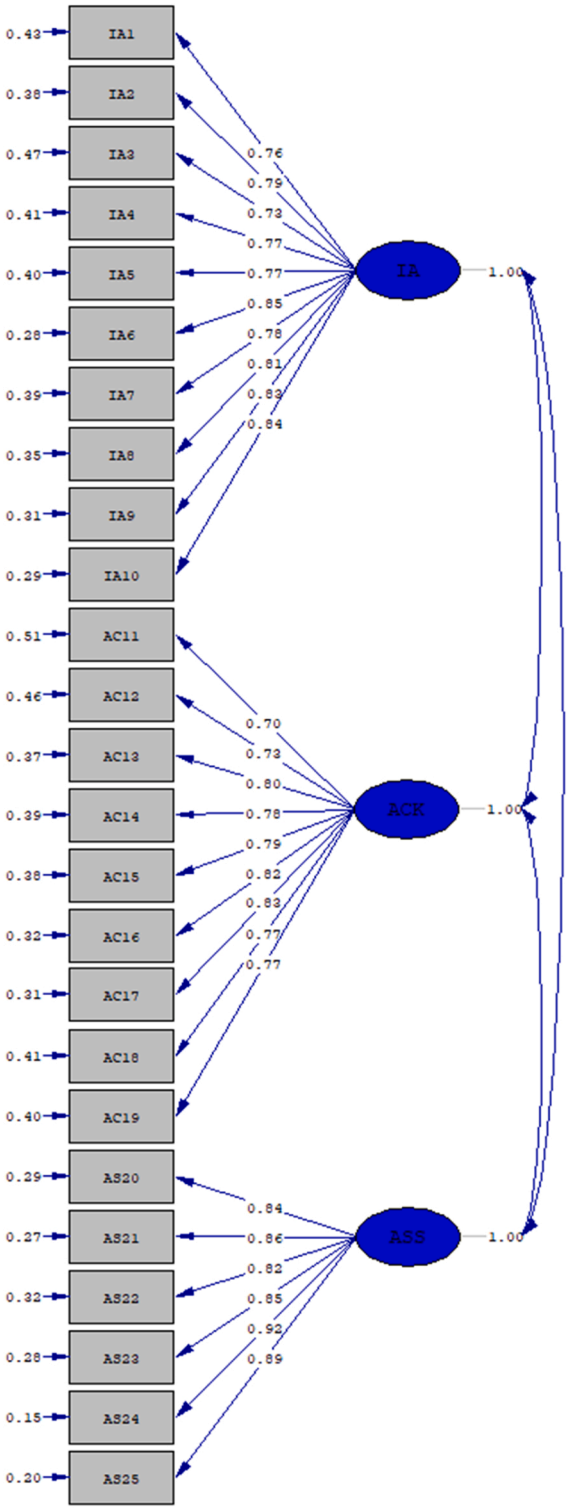

Fig. 2. Path diagram for the CFA of the Turkish StSCS.

Table 2
CFA fit indices for the Turkish StSCS.

Fit Indices	χ^2	*df*	CFI	NFI	NNFI	IFI	RFI	SRMR
Values	2258.4 ($p < .05$)	272	0.96	0.96	0.96	0.96	0.95	0.057
Degree of Fit	-	-	Perfect fit $\geq .95$[a]	Perfect fit $\geq .95$[a]	Perfect fit $\geq .95$[a]	Perfect fit $\geq .95$[a]	Perfect fit $\geq .95$[a]	Acceptable fit $\leq .08$[a]

Note. [a] Hu and Bentler (1999), Hooper et al. (2008), Bentler and Bonett (1980).

acceptable ($\chi^2 = 2258.4$, $p < .05$; $df = 272$; CFI =.96; SRMR =.057; NFI =.96; NNFI =.96; IFI =.96; RFI =.95). Table 2 summarizes the goodness-of-fit indices for the Turkish version of the StSCS. Table 2 shows that the CFA results demonstrated acceptable fit indices for the three-dimensional 25-item structure of the StSCS, confirming that it retains the same structure as the original version.

As additional evidence for the factor structure of the scale, we also conducted a CFA to test the loading of all items onto the same factor. The fit indices of the one-factor model were poor ($\chi^2 = 11109.74$, $p < .05$; $df = 275$; CFI =.87; SRMR =.15; NFI =.86; NNFI =.86; IFI =.87; RFI =.85) and showed that one-factor structure does not fit as well as the three-factor version of the scale.

IRT analysis

Table 3 demonstrates the IRT results. Item characteristics curves were also created to visually represent the basic IRT parameters, which formed S shapes (see Appendix B).

As shown in Table 3, all α values were higher than 1.0, which corresponds to being highly discriminant (Baker, 2001). According to IRT results, the StSCS has an acceptable level of item difficulty and discrimination ability between good performers and poor performers.

Table 3
IRT estimates for the Turkish StSCS.

	Item parameter estimates						Item parameter estimates				
Item	α	b_1	b_2	b_3	b_4	Item	α	b_1	b_2	b_3	b_4
1	2.21	-2.08	-1.48	-.77	.45	**14**	1.13	-2.37	-.84	1.05	2.41
2	2.33	-2.32	-1.72	-.95	.33	**15**	1.62	-2.46	-1.37	-.073	1.34
3	1.98	-2.75	-2.03	-1.22	.41	**16**	1.51	-2.32	-1.06	.37	1.65
4	2.27	-2.24	-1.24	-.17	1.05	**17**	1.39	-2.28	-.97	.60	1.87
5	2.36	-2.11	-1.18	-.39	.77	**18**	1.32	-2.07	-.59	.79	2.22
6	2.87	-2.20	-1.40	-.51	.52	**19**	1.30	-2.21	-.61	.99	2.21
7	2.61	-1.80	-.91	.037	1.01	**20**	2.09	-2.14	-1.39	-.65	.72
8	2.77	-1.88	-.94	-.03	1.02	**21**	2.17	-2.15	-1.36	-.74	.72
9	2.95	-2.22	-1.52	-.82	.52	**22**	2.10	-2.13	-1.31	-.61	.81
10	3.07	-2.21	-1.41	-.76	.54	**23**	2.22	-1.92	-1.10	-.22	.95
11	1.48	-2.09	-1.09	.39	1.57	**24**	2.40	-1.86	-1.17	-.24	.90
12	1.51	-2.21	-1.14	.31	1.62	**25**	2.21	-1.98	-1.18	-.25	1.01
13	1.36	-2.44	-1.25	.26	1.71						

Table 4
Correlation between the subscales and overall score.

Subscales	IA	AC	AS	Mean	SD	Skewness	Kurtosis
IA	-			3.79	.84	-.757	.369
AC	.537**	-		3.16	.86	-.177	.097
AS	.643**	.439**	-	3.66	.97	-.742	.214
Total	.866**	.781**	.849**	3.54	.74	-.617	.591

Note. ** $p < .001$; *IA* Individual attention; *AC* Acknowledgement; *AS* Assistance.

Table 5
Reliability coefficients of the Turkish StSCS.

Subscales	Cronbach's alpha (α)	McDonald's omega (ω)	Guttmann's lambda (λ6)
Individual attention	0.943	0.944	0.950
Acknowledgement	0.932	0.932	0.937
Assistance	0.947	0.947	0.951
Total	0.955	0.954	0.975

Intercorrelation and reliability

We examined the correlations between the subscales and the overall score. As shown in Table 4, the total sample exhibited a normal distribution across all three subscales (the skewness coefficients range from −.757 to −.177; the kurtosis coefficients range from .097 to .591). All the subscales have a significant ($p < .01$) and positive correlation with each other and with the overall scale. The individual attention subscale correlated with the acknowledgement subscale (r =.537), assistance subscale (r = .643), and overall scale (r =.866). The acknowledgement subscale correlated with the assistance subscale (r = .439), and the overall scale (r = .781). The assistance subscale correlated with the overall scale (r = .849). Table 5 shows the reliability coefficients of the StSCS. Cronbach's alpha (α), McDonald's omega (ω), Guttmann's lambda (λ6) reliability coefficients of the subscales and overall score of the StSCS' Turkish version indicate a satisfactory degree of internal consistency because all values were above 0.90.

Discussion

The student-to-student confirmation includes specific messages that students convey to and receive from their classmates to communicate that they are valued and important (Johnson & LaBelle, 2016). We investigated student-to-student confirmation in Turkey since previous studies revealed that the experience of student-to-student confirmation resulted in higher perceived cognitive learning, intrinsic motivation, classroom connectedness, academic self-efficacy, and psychological well-being (Johnson & LaBelle, 2016; LaBelle & Johnson, 2018, 2020, 2021; Shin & Johnson, 2021). The first study on this recently coined term included participants from a Southeastern university in the United States (Johnson & LaBelle, 2016). This study discovered that student-to-student confirmation has three subdimensions: acknowledgement, assistance, and individual attention. Later studies on student-to-student confirmation focused on Western universities in the United States (LaBelle & Johnson, 2018, 2020, 2021; Shin & Johnson, 2021). Since there are no studies on this topic in non-Western countries such as Turkey and no Turkish scale for student-to-student confirmation, this research sought to provide a valid and reliable Turkish measurement tool that enables investigation into and improvement of this crucial concept in non-Western cultures and facilitates cross-cultural comparisons.

This work adapted the StSCS developed by LaBelle and Johnson (2018) into the Turkish language and context and conducted its validity and reliability studies. The scale was found to be reliable in this validation with a Turkish undergraduate university student sample, with meaningful correlations between the subscales and overall scale. In addition, the same three-dimensional structure emerged in the Turkish sample as did the original validation with a Western sample of college students. Cronbach's alpha (α), McDonald's omega (ω), and Guttmann's lambda (λ6) calculations were used to confirm the scale's reliability. In the Turkish sample, the reliability of the Turkish adaptation of this scale was over 0.90, indicating satisfactory reliability.

Item Response Theory (IRT) was utilized to improve the validation of items of the StSCS. From the two approaches of IRT and classical test theory (CTT), IRT is preferable to CTT (Jabrayilov et al., 2016) because IRT's estimates of item difficulty do not vary among samples, its difficulty indices are more consistent across test types, and it has noticeably fewer measurement errors (Magno, 2009). IRT yields a customized estimate of measurement error for all abilities, as opposed to CTT, which solely produces one generic measurement estimate for all scores (De Champlain, 2010). Most importantly, unlike CTT, IRT uses a logistic response function to predict the participants' underlying capabilities as well as the properties of items according to the quantity of information they offer regarding the latent trait (Jafari et al., 2012; Tractenberg, 2010; Van der Linden & Hambleton, 2013). Considering the benefits of IRT and the five-point Likert-type scale, the present study used a polytomous IRT model called the Graded Response Model to analyze the fitness of the items of the Turkish StSCS. Based on the IRT results, the item difficulties were adequate, and the item characteristics of the scale were sufficient.

This study and the adapted Turkish instrument are expected to lead the way for future research on this topic in Turkey. The concept of student-to-student confirmation has yet to be addressed in Turkey. However, since student-student confirmation is related to student-student communication, the results and recommendations of studies dealing with student-to-student communication may serve as a guide and enable us to estimate student-to-student confirmation. A study (Küçükoğlu & Köse, 2008) with students from the faculty of education in Turkey concluded that good student-to-student communication should be provided for the learning and teaching processes to be successful. This conclusion's basic hinge can be the assertion that interactions between students give meaning to the content materials and the learning process and makes them come to life (Wragg, 2020). Student-to-student confirmation may also influence the success of learning and teaching processes. Thus, further studies may investigate the effect of student-to-student confirmation on students' achievement or effectiveness of the instructions using this adapted scale. In addition, creative drama activities improve friendship relations in the classroom (Yeler, 2018), and students communicate effectively with one another when using curricula designed in accordance with the cooperative learning approach (İlhan et al., 2018). Thus, this Turkish-adapted scale might be employed as a data-gathering instrument in the educational experimental studies using interventions based on diverse teaching methods and techniques as interventions.

This adapted scale makes it possible to employ student-to-student confirmation in studies that examine other student-centric variables, such as connectedness, rapport, acceptance, mentoring and collaboration. Comparison studies on student-to-student confirmation between Turkey and different cultural contexts can be conducted as well. In their study investigating teacher-to-

student confirmation, Goldman et al. (2014) revealed significant differences in cross-cultural samples; the teacher-to-student confirmation and learning relationship were significantly greater in American and Chinese classrooms than in Turkish ones. Similarly, researchers investigating student-to-student confirmation (LaBelle & Johnson, 2018) proposed scrutinizing how student-to-student confirmation's impact varies in cross-cultural contexts to explore the role of culture in classroom communication.

According to Caliskan and Zhu's (2020) study, the primary obstacles to innovative educational practices at Turkish colleges are hierarchical structures and a lack of open communication and autonomy. This context of Turkish higher education may affect the student-to-student confirmation both positively, as they help each other to overcome hindrances, and negatively, as they feel under teachers' authoritative control in the classroom. Frisby et al. (2017) found that American undergraduate students reported having much better relationships with their teachers, whereas Turkish students reported having significantly higher levels of involvement in class. However, the two samples did not differ noticeably in terms of motivation or perceptions of learning. This Turkish adapted scale can be administered to examine how student-to-student confirmation relates to the variables tested by Frisby et al. (2017) in Turkish and American contexts. In Turkey and Turkish college classrooms, there are nationals from multiple countries. This may lead to the idea that Turkish students are sensitive and respectful of other cultures. On the other hand, it may lead to segregation and prejudice within the classroom. These speculations can be tested with studies using our Turkish-adapted StSCS as a tool.

Limitations

The current study has some limitations. First, the confirmation of the factor structure found in the original scale was tested for construct validity in the present study. Future studies can utilize this validated scale in conjunction with instruments of other related concepts to explore theoretical relationships between them. They can investigate convergent validity by utilizing other instruments measuring other concepts such as classroom connectedness, academic self-efficacy, affective learning, and learning motivation, which are likely positively correlated with StSCS. Discriminant validity should be also demonstrated by showing how the StSCS differs from other similar concepts such as peer acceptance and teacher-to-student confirmation. Researchers can use the scale of Butler et al. (2007) to measure peer acceptance and they can use the scale of Ellis (2000) to measure teacher confirmation.

Second, the sample was restricted to Turkish university students and the data was self-reported and cross-sectional, both of which are prone to well-known methodological biases. Future studies can use the newly validated Turkish StSCS with different Turkish samples from private or small-scale public universities located in the east of Turkey. They could investigate how the type or size of the university influences student-to-student confirmation. In this regard, researching the effects of various factors, such as students' GPA, socioeconomic status, type of course (core or elective), and mode of delivery (face-to-face or online),on student-to-student confirmation may offer practical insights for educators to properly design course content and the learning environment. Future research may also combine these quantitative scale data with qualitative information from observations in the classroom and course activities, and interviews with students and instructors.

Implications and future directions

A need has emerged for measurement tools to investigate the effects of student-to-student confirmation on various variables related to students' academic, social, emotional, and physiological characteristics. The StSCS is the one such measurement tool, and this study conducted its validation in Turkey. Such attempts are valuable because they enable the scale's utilization in non-Western samples, paving the way for cross-cultural comparisons, and helping non-Western populations understand and improve this fundamental concept. As Myers (2010) recommended, researchers should continue examining the communicative aspects of the educational process across grade levels, instructional contexts, and topic areas.

This valid and reliable Turkish scale could be beneficial for educational professionals in Turkey, such as instructors and administrators, in determining student-to-student confirmation. Based on the results obtained from the scale, the instructors can take actions in order to improve student-to-student communication such as setting up collaborative group/pair works and discussion activities. Students' active involvement in these interactive activities may boost their contact in class—both with the teacher and with one another (Sadler, 2012) as well as create a positive classroom climate. When the instructor –one of the powerful actors in organizing and upholding classroom communication- fosters an open environment, the development of a trusting relationship not only between student and instructor but also among students occurs (Yürekli Kaynardağ, 2019; Zou & Yu, 2021). The administrators can also organize out-of-school or in-school activities that enable students to get to know and communicate with one another such as school trips (e.g., cultural, historical, nature), group competitions and spring festivals. Another practical implication could be organizing learning/social communities and orientation seminars for freshmen before starting college. These programs can help students feel more confident about the curriculum and atmosphere and perform better in peer-to-peer relationships. In a similar vein, a pre-academic program for first-year students before enrolling in college was designed and this program enhanced student-peer interactions and students' achieved grades in the first course and increased their first-year GPA (van Herpen et al., 2020).

Conclusion

In conclusion, this study offers the Turkish adaptation and validation of the recently developed StSCS. The Turkish scale was found to have the same structure as the original one. The present study provides a valid and reliable student-to-student confirmation scale in Turkish. With that, it has the potential to guide future research and enable the measurement of this concept in non-Western samples. This way, it can pave the way for cross-cultural comparisons as well as for understanding and ameliorating this important concept in non-Western college classrooms. Finally, the students can use this scale to get to know themselves better and take charge of their educational experiences for optimal academic and mental well-being outcomes.

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Pre-registration statement

This study was not pre-registered.

Note

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Declaration of competing interest

No conflict of interest exists for any of the authors.

Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Appendix A. Turkish version of StSCS

1. Sınıf arkadaşlarım ders dışındaki konular hakkında benimle konuşmak için zaman ayırırlar.
2. Sınıf arkadaşlarımı ders dışında gördüğümde benimle konuşurlar.
3. Sınıf arkadaşlarımı ders dışında gördüğümde bana selam verirler.
4. Sınıf arkadaşlarım beni tanımaya çalışırlar.
5. Sınıf arkadaşlarım benimle şakalaşırlar.
6. Sınıf arkadaşlarım dersle ilgili olmayan sohbetlere beni dahil ederler.
7. Sınıf arkadaşlarım ders dışında ilgi alanlarımı öğrenmek için zaman ayırırlar.
8. Sınıf arkadaşlarım ders dışında beni daha yakından tanımak isterler.
9. Sınıf arkadaşlarım derslerden önce benimle konuşurlar.
10. Sınıf arkadaşlarım derslerden sonra benimle konuşurlar.
11. Sınıf arkadaşlarım zeki olduğumu söylerler.
12. Sınıf arkadaşlarım becerikli olduğumu söylerler.
13. Sınıf arkadaşlarım ders konularını iyi kavradığımı söylerler.
14. Sınıf arkadaşlarım derste işlediğimiz konuları öğrenmede doğal bir yeteneğim olduğunu söylerler.
15. Sınıf arkadaşlarım benim iyi iş çıkardığımı söylerler.
16. Sınıf arkadaşlarım sınıftaki yeteneğimi takdir ederler.
17. Sınıf arkadaşlarım derste öğrendiğimiz şeylerle alakalı yeteneğimi takdir ederler.
18. Sınıf arkadaşlarım yeteneklerimden etkilendiklerini söylerler.
19. Sınıf arkadaşlarım derste öğrendiklerimizi uygulama konusunda doğal bir yeteneğim olduğunu söylerler.
20. İhtiyacım olduğunda sınıf arkadaşlarım ders çalışmama yardım ederler.
21. İhtiyacım olduğunda sınıf arkadaşlarım sınavlara hazırlanmama yardım ederler.
22. İhtiyacım olduğunda sınıf arkadaşlarım sunumlara hazırlanmama yardım ederler.
23. Sınıf arkadaşlarım ödevleri en iyi şekilde yapmama yardımcı olmaya isteklidirler.
24. Sınıf arkadaşlarım sınavlara çalışmama yardım etmeye isteklidirler.
25. Sınıf arkadaşlarım ders konularını anlamama yardımcı olmaya isteklidirler.

Appendix B. Item characteristics curves for the Turkish StSCS

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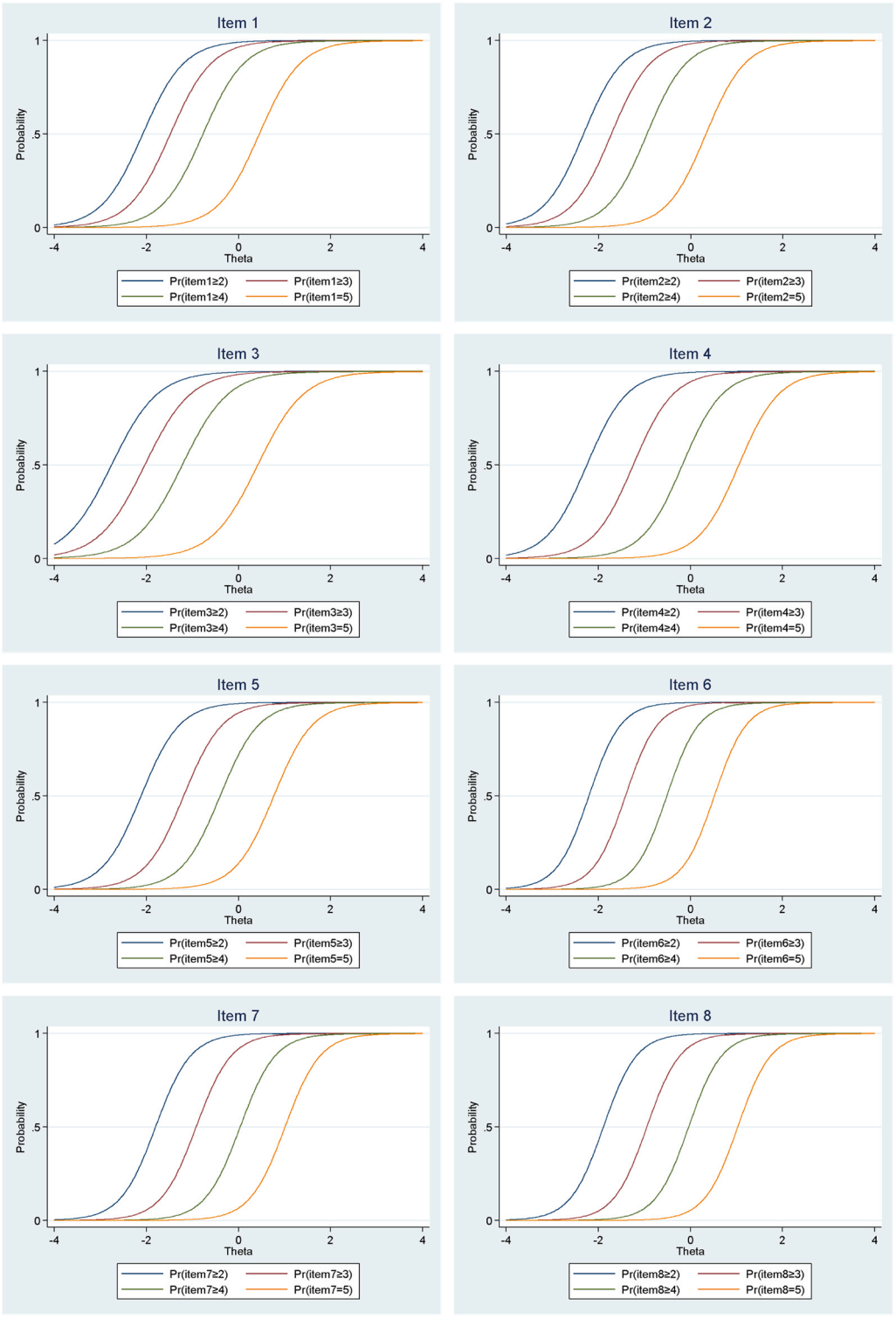
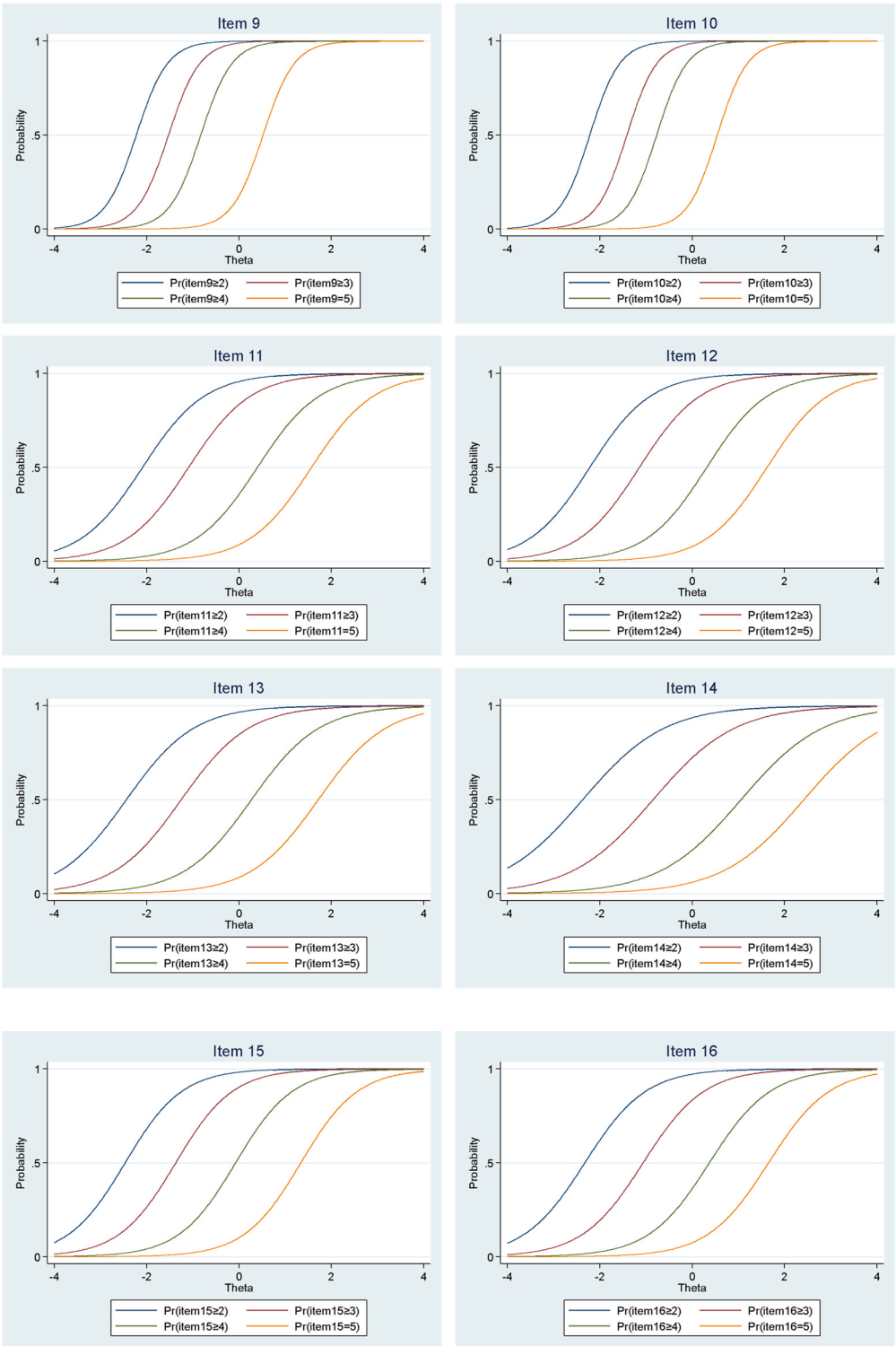
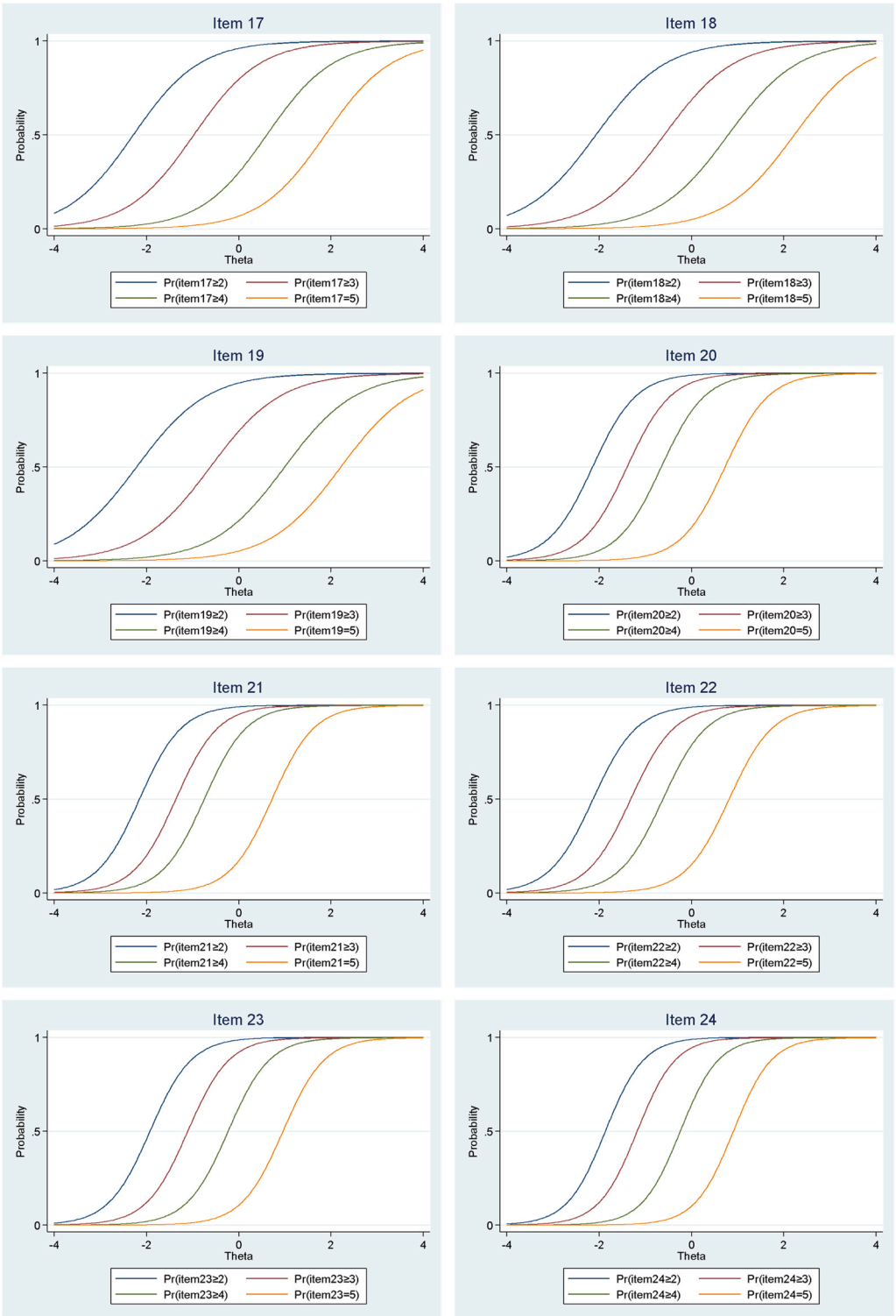
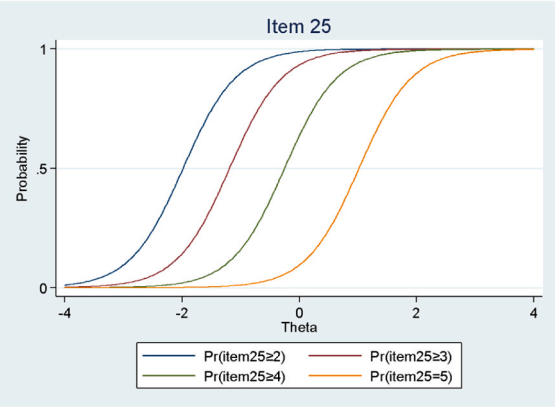



Item 9
Probability
Theta
Pr(item9≥2)
Pr(item9≥3)
Pr(item9≥4)
Pr(item9=5)
Item 10
Pr(item10≥2)
Pr(item10≥3)
Pr(item10≥4)
Pr(item10=5)
Item 11
Pr(item11≥2)
Pr(item11≥3)
Pr(item11≥4)
Pr(item11=5)
Item 12
Pr(item12≥2)
Pr(item12≥3)
Pr(item12≥4)
Pr(item12=5)
Item 13
Pr(item13≥2)
Pr(item13≥3)
Pr(item13≥4)
Pr(item13=5)
Item 14
Pr(item14≥2)
Pr(item14≥3)
Pr(item14≥4)
Pr(item14=5)
Item 15
Pr(item15≥2)
Pr(item15≥3)
Pr(item15≥4)
Pr(item15=5)
Item 16
Pr(item16≥2)
Pr(item16≥3)
Pr(item16≥4)
Pr(item16=5)

.


Item 17
Probability
Theta
Pr(item17≥2)
Pr(item17≥3)
Pr(item17≥4)
Pr(item17=5)
Item 18
Pr(item18≥2)
Pr(item18≥3)
Pr(item18≥4)
Pr(item18=5)
Item 19
Pr(item19≥2)
Pr(item19≥3)
Pr(item19≥4)
Pr(item19=5)
Item 20
Pr(item20≥2)
Pr(item20≥3)
Pr(item20≥4)
Pr(item20=5)
Item 21
Pr(item21≥2)
Pr(item21≥3)
Pr(item21≥4)
Pr(item21=5)
Item 22
Pr(item22≥2)
Pr(item22≥3)
Pr(item22≥4)
Pr(item22=5)
Item 23
Pr(item23≥2)
Pr(item23≥3)
Pr(item23≥4)
Pr(item23=5)
Item 24
Pr(item24≥2)
Pr(item24≥3)
Pr(item24≥4)
Pr(item24=5)

.



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