Development of a Scale to Measure Synergy

By:

Kathy J. Keister

Sharon L. Farra

Sherrill J. Smith

Michael Bottomley

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New nurse graduates today must be prepared to demonstrate a variety of cognitive, psychomotor, and affective competencies to be able to practice within today's complex healthcare environments. While literature is available to support tangible and effective methods for evaluating many psychomotor and cognitive abilities, less evidence is available to support how to evaluate nursing student skills that are less tangible or 'soft skills.' These soft skills include those related to communication, leadership, working in teams/groups, and social problem solving (Lau & Wang, 2014). Many of these competencies must be evaluated as students work together with others requiring new evaluation methods that differ from traditional methods that measure individual learners. With the increase in use of active learning strategies and team/group based learning in nursing education, evidence indicates these teaching strategies are successful in producing positive student outcomes. The authors propose that synergy is an underlying factor in group learning that may explain why some groups do well while other groups struggle. This study adds to the science of nursing education through development of a scale to measure the soft skill of synergy.

Specific Aims/Hypothesis

The purpose of this study was to develop a psychometrically sound instrument, the Nursing Education Synergy Scale (NESS), to assess the synergy within learning groups. A premise of the study was that synergy encompasses specific constructs and indicators that can be validated by content validity and expert opinion. The specific aims of the study were to develop a scale that measures synergy within learning groups and to pilot the scale with undergraduate nursing students.

Theoretical/Conceptual Framework

The framework which guided this study was the eight-step instrument development framework proposed by DeVellis (2003). This framework provides researchers a step-by-step method for rigorously developing a new instrument. The framework guides the researcher through eight steps, from identification of the purpose of the instrument to finalizing the instrument with the appropriate number of items included in the scale. These steps include: 1) identify a clear purpose for the concept to be measured, 2) generate an item pool based on literature and expert opinion, 3) determine format of measurement based on the concept measured (i.e. met/not met, Likert scale, etc.), 4) obtain expert review of instrument in terms of relevance, clarity, simplicity and ambiguity, 5) conduct validity of items to quantitatively analyze expert review feedback, 6) administer the instrument to a development sample to generate feedback regarding usability, 7) pilot the instrument by conducting evaluation of items with a small sample to determine reliability, and 8) use all feedback to finalize the instrument with the optimal scale length.

Literature Review

Through the identification of the characteristics of synergy, strategies that optimize group learning can be identified. Farra, Keister, and Stalter (2018) conducted a concept analysis of synergy, which resulted in a conceptual definition of synergy as “the creative collaboration between students working toward achievement of a common learning goal that results in outcomes greater than the mere sum of individual efforts.” Synergy involves an interaction among two or more learners, whereby each learner invests concentrated effort toward a unified group goal. A single individual does not possess synergy. Whenever synergy exists, two or more learners work cooperatively and positively, offering mutual support to one another. Each individual possesses different expertise. Synergy is a catalyst that sparks creativity and energizes group members, resulting in learning outcomes greater than learning outcomes of each individual acting alone. The antecedents of synergy are a purpose, a group, a capacity for concerted action, and teaching strategies. The attributes of synergy are more than one entity, mutual participation, predominantly positive interactions, and concentrated effort of each learner toward a unified group goal. Consequences of synergy are greater problem-solving ability and higher levels of creativity in groups possessing and accomplishment of goals greater than could be accomplished by each individual alone.

The focus of nursing education has been the development of knowledge, skill, and attitudes necessary for a successful transition from the student role to the professional nurse role. However, the development of soft skills, such as communication, professionalism, and leadership have received less attention (Minority Nurse Staff, 2013) but are essential for successful performance in nursing practice (Kuthy, Ramon, Gonzalez, & Biddle, 2013). Communication, collaboration, interpersonal relationships, and leadership are intertwined. As soft skills they are elusive, making them more difficult to teach, learn, assess, and evaluate. The authors contend that these skills can be developed through the use of team /group learning. The authors proposed that synergy is an underlying factor in group learning that may explain why some groups do well while other groups struggle.

Within fields of science, synergy is a widely used term including environmental conservation (Park, 2007), zoology (Allaby, 2009), pharmacology (Synergy, 2009), medicine (Venes, 2009), and psychology (Synergy, 2007). The definitions from these various disciplines emphasize that synergy is created by two or more entities and this interaction results in an outcome (or outcomes) greater than the outcome (s) each entity could achieve alone.

Within the discipline of education, synergy is an outcome (Conway-Gómez**,** Williams, Atkinson-Palombo, Ahlqvist, Kim, & Miranda Morgan 2011). There are four assumptions for synergy. Learning most often occurs in a social context (Considine, Currey, Payne, & Williamson, 2014; Criss, 2010; Scarvell & Stone, 2010). Each group member has different expertise (Considine, Currey, Payne, & Williamson, 2014; Criss, 2010; Kemery & Mu & Gnyawali, 2003; Stickney, 2014; Swartz & Triscari, 2011). Individuals participate in groups to meet their needs and accomplish goals (Considine, Currey, Payne, & Williamson, 2014; Criss, 2010; Kemery & Stickney, 2014; Scarvell & Stone, 2010; Swartz & Triscari, 2011). Group synergy is a positive interaction (Criss, 2010; Kemery & Stickney, 2014; Mu & Gnyawali, 2003; Scarvell & Stone, 2010; Swartz & Triscari, 2011).

Community engagement using synergistic activities has been proposed as an effective approach to promote higher level learning in students enrolled in geography courses (Conway-Gomez, Williams, Palombo, Ahlqvist, Kim, & Morgan, 2011) and in business students (Holland, 2016). Synergy has been used to describe the effective use of technology as a method of improving instruction (Baumgartner & Hsi, 2002; Katernyak, Ekman, Ekman, Sherement, & Loboda, 2009; Ma & Runyou, 2004). The integration of information technology with faculty resources enhances teaching. Thus, the synergy described between participant and technology is one new pedagogical approach.

Kemery & Stickney (2014) developed the Learning Partner Rating Scales (LPRS) with 91 students enrolled in a business core course. Encompassing five dimensions, the LPRS measures teamwork behaviors of students. Students completed quizzes individually and in teams. Team synergy was measured on each quiz and was represented by the difference in scores of the team and the highest scoring team member. While team scores were higher than individual scores, scores on problem-solving and communication were low.

Historically, nursing education has focused on the learning and development of individual students. While active learning and group activities have been shown to be effective teaching strategies resulting in positive student outcomes (Bradshaw & Lowenstein, 2017; Kroning, 2014; Reese, Jeffries, & Engum, 2010), placing individuals within learning groups does not automatically lead to the creation of synergy and higher level outcomes (Lawford, 2003; Sandberg, 2010; & Zwarenstein). However, blending individual talents through strategic thought creates synergy (Kerr 2010; Larson, 2010). Synergistic teams are not only important for intrapersonal teamwork but interprofessional teamwork as identified by Quality and Safety for Nursing Education as one of the components for promoting safe, quality care (qsen.org).

While synergy has been discussed from the perspective of various disciplines, it has not been explored within the context of nursing education. The goal of this study was to develop an instrument to assess group synergy in the learning environment. In a search of the nursing education literature, studies quantitatively defining or measuring synergy were not found. Therefore, a scale is needed to effectively assess and measure synergy. A quantitative measure of synergy can be used by nurse educators to optimize student learning.

Methods

Research Design

A Delphi model using semi-structured online surveys with an expert panel guided the study. To identify the main topics and develop items, the researchers moved through the steps identified by DeVellis (2003). Three rounds of data collection were used to solicit input from expert panel members to develop the instrument. The instrument was then piloted with teams of nursing students and a factor analysis was performed.

Subjects and Setting

Nursing faculty were recruited to serve on an expert panel. Purposive and snowball sampling was used to identify members for the expert panel and to strengthen expert retention (Patton, 2002; Rowe & Wright, 2011). Inclusion criteria for panel members included (1) nursing faculty with a minimum of 5 years teaching experience; (2) nursing faculty with the Certified Nurse Educators (CNE) credential; and (3) experience with group learning strategies, such as but not limited to, problem-based learning. The researchers contacted individuals from their professional network of peers and reviewed the nursing literature to identify faculty who met the inclusion criteria. From these initial potential participants, additional individuals were identified and recruited via snowball sampling. Initially six experts agreed to participate after three rounds of data collection; however, after three rounds the pool had decreased to five. Demographic and professional data were collected to describe participants.

In addition, a non-probability convenience sample of baccalaureate senior nursing students participating in a simulation experience were recruited to pilot the newly developed instrument. Baccalaureate students enrolled in a leadership practicum course in their final semester at a Midwestern university during Spring 2018 were recruited to participate. All students enrolled in the course were eligible to participate in the study. Only students who agreed to participate through written consent were included in the study. While all students were required to take part in the simulation activity as part of the course requirements, only those who consented had their participation evaluated using the new instrument.

Instruments

Online surveys were sent to the expert panel that allowed them to rate the proposed instrument items in terms of relevance to the objectives, clarity, simplicity and ambiguity. The surveys were administered online to the expert panel using Qualtrics software. The resulting Nursing Education Synergy Scale (NESS) developed based on expert panel feedback was then piloted based on evaluating students taking part in a simulation experience.

Procedures

The 8 steps of the DeVellis (2003) framework, were used by the researchers to develop the scale. The steps included: 1) Defining synergy; 2) Scale construction (recruiting pane of expert, examining literature and expert opinion; 3) Determination of measurement format; 4) Instrument expert review; 5) Expert validity assessment; 6) Assessment of usability; 7) Pilot of instrument; 8) Finalization of instrument. Institutional Research Board review was obtained prior to initiation of the study. The researchers then contacted potential faculty experts by email. The email included a consent form with a description of the study. Upon receipt of the completed electronic consent form, expert panel participants were enrolled in the study.

The tool was piloted with a group of senior-level nursing students following a TeamStepps interprofessional presentation. Performance in the simulation was assessed using a psychometrically sound rubric which afforded the opportunity for triangulation of scale results and actual performance (Smith, Farra, Ten Eyck, & Bashaw, 2015). Each team took part in an unfolding case study simulation experience involving two assignments: 1) a multi-patient Emergency Department scenario where the participants identified an influenza outbreak and 2) a follow-up assignment in which students took part in a table top experience to develop a plan for a Point of Distribution of influenza vaccines based on the identified outbreak.

Data Analysis

Analysis of expert opinion was achieved using a combination of Delphi method and assessment of content validity using content validity index as described by Lynn (1986).

The instrument pilot data was assessed for internal consistency using a reliability assessment appropriate for the item type and the tool variable relationships were assessed using factor analysis.

Results

Six experts completed round one and five experts completed rounds two and three of the Delphi Study to evaluate and provide comments on each of the items in the newly proposed instrument.

In addition, 73 student participants agreed to participate as teams in simulation scenarios that were used by faculty evaluators to evaluate the psychometric properties of the new instrument. Participants included 57 females and 16 males with ages ranging from 21-46 years. Of these participants, 65 were Caucasian, 3 were African American, 3 were Asian, and 3 unknown race with 3 reporting a Hispanic ethnic background.

Instrument Development

Scale items were identified using deductive and inductive methods. An initial pool of 34 items were developed based on a concept analysis of synergy with at least two items for each underlying construct (Farra, Keister, & Stalter, 2018). Face validity was established by the researchers.

Content validity was established using an expert panel of nurse educators, using three rounds of the Delphi method. Each item was rated on relevance to objectives, clarity, simplicity, and ambiguity, using a 4-point scale ranging from strongly disagree (1) to strongly agree (4). Content validity indices were determined using the method recommended by Lynn (1986). The Item-Content Validity Index (I-CVI) was determined by collapsing the expert panel scores into a dichotomy of relevant (scores of 3 and 4) and not relevant (scores of 1 and 2). The number of relevant scores was then divided by the total number of experts. I-CVI ranged from 0.8 to 1 for each scale item.

A Scale-Content Validity Index (S-CVI) was calculated using the two methods recommended by Polit and Beck (2006). The Scale-Content Value Index Average (S-CVI/Ave), a frequently used approach, represents the average of the I-CVI values and was 0.93 in this study. The second more conservative approach involves calculation of a Scale-Content Value Index Universal Agreement (S-CVI/UA) based on the number of items receiving a I-CVI of 1 by the experts (Universal Agreement) divided by the number of total scale items. In this study, there were 21 items that had an I-CVI or universal agreement of 1. This number, 21, was then divided by 34, the total number of items, resulting in a S-CVI/UA of 0.62.

Pilot Testing of the Instrument

Factor analysis was used to explore how well the scale detected the underlying constructs of nurse education synergy. The Nursing Education Synergy Scale instrument with 34 items hypothesized to identify 11 constructs of nurse education synergy was analyzed. Using the scale, teams of students were rated on a scale from 0 to 2, where 0 indicates the item was met less than 25% of the time, 1 indicates the item was met 25-75% of the time, and 2 indicates the item was met more than 75% of the time. Three evaluators rated the different teams, with two raters evaluating any one team at the same time. The average of the two scores was used for the analysis. Therefore, possible values in the data set are 0, 0.5, 1, 1.5, and 2. The groups were scored on two different assignments reflecting two components of an unfolding case study. Assignment 1 consisted of the teams working in a simulated Emergency Department with multiple patients. Assignment 2 was more group-centric where the nursing students were all working on a single task to develop a Point of Distribution for a flu clinic. A separate exploratory factor analysis (EFA) was done for each of these assignments. SPSS version 24 (Armonk, New York) was used for all analyses.

Initial items were examined for correlation. Items that were highly correlated were removed so that the redundancy was not adding to the model. Descriptive statistics for the ten items that were used in the EFAs are given below in Tables 1 and 2.

Table 1: Means and Standard Deviations for Assignment 1

Item	*Mean*	*Std. Deviation*
Addressing Issues Requiring a Team Decision	1.50	0.45
Coordinated Actions by Majority of Members	1.47	0.65
Sharing of Knowledge	1.44	0.73
Providing Positive, Constructive Feedback	0.63	0.62
Discussing Solutions in a Constructive, Nonjudgmental Manner	1.47	0.67
Considering Potential Solutions from Similar Issues	0.69	0.48
Original, Innovative Ideas Developed Through Brainstorming	0.25	0.45
Team Combined Action Outcomes	1.63	0.50
Group Activity Objective Met	1.53	0.59
Discussing How to Improve Group Efforts during Debriefing	1.78	0.45

Table 2: Means and Standard Deviations for Assignment 2

Item	*Mean*	*Std. Deviation*
Addressing Issues Requiring a Team Decision	1.78	0.52
Coordinated Actions by Majority of Members	1.84	0.35
Sharing of Knowledge	1.88	0.29
Providing Positive, Constructive Feedback	1.22	0.52
Discussing Solutions in a Constructive, Nonjudgmental Manner	1.75	0.55
Considering Potential Solutions from Similar Issues	1.31	0.57
Original, Innovative Ideas Developed Through Brainstorming	1.69	0.54
Team Combined Action Outcomes	1.72	0.45
Group Activity Objective Met	1.59	0.42
Discussing How to Improve Group Efforts during Debriefing	1.72	0.58

I. Assignment 1

For Assignment 1, the principal axis factoring extraction method was used, oblique rotation, and retained factors with eigenvalues greater than one. The oblique rotation was chosen because it allows the factors to be correlated. Factors with an eigenvalue greater than one were retained. The Kaiser-Meyer-Olkin (KMO) statistic for Part 1 was 0.66, indicating this data set is a "mediocre" candidate for EFA (Dziuban & Shirkey, 1974). Bartlett's Test of Sphericity tests the null hypothesis that the correlations in the correlation matrix are zero. Rejection of the null hypothesis gives evidence that they are not zero, which is favorable for EFA. Based on a P-value of < 0.0001, the null hypothesis is rejected. This gives further evidence of EFA being appropriate for this data set.

Communalities are the amount of variance of one item explained by the other items (i.e. this would be the R-squared value if a linear regression was run with a given item as the response variable and all the other items as the predictor variables). The initial communalities are the proportions of variance explained by the items, the extraction communalities are the proportions of variance explained by the extracted factors. Communalities range from zero to one with higher values indicating more shared variance. It is recommended to remove variables with communalities less than 0.2, since they are not very related to the other variables and unlikely to load on a factor with any of them. All of the communalities are well above this threshold . The eigenvalues for the factors are given below in Table 3.

Table 3: Total Variance Explained for Assignment 1

	Initial Eigenvalues		
Factor	*Total*	*% of Variance*	*Cumulative %*
1	4.90	49.04	49.04
2	1.75	17.52	66.56
3	1.17	11.66	78.22
4	0.68	6.79	85.01
5	0.53	5.29	90.30
6	0.45	4.45	94.75
7	0.19	1.92	96.67
8	0.16	1.60	98.27
9	0.15	1.47	99.73
10	0.03	0.27	100.00

The "Total" column lists the eigenvalues for the factors. Since three are above 1.00, these three factors are extracted. The first factor accounts for 49% of the variance, while the second and third account for about 18% and 12%, respectively. Together, the three factors account for about 78% of the variability in the data.

The loadings of the factors on each of the items are given below in Table 4. Note that for ease of interpretation, the loadings are given in decreasing magnitude (therefore the items appear in a different order here than the prior tables) and loadings below 0.4 have been omitted (in reality there is a number for each entry in the table). Lastly, the reliability of the instrument was assessed via Chronbach's alpha. It is recommended for this statistic to fall between 0.7 and 0.9 ((Tavakol & Dennick, 2011)). Chronbach's alpha for Assignment 1 was 0.87, which falls within this range.

Table 4: Pattern Matrix for Assignment 1

	Factor		
Item	*1*	*2*	*3*
Group Activity Objective Met	.92		
Considering Potential Solutions from Similar Issues	.87		
Team Combined Action Outcomes	.68		
Providing Positive, Constructive Feedback	.65		
Coordinated Actions by Majority of Members	.56		
Discussing How to Improve Group Efforts during Debriefing	.55		
Addressing Issues Requiring a Team Decision		-.96	
Discussing Solutions in a Constructive, Nonjudgmental Manner		-.71	.40
Sharing of Knowledge	.50	-.58	
Original, Innovative Ideas Developed Through Brainstorming			.83

II. Assignment 2

The same factor analysis approach was used to analyze the Assignment 2 data. The KMO statistic was 0.75 and the *P*-value for Bartlett's Test of Sphericity was <0.0001, which imply these results are also a good candidate for EFA. Communalities for Assignment 2 were again above the 0.2 threshold. Eigenvalues for Assignment 2 are given below in Table 5.

Table 5: Total Variance Explained for Assignment 2

	Initial Eigenvalues		
Factor	*Total*	*% of Variance*	*Cumulative %*
1	5.64	56.35	56.35
2	1.52	15.21	71.56
3	1.01	10.08	81.65
4	0.79	7.88	89.53
5	0.45	4.46	93.99
6	0.27	2.68	96.67
7	0.13	1.33	98.00
8	0.09	0.91	98.91
9	0.08	0.78	99.69
10	0.03	0.31	100.00

Three factors were also extracted for Assignment 2, accounting for 81.65% of the variability in the data. The loadings are given below in Table 6.

Table 6: Pattern Matrix for Assignment 2

	Factor		
Item	*1*	*2*	*3*
Discussing Solutions in a Constructive, Nonjudgmental Manner	.91		
Addressing Issues Requiring a Team Decision	.86		
Sharing of Knowledge	.80		
Coordinated Actions by Majority of Members	.76		
Discussing How to Improve Group Efforts during Debriefing	.58		
Providing Positive, Constructive Feedback	.47		
Team Combined Action Outcomes		.95	
Group Activity Objective Met		.81	
Considering Potential Solutions from Similar Issues			.85
Original, Innovative Ideas Developed Through Brainstorming		.46	.52

Discussion

Eleven items were selected for exploratory factor analysis (EFA). The items were examined for each task and loaded onto 3 factors for each assignment. For Assignment 1, according to Comrey and Lee (1992), loadings greater than 0.71 are excellent, 0.63 very good, 0.55 good, 0.45 fair, and 0.32 poor. Based on the results in Table 4, Group Activity Objective Met, Considering Potential Solutions from Similar Issues, Team Combined Action Outcomes, Providing Positive Constructive Feedback, Coordinated Actions by Majority of Members, and

Discussing Solutions in a Constructive, Non-judgmental Manner are all loading on Factor 1. The first two would be considered "excellent", the second two "very good", and the final two "good". Sharing of Knowledge appears to be cross loading between Factor 1 ("fair" amount) and Factor 2 ("good" amount). Addressing Issues Requiring a Team Decision and Discussing Solutions in a Constructive, Nonjudgmental Manner (both "excellent") are loading on Factor 2, while Original, Innovative Ideas Developed Through Brainstorming is loading on Factor 3 ("excellent" amount). Discussing Solutions in a Constructive, Nonjudgmental Manner is slightly cross loading on Factor 3 as well, although it would fall into the "poor" category. it is desirable to have at least three items per factor, and Factor 3 has only two (so is not considered in discussion). The reliability of the instrument was assessed via Cronbach's alpha. It is recommended for this statistic to fall between 0.7 and 0.9 (Tavakol & Dennick, 2011).

Items that loaded to Factor 1 came from the following initial categories on the preliminary tool, "Increased Problem-Solving", "Combined Effort" ."Increased Creativity", "Greater Outcomes", "Individual and Group Success". The categories were focused towards both process and outcomes. Factor 2 items included the process areas of "cooperation", "collaboration" and "increase of problem solving" from the piloted tool.

For assignment 2, Discussing How to Improve Group Efforts during Debriefing, Addressing Issues Requiring a Team Decision, Sharing of Knowledge, Coordinated Actions by Majority of Members, Discussing How to Improve Group Efforts during Debriefing, and Providing Positive Constructive Feedback are all loading exclusively on Factor 1. The first four would be considered "excellent", the fifth "good", and the sixth "fair". Team Combined Action Outcomes and Group Activity Objective Met are both loading exclusively on Factor 2, and both would be considered "excellent". Original, Innovative Ideas Developed Through Brainstorming is cross loading on Factor 2 and Factor 3, both in the “fair” category. Considering Potential Solutions from Similar Issues is loading on Factor three in an “excellent” fashion.

For assignment 2, the items loaded to three factors. The first factor was related to team activity/communication. Items came from categories of “Combined Action”, Group Cohesion”, “Mutual Support”, and “Collaboration”. The second factor included attainment of objectives/outcomes. The items came from two categories from the original tool “Greater Outcomes” and “Individual and Group Successes” contained the original items. and the third factor captured elements of critical thinking (“Increased Problem Solving” and “Increased Creativity”. Overall the initially identified objective category of items were well represented in the final 10 items.

Items from the Assignment 2, a tabletop case study, were found to be more highly correlated than the Assignment 1 data. This may be related to the fact that the students had already completed Assignment 1 and had already had experience working together to create synergy. In addition, the task of a table-top may have be a better fit for the new instrument rather than a busy Emergency Department simulation scenario with multiple patients in which students were frequently focused on their assigned patient and not on the group’s effort.

Analysis of the data indicates the second assignment was more appropriate for the instrument, suggesting factors influencing synergy may be dependent on the type of task/project. The EFA for assignment 2 more clearly supported the theoretical underpinnings of the concept of synergy as described by Farra, Keister, and Stalter (2018). For assignment 2, Factor 1 focused on ***communication***. Communication among the group members generated cooperation, collaboration, and positive interactions among group members, leading to agreement of the common goal and producing group cohesiveness. Factor 2 is ***outcomes***. Each group was able to achieve the group activity objective through combined team action. Factor 3 is ***critical thinking***. This factor encompassed increased problem-solving, increased creativity, and shared decision-making to achieve the group goal.

Limitations

Limitations of the study include (1) attrition of panel members; (2) a small pool of a expert panel members; (3) lack of geographically diverse panel; (4) lack of face-to-face meetings to clarify disagreement of scale item comments by panel members, and (5) pilot study conducted at one institution. In addition, the sample size for the factor analysis was only sixteen, and data were highly correlated. While no statistical accommodations can be done about the sample size, future studies could incorporate more participants. Data correlation was addressed by removing variables that were either extremely highly correlated with another variable in a pair-wise manner (correlation coefficient greater than 0.90) or were highly correlated with a linear combination of several other variables.

Conclusion

The purpose of this project was to develop and evaluate an instrument, The Nursing Education Synergy Scale, measuring synergy among nursing students in learning groups. While the instrument was found to have acceptable content validity measures, a factor analysis based on the use of the tool demonstrated results that varied depending on the simulation scenario evaluated. By choosing their own teams, students may have already developed patterns of working synergistically that were identified through the instrument. Therefore, these were groups that already have an established dynamic not found in groups in general. This should be kept in mind while interpreting the results.

The intent of the Nursing Education Synergy Scale was to measure synergy among team members focusing on a common goal. In Assignment 1, the overarching goal was to provide nursing care to a group of patients. However, it can be surmised that students were more focused on achieving individual goals for their assigned patient rather than for all patients on the unit. Conversely, students recognized readily the common group goal for Assignment 2, leading to demonstration of expected theoretical behaviors of synergy. Therefore, the intended use of a scale must be considered when determining applicability in various situations.

Nurse educators must understand how to evaluate students in meeting the cognitive, psychomotor, and affective skills required for professional practice. Evidence-based methods for evaluating individual skills, such as cognitive knowledge using exams or performance of skills, are readily available. However, there are fewer evaluation tools to assist nurse educators to evaluate students demonstrating those soft skills required to function effectively in teams, including how students demonstrate synergy in working together to create a greater outcome than they would have when working alone.

The findings of this study have added to the existing knowledge of group learning in nursing education.This initial study suggests synergy is indeed multifactorial and can be assessed by faculty. However, additional work is needed. The Nursing Education Synergy Scale requires further testing with larger numbers of students in various types of nursing programs. Additionally, testing of the instrument in various group scenarios across the curriculum may delineate specific factors that may impact group synergy.

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