



College of Criminal Justice and College of Science and Engineering Technology
A Report on the Teamwork Self-Reflection Instrument (TSRI)
2022-2023

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The Teamwork Self-Reflection Instrument (TSRI) was developed by the Sam Houston State University (SHSU) Office of Assessment to evaluate one of six Core Objectives outlined by the Texas Higher Education Coordinating Board (THECB), teamwork. The THECB (2018) defines teamwork as “the ability to consider different points of view and to work effectively with others to support a shared purpose or goal” (p. 4).

Research Questions

The following research questions were addressed in this investigation: (a) What is the difference between overall teamwork scores for students classified as freshman/sophomore and students classified as junior/senior? (b) What is the difference between groups based on the number of teamwork experiences and the total TSRI score?

Method

Instrument

The TSRI was intentionally designed to assess students’ self-perceived actions, attitudes, and behaviors in team settings. It was piloted in Fall 2016, revised, then further tested in Fall 2017 and Spring 2018. The full implementation began in Fall 2018. The TSRI is administered each academic year to approximately 500 students. Over a three-year cycle, each academic college at SHSU participates. The TSRI schedule can be viewed on the Office of Assessment’s Core Curriculum Projects [webpage](#).

Instrument Reliability

An exploratory factor analysis conducted on the first iteration of the instrument revealed the possibility of four underlying factors each meeting the eigenvalue-greater-than-one rule (Kaiser, 1958), and three of those factors were ultimately demonstrated to be reliable using internal consistency analysis. The relative fit of questions within each of the factors was determined using the correlational cutoff of .3 (Lambert & Durand, 1975). Two questions did not factor into any of the three reliable factors, and overall reliability was slightly improved with their exclusion (.838 to .844), so the questions were revised.

A factor analysis conducted using data from the 2022-2023 administration, involving the College of Criminal Justice and the College of Science and Engineering Technology, confirmed four underlying factors: interactions with group members, group engagement and task management, contributions to group discussions, and intergroup conflict. As revealed in the principal component analyses for 2021-2022 and 2022-2023 results, one question (Q9) had an r-square value less than .3, and it did not factor into any of the factors. so this question will be revised or removed from the TSRI for the 2023-2024 administration. Reliability analysis revealed that three of the factors were reliable. In general, good alpha estimates range from .7 - .9 (George & Mallery, 2003), with <.50 being unacceptable, .51-.60 being poor, .61-.70 being questionable,

.71-.80 being acceptable, .81-.90 being good, and .91-.95 being excellent. Cronbach's Alpha for each factor was as follows: Factor 1 (interactions with group members) = .753, Factor 2 (group engagement and task management) = .698, Factor 3 (contribution to group discussions) = .719, and Factor 4 (intergroup conflict) = .706

Participants

For the 2022-2023 academic year, 571 students from the College of Criminal Justice (COCJ) and the College of Science and Engineering Technology (COSET) combined completed the TSRI. Table 1 provides a breakdown of participants by class group.

Table 1

TSRI Participants by Class Group for the College of Criminal Justice and the College of Science and Engineering Technology Combined

Class Group	<i>N</i>
Freshman/Sophomore	144
Junior/Senior	427
Total	571

Procedure

The Office of Assessment strives to elicit faculty and student participation from every department in participating colleges. Although the TSRI may be completed by students enrolled in face-to-face or online classes, face-to-face is the preferred modality as it typically yields higher participation rates.

At the beginning of the semester, the Director of Assessment sends an email to college leadership requesting participation in the TSRI process. Upon receipt of the email, the Associate Dean responsible for assessment in his/her college coordinates with department chairs to recruit faculty willing to designate approximately ten minutes of class time during which students are encouraged to complete the TSRI. Interested faculty then coordinate with the Office of Assessment to determine a date and time for students to complete the instrument. A Qualtrics link to the TSRI is sent to students on the arranged date and time. After all of the TSRI's have been completed, results are exported to an Excel file, which is then imported into SPSS for data analysis.

Results: Independent Samples *t*-test

The following research question guided this investigation: What is the difference between overall teamwork scores for students classified as freshman/sophomore and students classified as junior/senior?

COCJ and COSET Combined

Before calculating inferential statistics to ascertain if statistically significant differences were present in overall teamwork scores between class groups (i.e., freshman/sophomore and

junior/senior students), the standardized skewness coefficients (i.e., the skewness value divided by the standard error of skewness) and the standardized kurtosis coefficients (i.e., the kurtosis value divided by the standard error of kurtosis) were calculated. Because all of the coefficient values were within the range of normality (i.e., ± 3 , Onwuegbuzie & Daniel, 2002), the assumption of normality for an independent samples *t*-test was met. The standardized skewness and standardized kurtosis coefficient values are presented in Table 2. Because the independent variable of student classification (class group) was dichotomous and the dependent variable of overall teamwork scores was at the ratio level, these assumptions for a parametric independent samples *t*-test were also met (Slate & Rojas-LeBouef, 2011). Therefore, a parametric independent samples *t*-test was performed to answer the research question.

Table 2

Standardized Skewness Coefficients and Standardized Kurtosis Coefficients for Teamwork Scores by Class Group for COCJ and COSET Combined

Classification	Standardized Skewness Coefficient	Standardized Kurtosis Coefficient
Freshman/Sophomore	-0.21	-1.11
Junior/Senior	-0.09	-2.13

A parametric independent samples *t*-test did not reveal a statistically significant difference between teamwork scores by class group, $p = .998$. Descriptive statistics for this analysis are provided in Table 3.

Table 3

Descriptive Statistics for Teamwork Scores by Class Group for COCJ and COSET Combined

Class Group	<i>n</i>	<i>M</i>	<i>SD</i>
Freshman/Sophomore	144	48.46	7.89
Junior/Senior	427	50.11	7.74

Results: One-Way Analysis of Variance (ANOVA)

The following research question guided this investigation: What is the difference between groups based on the number of teamwork experiences and the total TSRI score?

COCJ and COSET Combined

Before performing inferential statistical procedures to answer the research question, the data were examined to ensure the assumptions for a parametric one-way Analysis of Variance (ANOVA) were met. Because the dependent variable (total TSRI score) was a continuous variable, and the independent variable (number of teamwork experiences) consisted of five categorical groups of independent observations, the first two assumptions were met. To determine if the data were normally distributed, the standardized skewness and kurtosis coefficients were calculated. These calculations revealed that all coefficient values were within the ± 3 range of normality (Onwuegbuzie & Daniel, 2002); therefore, the assumption for a normal distribution for a parametric one-way ANOVA was met. Standardized skewness and kurtosis coefficients are presented in Table 4. For the fourth assumption regarding homogeneity of variance, a Levene's test was performed. This result revealed that homogeneity of variance

was not present ($p = .018$); however, according to Field (2009), the parametric ANOVA is sufficiently robust that this violation can be withstood. Accordingly, a parametric one-way ANOVA statistical procedure was performed.

Table 4

Standardized Skewness Coefficients and Standardized Kurtosis Coefficients for TSRI Scores and Number of Teamwork Experiences for COCJ and COSET Combined

Group	<i>n</i> of Teamwork Experiences	Standardized Skewness Coefficient	Standardized Kurtosis Coefficient
1	0	0.06	-1.31
2	1-3	0.30	-1.65
3	4-6	-0.18	0.29
4	7-9	-1.00	-0.06
5	10 or more	-0.01	-2.29

Regarding the extent to which differences were present in students' total teamwork scores as a function of the number of teamwork experiences, results revealed a statistically significant difference $F(4,566) = 5.522, p < .001$, partial $\eta^2 = .038$. The effect size for this difference was large. An examination of Scheffe post hoc results revealed that TSRI scores were statistically significantly higher for students with ten or more teamwork experiences compared to students with one to three teamwork experiences and students with no teamwork experience. In addition, scores were statistically significantly higher for students with seven to nine teamwork experiences than those with no teamwork experience. Table 5 contains the descriptive statistics for TSRI scores and the number of teamwork experiences for the College of Criminal Justice and the College of Science and Engineering Technology combined.

Table 5

Descriptive Statistics for TSRI Scores and Number of Teamwork Experiences for COCJ and COSET Combined

Group	<i>n</i> of teamwork experiences	<i>n</i> of students in the group	<i>M</i>	<i>SD</i>
1	0	24	45.92	9.79
2	1-3	162	48.61	7.49
3	4-6	170	48.99	7.15
4	7-9	69	51.65	7.50
5	10 or more	146	51.40	8.19

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