Sam Houston State University
Office of Assessment
Academic Affairs

College of Humanities & Social Sciences
A Report on the Teamwork Self-Reflection Instrument (TSRI)
2023-2024

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 factor was determined using a 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 2023-2024 administration, involving the College of Humanities and Social Sciences and the College of Business Administration, confirmed three underlying factors: group engagement and task management, interactions with group members, and responses to 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 was revised for the 2023-2024 TSRI administration. The principal component analysis for 2023-2024 revealed that this question still did not contribute to any of the factors. Therefore, it will be removed from the TSRI for the 2024-2025 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 (group engagement and task management) = .798, Factor 2 (interactions with group members) = .762, Factor 3 (responses to inter-group conflict) = .760.

Participants

For 2023-2024, 171 students from the College of Humanities and Social Sciences (CHSS) completed the TSRI. Table 1 provides a breakdown of participants by class group.

Table 1
TSRI Participants by Class Group for the CHSS

Class Group	*n*
Freshman/Sophomore	72
Junior/Senior	99
Total	171

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 TSRIs have been completed, the results are exported to an Excel file and 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?

Results Summary

Results for the College of Humanities and Social Sciences and the Departments of Communication Studies, Psychology and Philosophy, and World Languages and Cultures revealed no statistically significant difference in scores between the freshman/sophomore and junior/senior class groups. For the Department of English, the sample size was insufficient to perform statistical analysis, and the Departments of History, Political Science, and Sociology did not participate in the TSRI during the 2023-2024 academic year.

College of Humanities and Social Sciences

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 of the dependent variable for an independent samples *t*-test was met. The standardized skewness and standardized kurtosis coefficient values for CHSS are presented in Table 2. Because the independent variable of student classification 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. The results did not reveal a statistically significant difference between teamwork scores by class group, $p = .338$. The descriptive statistics for this analysis are provided in Table 3

Table 2
Standardized Skewness Coefficients and Standardized Kurtosis Coefficients for Teamwork Scores by Class Group for CHSS

Class Group	Standardized Skewness Coefficient	Standardized Kurtosis Coefficient
Freshman/Sophomore	0.32	-1.29
Junior/Senior	-0.53	-1.33

Table 3
Descriptive Statistics for Teamwork Scores by Class Group for CHSS

Class Group	*n*	*M*	*SD*
Freshman/Sophomore	72	49.04	8.59
Junior/Senior	99	50.40	7.86

Department of Communication Studies

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 of the dependent variable for an independent samples *t*-test was met. The standardized skewness and standardized kurtosis coefficient values for CHSS are presented in Table 2. Because the independent variable of student classification 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. The results did not reveal a statistically significant difference between teamwork scores by class group, $p = .655$. The descriptive statistics for this analysis are provided in Table 5.

Table 4
Standardized Skewness Coefficients and Standardized Kurtosis Coefficients for Teamwork Scores by Class Group for the Department of Communication Studies

Class Group	Standardized Skewness Coefficient	Standardized Kurtosis Coefficient
Freshman/Sophomore	-2.18	2.12
Junior/Senior	-0.96	-0.14

Table 5
Descriptive Statistics for Teamwork Scores by Class Group for the Department of Communication Studies

Class Group	*n*	*M*	*SD*
Freshman/Sophomore	5	53.40	5.94
Junior/Senior	20	51.00	7.15

Department of English

Because $n = 0$ for the freshman/sophomore group, no statistical calculations were performed for the Department of English.

Department of Psychology and Philosophy

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 of the dependent variable for an independent samples *t*-test was met. The standardized skewness and standardized kurtosis coefficient values for CHSS are presented in Table 8. Because the independent variable of 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. The results did not reveal a statistically significant difference between teamwork scores by class group for the Department of Psychology and Philosophy, $p = .924$. The descriptive statistics for this analysis are provided in Table 9.

Table 8
Standardized Skewness Coefficients and Standardized Kurtosis Coefficients for Teamwork Scores by Class Group for the Department of Psychology and Philosophy

Class Group	Standardized Skewness Coefficient	Standardized Kurtosis Coefficient
Freshman/Sophomore	0.20	0.10
Junior/Senior	1.35	0.77

Table 9

Descriptive Statistics for Teamwork Scores by Class Group for the Department of Psychology and Philosophy

Class Group	*n*	*M*	*SD*
Freshman/Sophomore	15	48.27	8.15
Junior/Senior	12	50.42	7.38

Department of World Languages and Cultures

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 of the dependent variable for an independent samples *t*-test was met. The standardized skewness and standardized kurtosis coefficient values for CHSS are presented in Table 10. Because the independent variable of 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. The results did not reveal a statistically significant difference between teamwork scores by class group for the Department of World Languages and Cultures, $p = .456$. The descriptive statistics for this analysis are provided in Table 11.

Table 10

Standardized Skewness Coefficients and Standardized Kurtosis Coefficients for Teamwork Scores by Class Group for the Department of World Languages and Cultures

Class Group	Standardized Skewness Coefficient	Standardized Kurtosis Coefficient
Freshman/Sophomore	0.49	-1.14
Junior/Senior	-0.56	-0.94

Table 11

Descriptive Statistics for Teamwork Scores by Classification for the Department of World Languages and Cultures

Class Group	*n*	*M*	*SD*
Freshman/Sophomore	51	49.08	8.86
Junior/Senior	61	50.31	8.03

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?

Results Summary

Results for the College of Humanities and Social Sciences and the Department of World Languages and Cultures were statistically significant. For both the college and this department, TSRI scores were statistically significantly higher for students with ten or more teamwork experiences than for students with one to three teamwork experiences and students with no teamwork experience. Results for the Department of Communication Studies were also statistically significant. However, for this department, the pairwise differences in groups were not statistically significant. The sample sizes for the Department of English and for the Department of Psychology and Philosophy were insufficient to perform statistical analyses. The Departments of History, Political Science, and Sociology did not participate in the TSRI during the 2023-2024 academic year.

College of Humanities and Social Sciences

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 coefficients and the standardized kurtosis coefficients were calculated. These calculations revealed that all but one of the coefficients 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 12. A Levene's test was performed for the assumption regarding the homogeneity of variance. This result revealed that homogeneity of variance was present (p = .825).

Table 12
Standardized Skewness Coefficients and Standardized Kurtosis Coefficients for TSRI Scores and Number of Teamwork Experiences for CHSS

Group	Standardized Skewness Coefficient	Standardized Kurtosis Coefficient
1	1.41	*
2	0.35	-0.90
3	0.73	-0.86
4	-0.29	-0.60
5	-1.74	-0.40

*Note: This coefficient could not be calculated because the sample size for Group 1 was so small (n=3).

Regarding the extent to which differences were present in students' total teamwork scores as a function of the number of teamwork experiences, a parametric one-way ANOVA revealed a statistically significant difference $F(4,166) = 6.536$, $p < .001$, partial $n^2 = .136$. The effect size for this difference was medium. An examination of Scheffe post hoc results revealed that TSRI scores were statistically significantly higher for students with ten or more teamwork experiences than students with one to three teamwork experiences and students with no teamwork experience. Table 13 contains the descriptive statistics for TSRI scores and the number of teamwork experiences for the College of Humanities and Social Sciences.

Table 13
Descriptive Statistics for TSRI Scores and Number of Teamwork Experiences for CHSS

Group	*n* of teamwork experiences	*n*	*M*	*SD*
1	0	3	36.00	6.93
2	1-3	40	46.55	6.90
3	4-6	62	49.82	7.92
4	7-9	21	50.77	8.41
5	10 or more	45	53.24	7.73

Department of Communication Studies

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. The standardized skewness and kurtosis coefficients were calculated to determine if the data were normally distributed. These calculations revealed that eight of the ten coefficients were within the +/- 3 range of normality (Onwuegbuzie & Daniel, 2002); therefore, the assumption for a normal distribution of the data was met. The standardized skewness and kurtosis coefficients are presented in Table 14. A Levene's test was performed for homogeneity of variance. This result revealed that homogeneity of variance was not present ($p = .030$); however, according to Field (2009), the parametric ANOVA is sufficiently robust that this violation can be withstood. Accordingly, a one-way parametric ANOVA procedure was performed. Results revealed a statistically significant difference, $F(3,21) = 1.092$, $p = .374$, partial $n^2 = 135$. The effect size for this difference was medium. The results for a Scheffe post hoc revealed no statistically significant difference between any of the five groups. Descriptive statistics for this analysis are provided in Table 15.

Table 14
Standardized Skewness Coefficients and Standardized Kurtosis Coefficients for TSRI Scores and Number of Teamwork Experiences for the Department of Communication Studies

Group	Standardized Skewness Coefficient	Standardized Kurtosis Coefficient
1	*	*
2	-0.28	0.01
3	-0.39	-0.13
4	-0.11	-0.25
5	-1.05	-1.07

*Note: Because $n = 0$ for Group 1, these coefficients could not be calculated.

Table 15
Descriptive Statistics for TSRI Scores and Number of Teamwork Experiences for the Department of Communication Studies

Group	*n* of teamwork experiences	*n* of students in the group	*M*	*SD*
1	0	0	-	-
2	1-3	7	51.86	4.26
3	4-6	5	52.00	4.24
4	7-9	4	46.00	9.42
5	10 or more	9	53.33	8.18

Department of English

Because the sample size for all five groups was so small, neither a parametric or a nonparametric ANOVA procedure was performed. Descriptive statistics for the Department of English are presented in Table 16.

Table 16
Descriptive Statistics for TSRI Scores and Number of Teamwork Experiences for the Department of English

Group	*n* of teamwork experiences	*n* of students in the group	*M*	*SD*
1	0	0	-	-
2	1-3	2	47.50	2.12
3	4-6	1	42.00	*
4	7-9	0	-	-
5	10 or more	3	53.00	15.62

*Note: The *n* was too small to calculate this value.

Department of Psychology and Philosophy

Because *n* =0 for Group 1 and the sample sizes for Groups 2 and 4 were n = 1 and n = 3, respectively, neither a parametric nor a nonparametric one-way ANOVA was performed for the Department of Psychology and Philosophy. Descriptive statistics for this department are provided in Table 17.

Table 17
Descriptive Statistics for TSRI Scores and Number of Teamwork Experiences for the Department of Psychology and Philosophy

Group	*n* of teamwork experiences	*n* of students in the group	*M*	*SD*
1	0	0	-	-
2	1-3	1	41.00	*
3	4-6	15	49.20	7.39
4	7-9	3	45.67	6.03
5	10 or more	8	51.63	9.04

*Note: The *n* was too small to calculate this value.

Department of World Languages and Cultures

Before performing inferential statistical procedures to answer the research question, the data were examined to ensure the assumptions for a parametric one-way 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. The standardized skewness and kurtosis coefficients were calculated to determine if the data were normally distributed. These calculations revealed that nine of the ten coefficients were within the +/- 3 range of normality (Onwuegbuzie & Daniel, 2002); therefore, the assumption for a normal distribution of the data was met. The standardized skewness and kurtosis coefficients are presented in Table 18. A Levene's test was performed for homogeneity of variance. This result revealed that homogeneity of variance was present ($p = .311$). A one-way parametric ANOVA procedure was performed because the variables and data satisfied all assumptions. Results revealed a statistically significant difference, $F(4,107) = 7.459$, $p < .001$, partial $n^2 = 218$. The effect size for this difference was large.

Scheffe post hoc results revealed that TSRI scores were statistically significantly higher for students with ten or more teamwork experiences than students with no teamwork experience and students with one to three teamwork experiences. TSRI scores were also statistically significantly higher for students with seven to nine teamwork experiences than those with no teamwork experience and those with one to three teamwork experiences. Finally, Scheffe post hoc results revealed that students with four to six teamwork experiences scored statistically significantly higher than students with no teamwork experiences. Table 19 contains the descriptive statistics for this analysis

Table 18

Standardized Skewness Coefficients and Standardized Kurtosis Coefficients for TSRI Scores and Number of Teamwork Experiences for the Department of World Languages and Cultures

Group	Standardized Skewness Coefficient	Standardized Kurtosis Coefficient
1	1.41	*
2	0.96	-0.56
3	0.97	-1.06
4	-0.61	0.13
5	-1.97	1.50

*Note: The *n* was too small to calculate this coefficient.

Table 19

Descriptive Statistics for TSRI Scores and Number of Teamwork Experiences for the Department of World Languages and Cultures

Group	*n* of teamwork experiences	*n* of students in the group	*M*	*SD*
1	0	3	36.00	6.93
2	1-3	30	45.43	7.13
3	4-6	40	50.30	8.37
4	7-9	14	53.21	7.95
5	10 or more	25	53.76	6.46

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