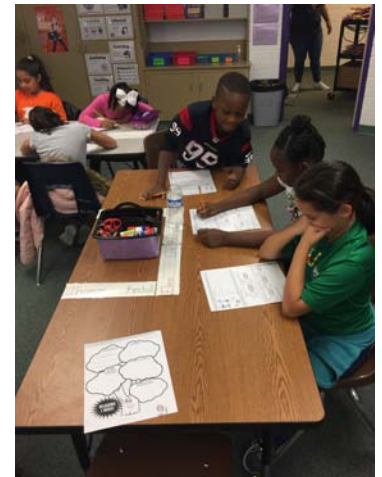




Evaluation of a music-based nutrition education intervention Jump with Jill: Impacts on willingness to try, confidence, and enthusiasm of 3rd graders in Texas



EXECUTIVE SUMMARY

In support of the Texas Department of Agriculture (TDA) Commissioner Sid Miller's Farm Fresh Fridays initiative, the rock & roll nutrition show Jump with Jill (JWJ) was performed at 20 schools in Northeast Texas in September of 2017. This is the third evaluation to establish the efficacy of the show and its program components.

Engagement around JWJ demonstrates it is a powerful intervention that shapes the entire school environment. JWJ is a cost-effective way to reach schools across the vast Texas geography.

Schools effectively "win" the show and working with the JWJ team is gaining back stage access. The anticipation of the show alone has a priming effect.

The show has the greatest impact than any of the component pieces, but the pieces amplify the effect of the show. The physical CRATE serves an essential priming role for the show and reinforces message from the show in the classroom; the TASTINGS bring the show's messages to life and its effects are best felt *after* seeing the show.

JWJ makes students feel confident and feel good! Good enough to try a new food. Composite scores for willingness to try a new healthy food, confidence that choosing healthy foods will improve health, and enthusiasm for nutrition education demonstrates JWJ improves scores - away from the negative extreme and out of Not Sure.

JWJ creates positive impressions of healthy foods, moderating negative responses and building willingness to try a new healthy food, confidence that choosing healthy foods will improve health, and enthusiasm for nutrition education. These improvements were maintained over time.

Materials sent in advance of the show empower teachers to take nutrition into the classroom. Teachers reported they made time for JWJ, using the curated CRATE to make quick decisions about how to inject it into their busy instructional time.

We know the show works. Future studies could look more at teachers to learn more about the utilization of the CRATES. Which materials are used and how are they used across a larger teacher population?

INTRODUCTION

In support of the Texas Department of Agriculture (TDA) Commissioner Sid Miller's Farm Fresh Fridays initiative, the rock & roll nutrition show *JWJ* was performed at 20 schools in Northeast Texas in September of 2017. Employing media strategies, Jump with Jill (JWJ) is a music-based program that transforms nutrition education into a school-wide rock concert. JWJ creates an unforgettable experience using original music, lighting, props and live characters to inspire their audiences for better nutrition (Figure 1).

Figure 1: The World's Only Rock & Roll Nutrition Show, Jump with Jill (JWJ), In Action



During the 60-minute show (SHOW), students dance and sing to behaviorally-focus songs that address increasing consumption of fruits, vegetables, low-fat milk products and eating breakfast. *The Texas Farm Fresh JWJ Live Tour* provides nutrition education for school-aged children while promoting local agriculture. To increase impact, schools received a "Texas Crate" (CRATE) filled with educational materials for classroom teachers. In addition, taste tests (TASTINGS) were conducted with selected classrooms to give students a hands-on experience with the featured local foods. This evaluation examines the mechanism for how the TDA-JWJ partnership amplifies much needed efforts to improve how kids eat by improving their perceptions of healthy foods and confidence in choosing them.

We will explore:

- Willingness to experiment with new healthy foods
- Confidence that choosing healthy foods will improve their health
- Enthusiasm for nutrition education

Component Impact: How does the order of exposure to the JWJ program's components (SHOW, TASTINGS, CRATE) (PROGRAM) impact outcomes - willingness, confidence, enthusiasm? We predict that the intervention is most impactful when paired with the SHOW, but do the TASTINGS prime for the SHOW or does the SHOW prime for the TASTINGS?

Program Impact: How does the PROGRAM works to impact the outcomes - willingness, confidence, enthusiasm? Based on prior evaluations, we want to improve our metrics for how the program works to create a positive view of healthy foods and make learning about nutrition fun.

METHODS

Recruitment

Texas schools participating in the National School Lunch Program are able to apply to host JWJ. Applications were completed by 122 schools for the 20 assembly stops. All applications are reviewed based on an evaluation matrix that included:






- enthusiasm for the experience
- adequate facilities to accommodate the performance
- high percentage of free and reduced National School Lunch Program participation
- participation in TDA's Local Products Challenge
- application to TDA's Expanding 3Es of Healthy Living Grant
- response to TDA survey indicating participation in Farm to School
- participation in the Fresh Fruit and Vegetable Grant Program
- location in the geographical target of the tour (for this tour, Northeast Texas)

While the performance rocked the entire student population at the school, only one randomly-selected 3rd grade classroom from each school was selected for the survey. The classroom teacher was asked to participate in a follow-up survey via email. Parental, student and teacher permission for participation was handled at the district level. All schools viewed JWJ as an adjunct to their education while conducting the evaluation as part of normal practice by providing researchers with deidentified data; the University of Illinois at Urbana-Champaign Institutional Review Board approved this study. No demographic information was collected.

Survey Development

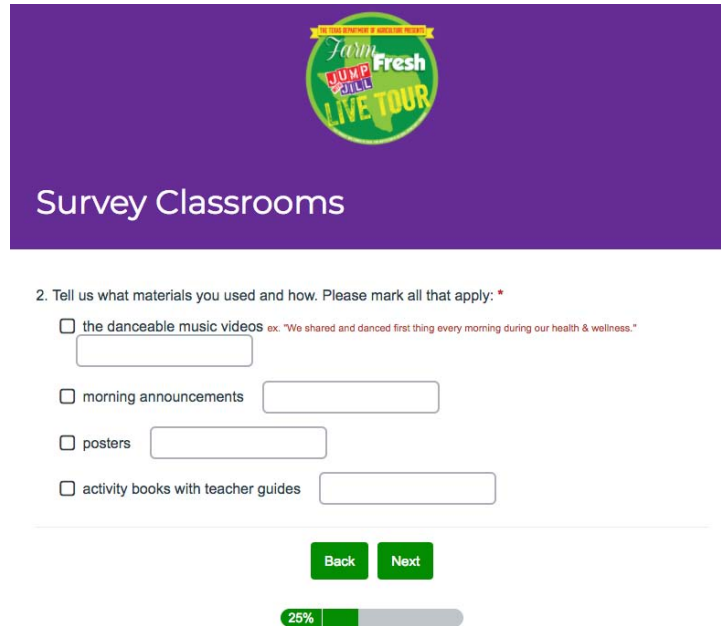
To match the delivery method of the intervention, the student survey was designed incorporating edutainment and gamification strategies to assess willingness, confidence, and enthusiasm. Instead of adapting more traditional 'yummy/yucky faces'¹ or indication of 'yes' or 'no,' customized emojis were used to determine responses. To overcome obstacles associated with using a Likert Scale with children,² emoji faces varied in relationship to the strength of response and were accompanied by words rather than numbers. Responses were recorded such that each emoji represented a point on a 1 to 5 Likert scale with 1 reflecting "ABSOLUTELY NOT" and 5 reflecting "YES!" (Figure 2).² This methodology was previously administered with great reception in the 2015 and 2016 TDA evaluations. Questions were designed to repeat phrasing from the SHOW in an attempt to separate "JWJ's version" of knowledge and attitudes from other sources.

Figure 2. Interactive Emoji Student Survey with Questions

1. I would eat watermelon.					} Willingness (3 Questions)
2. I would eat bell pepper.					
3. I would eat low-fat cheese.					
4. When I want something sweet, I feel confident that I can choose naturally sweet fruit.					} Confidence (3 Questions)
5. I feel confident that when I eat vegetables, I give my body healthy skin, hair, muscles, eyes, and bones.					
6. I feel confident that when I choose low fat dairy, I am making my bones and teeth strong.					
7. I show my Texas pride by eating foods grown in my state.					} Enthusiasm (2 Questions)
8. Learning about nutrition is exciting.					
Coded as 1	Coded as 2	Coded as 3	Coded as 4	Coded as 5	
ABSOLUTELY NOT	No	Not Sure	Yeah	YES!	
					

A major improvement in the 2017 teacher survey was moving from a handout collected the day of the follow-up survey to a digital survey (Figure 3). The change was prompted by the increase in data management as the survey classrooms increased from four in 2016 to 12 in 2017 as well as a desire to get more honest and thorough answers. Survey classroom teachers could type their answers instead of handwriting them and use their plan period to complete it, instead of quickly jotting things down while JWJ characters hovered over them. The survey also allowed them to truly anonymize their feedback. While we didn't collect any names in previous years, there was only one teacher submitting the paper survey on any given survey day, which effected our ability to have the survey be anonymous. The findings from the teacher surveys tell us more about what's happening on the ground, giving us insight into the engagement level of the school and how useful the CRATES are for teachers, even as the digital world dominates education.

Figure 3. Classroom Teacher Survey Goes Digital



Farm Fresh JUMP 411 LIVE TOUR

Survey Classrooms

2. Tell us what materials you used and how. Please mark all that apply: *

the danceable music videos ex: "We shared and danced first thing every morning during our health & wellness."

morning announcements

posters

activity books with teacher guides

25%

Survey Administration

Prior to *JWJ* coming to any school, teachers were provided with a link to the *JWJ* website and a custom designed CRATE (Figure 4) that included danceable music videos, morning announcements, posters (in English and Spanish), and a teacher pamphlet that provided detailed descriptions of how to access these tools digitally as well as activity books with teacher guides. Teachers were allowed to select whatever activities they wished. To motivate compliance, participating survey classroom teachers were told they would be surveyed in three weeks to report their experience with utilizing the provided tools. **Note: physical copies of the activity books were included in the survey classroom CRATES, but they were not included in the rest of the CRATES.**

Figure 4. Texas CRATES



Stations containing an emoji were arranged. Before starting the survey, students were told by *JWJ* characters that there was no right answer and that the survey was not a test. To capitalize on the power of peer influence, students make a “Promise to be Honest” as a commitment to being thoughtful “research subjects” where their authentic opinions were valued. To minimize group think, students were asked to select their answers *before* moving to a station. Students were then asked to fully commit to their answer by lining up by the emoji that matched their response (Figure 5). The *JWJ* cast recorded the number of children at each station for each question. In the post- and follow-up surveys, students reaffirmed their honesty pledge and repeated the process.

Figure 5. Survey Implementation



Taste tests serve to assist in TDA’s program goals to increase awareness and exposure to *actual* Texas-grown agricultural products. Foods to sample were also chosen based on their emphasis in the SHOW. *Nature’s Candy* song riffs on the word watermelon – a character who appears on stage next to the DJ wearing headphones of his own. Peppers are mentioned in Superpower Vegetables. “The Bone Rap” features a low fat cheese backbeat. In the same way that the SHOW makes nutrition education a rock show and a survey into a game, *JWJ* designed the guided taste tests to be like a character meet-and-greet (Figure 6). It was the goal to bias the experience in favor of the new, healthy foods so that kids would enjoy and engage. Jill & DJ served three sample foods either at lunch or in the classroom depending on availability. Jill & DJ recorded whether students tried or did not try the provided food so the “try rate” could be used as a metric.

Figure 6. Texas Students Give Texas-Produced Watermelon, Bell Pepper, and Low Fat Cheese a Try

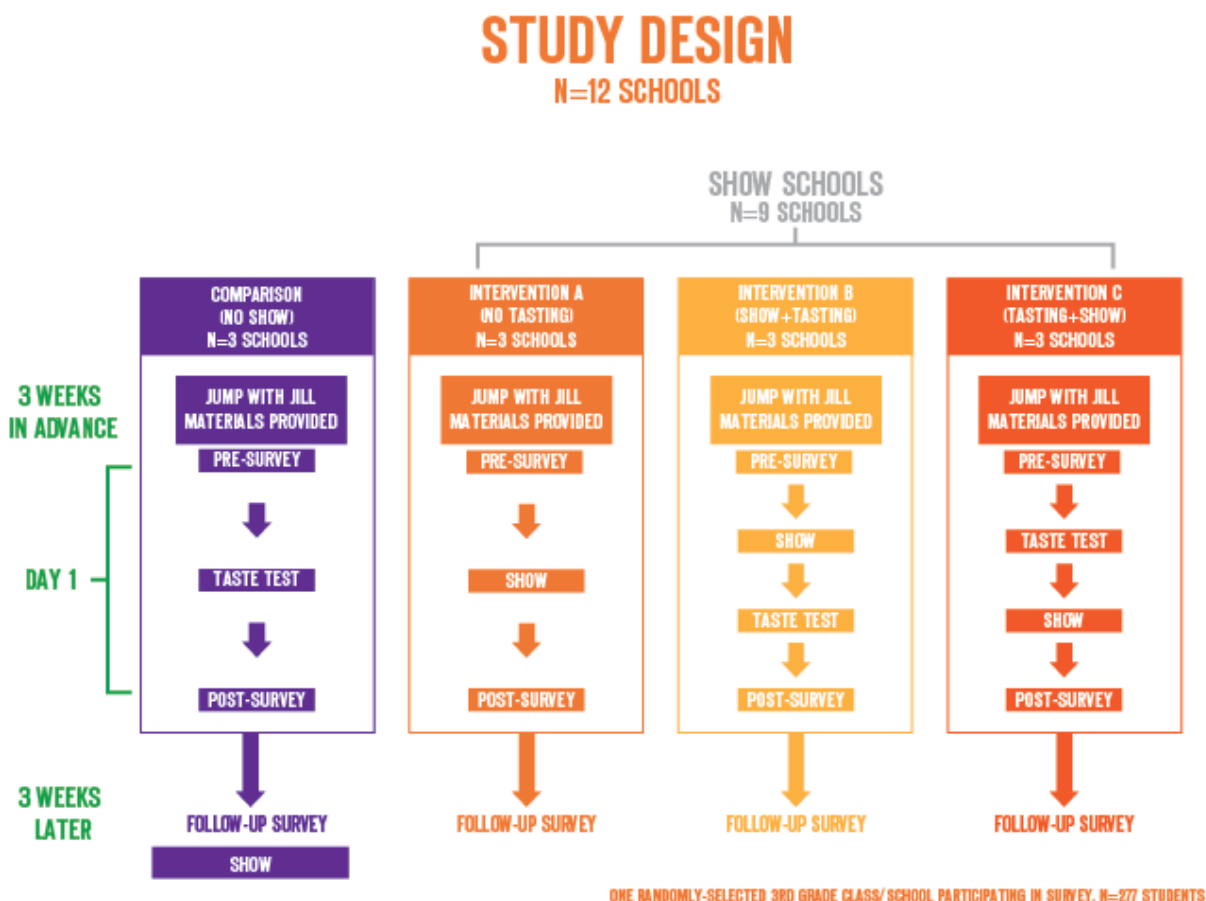


Study Design

Figure 7 details the Study Design. The study design was altered from the previous year to look at four possible configurations of exposure of the program's elements. Twelve of 20 schools were selected as taste testing/survey sights. All arms included a pre-survey and post-survey occurring in the same day, and follow-up survey three weeks later. This was an important change from previous studies where follow-up was conducted at all schools participating in the study. In the time between the post-survey and the follow-up survey, survey classroom teachers were asked to complete four hours (15-min per day over three weeks) of follow-up activities from the CRATE.

- Comparison group (TASTING only) of three schools had only a taste test. JWJ was offered at the end of the evaluation, when all survey components were completed as an incentive for participation. They are not termed control group because they still have exposure to JWJ, but do not have their results augmented by the SHOW.
- Intervention A, B, and C (SHOW SCHOOLS) are aggregated together as the live performance was the main variable being evaluated for these nine schools.
- Intervention A (SHOW only) of three schools had only the show, no TASTING.
 - Intervention B (SHOW then TASTING) of three schools had the SHOW followed by the TASTINGS.
 - Intervention C (TASTING then SHOW) of three schools had the TASTINGS followed by the SHOW.

Figure 7. Study Design



Data Analysis

Data was analyzed to determine (a) the impact of the order of the PROGRAM and (b) the impact of the SHOW on student's responses.

Calculation of scores

Scores for each question and time period were created and proportions were calculated. Rather than viewing each question separately, three composite scores were created by summing-up the total scores of a set of questions within each time period:

- Willingness to experiment with new healthy foods (questions 1-3)
- Feeling confident that choosing healthy foods will improve their health (questions 4-6)
- Enthusiasm for nutrition education (questions 7-8)

The internal reliability of the composite scores as demonstrated by Cronbach's alpha indicates acceptable reliability.

Analysis of total scores

A variety of statistical tests were used to determine differences within and between schools at the various time points. Appropriate tests were selected to determine comparisons, with suitable adjustments made for multiple comparisons. These included the Wilcoxon signed-rank test, generalized linear models, the Kruskal-Wallis non parametric test and the Tukey method.

RESULTS

JWJ performed 20 SHOWS reaching 11,734 elementary school students in Northeast Texas during the fall of 2017. A total of 227 3rd graders participated in the study.

When examining how the order of the components influences impact, we find (as expected) the greatest impact included the SHOW, specifically the greatest impact from Intervention B (SHOW then TASTING) improving all three composite scores and secondly the SHOW only, improving two composite scores and five questions (Tables 1a-d).

- Comparison (TASTING only):
 - improvements in **two questions** (1) willingness to try low fat cheese and (2) enthusiasm of nutrition education.
 - improvements in **one composite score** (1) willingness.
- Intervention A (SHOW only):
 - improvements in **five questions** (1, 2, 3) willingness to try all three foods, (4) confidence for bone health, and (5) pride in choosing local foods.
 - improvements in **two composite scores** (1) willingness and (2) enthusiasm.
- Intervention B (SHOW then TASTING):
 - improvements in **four questions** (1) willingness to try watermelon, (3) willingness to try low fat cheese, (6) confidence for bone health, and (8) enthusiasm of nutrition education.
 - improvements in **all three composite scores!**
- Intervention C (TASTING then SHOW):
 - improvements in **four questions** (1) willingness to try watermelon, (5) confidence for vegetables, (6) confidence for bone health, and (8) enthusiasm of nutrition education.
 - improvements in one composite score (1) confidence.

Furthermore, for many of the results the typical drop in scores over time (i.e. the follow-up responses) was not observed. Indeed, for some measures scores remained significantly higher than pre-test.

Table 1a: Comparison (TASTING only) n=60; Responses shown in percentages

Survey Item	Yes			Yeah			Not Sure			No			Absolutely No		
	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up
1. Watermelon	88.3	90.0	89.8	3.3	1.7	1.7	0	0	1.7	3.3	0	0	5	8.3	6.8
2. Bell pepper	23.3	24.6	23.7	5.0	0	5.1	20.0	9.8	6.8	1.7	8.2	8.5	50.0	57.4	55.9
3. Low Fat Cheese ^a	31.7	80.0	69.5	13.3	5.0	8.5	15.0	5.0	13.6	8.3	0.0	0	31.7	10.0	8.5
4. Fruits	80.0	76.7	69.5	10.0	6.7	10.2	3.3	8.3	13.6	0	3.3	1.7	6.7	5.0	5.1
5. Vegetables	41.7	58.3	59.3	26.7	20.0	6.8	13.3	6.7	23.7	6.7	1.7	0	11.7	13.3	10.2
6. Calcium	63.3	68.3	72.9	11.7	11.7	8.5	8.3	5.0	6.8	3.3	1.7	1.7	13.3	13.3	10.2
7. Eat Local	60.0	65.0	52.5	15.0	16.7	17.0	5.0	8.3	22.0	5.0	3.3	1.7	15.0	6.7	6.8
8. Enjoy Nutrition ^c	55.0	56.7	72.9	11.7	10.0	8.5	11.7	8.3	10.2	8.3	0	0	13.3	25.0	8.5
WILLINGNESS ^c	47.8	64.6	61.0	7.2	2.2	5.1	11.7	5.0	7.3	4.4	2.8	2.8	28.9	25.4	23.7
CONFIDENCE	61.7	67.8	67.2	16.1	12.8	8.5	8.3	6.7	14.7	3.3	2.2	1.1	10.6	10.6	8.5
ENTHUSIASM	57.5	60.8	62.7	13.3	13.3	12.7	8.3	8.3	16.1	6.7	1.7	0.9	14.2	15.8	7.6

Note: Totals may not equal 100% due to rounding. Superscripts with differing letters denote statistically significant differences (a: $p < .0001$, b: $p < 0.01$, c: $p < 0.05$) compared to pre-survey time period for low fat cheese (post and follow-up), enjoy nutrition (follow-up), willingness (post and follow-up)

Table 1b: Intervention A (SHOW only) n=62; Responses shown in percentages

Survey Item	Yes			Yeah			Not Sure			No			Absolutely No		
	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up
1. Watermelon ^c _a	38.7	67.7	79.7	56.5	14.5	6.7	0	8.1	11.9	1.6	1.6	0	3.2	8.1	1.7
2. Bell pepper ^b	14.5	25.8	37.3	9.7	9.7	11.9	24.2	22.6	18.6	11.3	12.9	13.6	40.3	29.0	18.6
3. Low Fat Cheese ^b	27.4	50.0	56.0	9.7	12.9	8.5	24.2	14.5	6.8	8.1	9.7	11.9	30.7	12.9	17.0
4. Fruits	48.3	51.6	54.2	30.0	16.1	15.3	13.3	8.1	15.3	5.0	11.3	5.1	3.3	12.9	10.2
5. Vegetables	72.6	75.8	60.4	9.7	6.5	17.2	11.3	6.5	12.1	1.6	3.2	3.5	4.8	8.1	6.9
6. Calcium ^c	30.7	53.2	61.0	37.1	16.1	11.9	14.5	12.9	10.2	6.5	8.1	8.5	11.3	9.7	8.5
7. Eat Local ^{a,b}	40.3	71.0	52.5	12.9	9.7	20.3	11.3	6.5	15.3	6.5	3.2	1.7	29.0	9.7	10.2
8. Enjoy Nutrition	71.0	66.1	55.9	12.9	16.1	25.4	8.1	8.1	6.8	4.8	1.6	5.1	3.2	8.1	6.8
WILLINGNESS ^{b,a}	26.9	47.9	57.6	25.3	12.4	9.0	16.1	15.1	12.4	7.0	8.1	8.5	24.7	16.7	12.4
CONFIDENCE	50.5	60.2	58.5	25.5	12.9	14.8	13.0	9.1	12.5	4.4	7.5	5.7	6.5	10.2	8.5
ENTHUSIASM ^c	55.7	68.6	54.2	12.9	12.9	22.9	9.7	7.3	11.0	5.7	2.4	3.4	16.1	8.9	8.5

Note: Totals may not equal 100% due to rounding. Superscripts with differing letters denote statistically significant differences (a: $p < .0001$, b: $p < 0.01$, c: $p < 0.05$) compared to pre-survey time period for watermelon (post and follow-up), bell pepper (follow-up), low fat cheese (post and follow-up), calcium (follow-up), eat local (post and follow-up), willingness (post and follow-up), enthusiasm (post).

Table 1c: Intervention B (SHOW then TASTING) n=55; Responses shown in percentages

Survey Item	Yes			Yeah			Not Sure			No			Absolutely No		
	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up
1. Watermelon ^c	63.6	85.5	85.7	21.8	7.3	5.4	7.3	5.5	1.8	3.6	0	3.6	3.6	1.8	3.6
2. Bell pepper	30.9	30.9	26.8	12.7	9.1	10.7	9.1	7.3	10.7	7.3	5.5	14.3	40.0	47.3	37.5
3. Low Fat Cheese ^a	34.6	78.2	60.7	12.7	12.8	21.4	16.4	1.8	12.5	7.3	1.8	0	29.1	5.5	5.4
4. Fruits	53.7	63.0	66.1	9.3	9.3	14.3	16.7	18.5	8.9	7.4	3.7	0	13.0	5.6	10.7
5. Vegetables	49.1	54.6	55.4	18.9	21.8	8.9	18.9	14.6	19.6	3.8	3.6	1.8	9.4	5.5	14.3
6. Calcium ^c	45.5	67.3	64.9	14.6	12.7	14.0	30.9	9.1	10.5	0	3.6	5.3	9.1	7.3	5.3
7. Eat Local	56.4	54.6	61.4	18.2	7.3	14.0	9.1	27.3	8.8	7.3	7.3	5.3	9.1	3.6	10.5
8. Enjoy Nutrition ^c	38.2	54.6	61.4	10.9	12.7	12.3	21.8	9.1	8.8	9.1	5.5	5.3	20.0	18.2	12.3
WILLINGNES ^{S_{a,b}}	43.0	64.9	57.7	15.8	9.7	12.5	10.9	4.9	8.3	6.1	2.4	6.0	24.2	18.2	15.5
CONFIDENCE ^c	49.4	61.6	62.1	14.2	14.6	12.4	22.2	14.0	13.0	3.7	3.7	2.4	10.5	6.1	10.1
ENTHUSIASM ^c	47.3	54.6	61.4	14.6	10.0	13.2	15.5	18.2	8.8	8.2	6.4	5.3	14.6	10.9	11.4

Note: Totals may not equal 100% due to rounding. Superscripts with differing letters denote statistically significant differences (a: $p < .0001$, b: $p < 0.01$, c: $p < 0.05$) compared to pre-survey time period for watermelon (post and follow-up), low fat cheese (post and follow-up), calcium (post and follow-up), enjoy nutrition (follow-up), willingness (post and follow-up), enthusiasm (follow-up), confidence (post and follow-up)

Table 1d: Intervention C (TASTING then SHOW) n=50; Responses shown in percentages

Survey Item	Yes			Yeah			Not Sure			No			Absolutely No		
	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up	Pre	Post	F/Up
1. Watermelon^c	70.0	85.1	89.4	14.0	4.3	4.3	14.0	4.3	4.3	2.0	4.3	2.1	0	2.1	0
2. Bell pepper	48.0	17.0	19.2	6.0	14.9	10.6	18.0	10.6	8.5	6.0	6.4	12.8	48.0	51.1	48.9
3. Low Fat Cheese	46.0	69.6	55.3	38.0	8.7	14.9	6.0	8.7	12.8	6.0	4.4	4.3	4.0	8.7	12.8
4. Fruits	65.4	61.5	54.0	13.5	17.3	10.0	9.6	7.7	24.0	1.9	5.8	6.0	9.6	7.7	6.0
5. Vegetables^{bc}	52.0	75.0	72.3	16.0	18.8	8.5	28.0	6.3	14.9	2.0	0	2.1	2.0	0	2.1
6. Calcium^b	44.0	77.3	63.8	34.0	13.6	8.5	12.0	4.6	17.0	4.0	0	2.1	6.0	4.6	8.5
7. Eat Local	42.0	59.1	59.6	18.0	11.4	10.6	24.0	9.1	14.9	10.0	9.1	8.6	6.0	11.4	6.4
8. Enjoy Nutrition	76.0	65.1	81.6	8.0	11.6	12.2	12.0	16.3	6.1	0	0	0	4.0	7.0	0
WILLINGNES S	47.3	57.1	54.6	18.0	9.3	9.9	12.7	7.9	8.5	4.7	5.0	6.4	17.3	20.7	20.6
CONFIDENCE^b	54.0	70.8	64.0	21.0	16.7	9.0	14.7	6.3	18.8	2.6	2.1	3.5	5.9	4.2	5.6
ENTHUSIASM	59.0	62.1	70.8	13.0	11.5	11.5	18.0	12.6	10.4	5.0	4.6	4.2	5.0	9.2	3.1

Note: Totals may not equal 100% due to rounding. Superscripts with differing letters denote statistically significant differences (a: $p < .0001$, b: $p < 0.01$, c: $p < 0.05$) compared to pre-survey time period for watermelon (follow-up), vegetables (post and follow-up), calcium (post), confidence (post).

To look more closely at the mechanism of JWJ, we see increases in the extreme positive response (YES!) as well as the overall positive responses (YES! and Yeah), movement out of being Not Sure, and movement from extreme negative views (ABSOLUTELY NOT and No).

YES!

A statistically significant increase in the percentage of extreme positive (YES!) responses was observed across all SHOW SCHOOLS for all three composite scores (Table 2a). A statistically significant increase of overall positive responses (YES! plus Yeah) was observed across all SHOW SCHOOLS for all three composite scores, just not in the post for Enthusiasm or the follow-up for Confidence (Table 2b).

Not Sure

Where are all those positive answers coming from? Not sure, No. and ABSOLUTELY NOT! Because we can only look at the group and not the individual, we looked at the Not Sure responses more closely (Table 3). JWJ certainly helps students to decide on their opinion, trending toward a positive one. With Willingness and Enthusiasm, the trend holds with follow-up.

ABSOLUTELY NOT!

Significant declines in the percentage for the extreme no (ABSOLUTELY NOT) responses as well as a decrease in the overall negative responses (ABSOLUTELY NOT plus No) by the follow-up survey for Willingness and Enthusiasm. This was not statistically significant at post-survey, which appears to indicate students with negative attitudes toward new foods or nutrition education need more time to be won over. Confidence appears to have a floor effect because there were so few negative answers for questions 5-7, changes are difficult to statistically detect (Table 4a and 4b). It is an interesting juxtaposition that groups in the negative responses appear to answer that they are unwilling to try a food and unenthusiastic about learning about nutrition, but are still confident that they know how to choose healthy foods and understand the food-health connections.

Table 2a: YES! (SHOW SCHOOLS) Composites

	Pre (means±SD)	Post (means±SD)	Follow-Up (Means±SD)
WILLINGNESS ^a	39.08±10.78	56.61±8.51	56.66±1.77
CONFIDENCE ^a	51.29±2.37	64.21±5.78	61.28±2.45
ENTHUSIASM ^c	53.97±6.04	61.72±7.01	62.16±8.32

Superscripts with differing letters denote statistically significant differences (a: $p < .0001$, b: $p < 0.01$, c: $p < 0.05$) compared to pre-survey time period

Table 2b: YES! & Yeah (SHOW SCHOOLS) Composites

	Pre (means±SD)	Post (means±SD)	Follow-Up (Means±SD)
WILLINGNESS ^b	58.76±6.59	67.06±7.19	67.15±2.88
CONFIDENCE ^c	71.56±6.93	78.95±7.57	73.36±1.17
ENTHUSIASM ^b	67.46±5.18	73.19±8.46	77.99±3.94

Superscripts with differing letters denote statistically significant differences (a: $p < .0001$, b: $p < 0.01$, c: $p < 0.05$) compared to pre-survey time period

Table 3: Not Sure Change Graphs of SHOW SCHOOLS

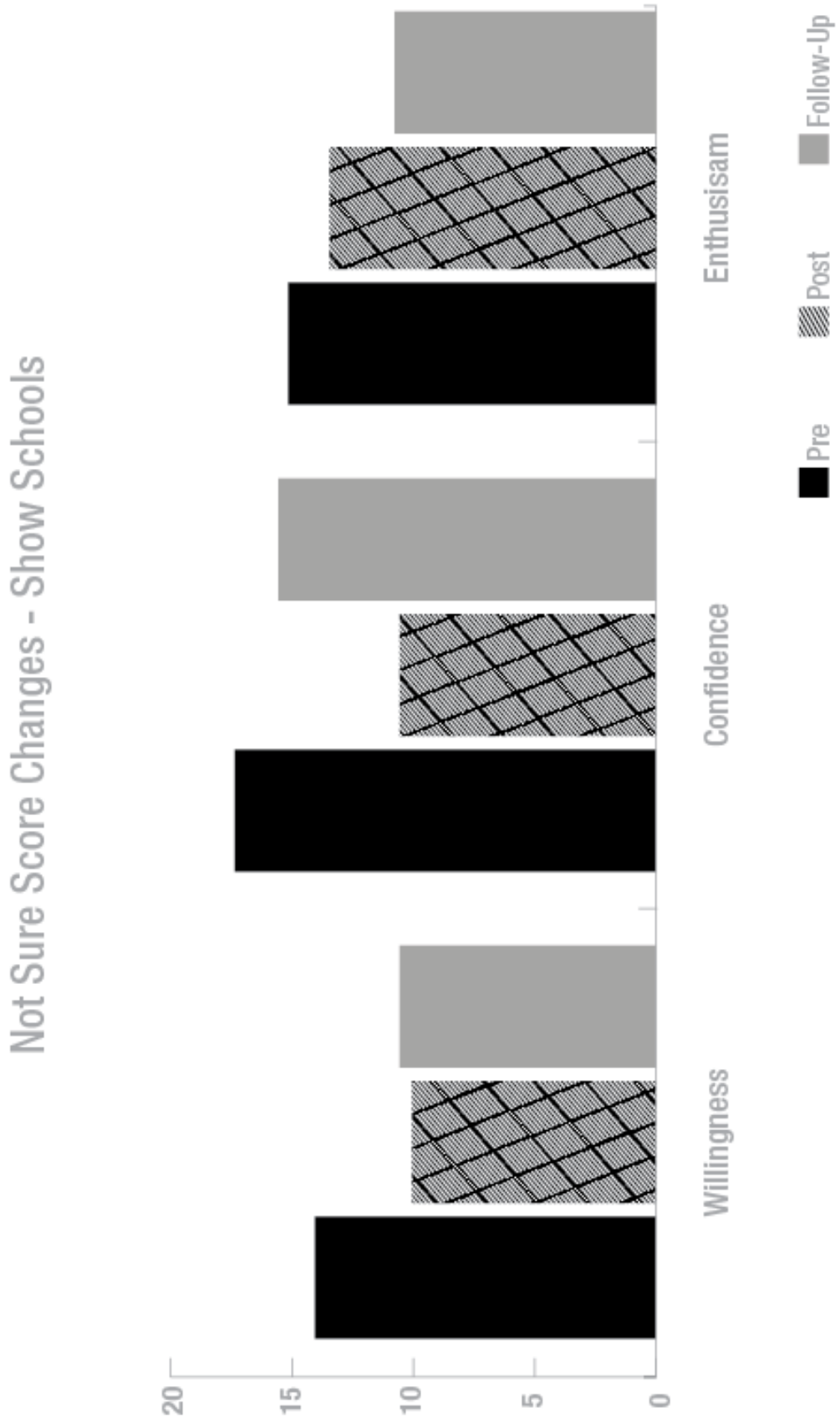


Table 4a: ABSOLUTELY NOT & No (SHOW SCHOOLS) Composites

	Pre (means)	Post (means)	Follow-Up (Means)
WILLINGNESS ^c	28.01±5.25	23.68±2.71	23.09±3.35
CONFIDENCE	11.21±2.84	11.25±5.89	11.89±2.63
ENTHUSIASM ^c	18.17±7.09	14.12±3.00	11.94±4.69

Superscripts with differing letters denote statistically significant differences (a: $p < .0001$, b: $p < 0.01$, c: $p < 0.05$) compared to pre-survey time period

Table 4b: ABSOLUTELY NOT (SHOW SCHOOLS) Composites

	Pre (means)	Post (means)	Follow-Up (Means)
WILLINGNESS ^b	22.10±4.14	18.52±2.05	16.16±4.11
CONFIDENCE	7.65±2.48	6.83±3.09	8.05±2.29
ENTHUSIASM ^c	11.89±6.02	9.66±1.10	7.67±4.20

Superscripts with differing letters denote statistically significant differences (a: $p < .0001$, b: $p < 0.01$, c: $p < 0.05$) compared to pre-survey time period

Teacher Surveys

Full Survey Results for Classroom Teacher Surveys can be found in Appendix I. The highlights include:

- Ten of the 12 teachers completed their survey, an impressive 91% survey completion rate.
- 30% of the teachers self-reported that they met the requested 15-minutes per day request to use the materials. All did at least something!
- The posters and activity books were the most used, with the danceable music videos and morning announcements close behind.
- Time was the overwhelming barrier for using the tools. Only one teacher on one question said he/she did not use the physical tools because of a digital-only classroom.
- The reviews of how JWJ was useful to students was themed around the non-threatening way JWJ teaches nutrition, connections to classroom concepts, and connections to food with taste tests.
- Did they use tools outside the CRATE? Nope. Only what was provided.
- JWJ brought classroom lessons to life by sparking conversation, building confidence to try new foods, and being an unforgettable reference point.

Taste Tests Try Rate

All schools receiving some component of the PROGRAM demonstrated an extremely high try rate. Try rates are highest in SHOW SCHOOLS.

	Watermelon	Bell Pepper	Low Fat Cheese	ALL FOODS
ALL SCHOOLS	97.1%	96.3%	100%	97.8%
COMPARISON	94.7%%	94.7%	100%	96.5%
SHOW SCHOOLS	98.6%	97%	100%	98.5%

DISCUSSION

The JWW-TDA partnership is causing an unprecedented swell of change in Texas schools. Engagement around JWW demonstrates it is a powerful intervention that shapes the entire school environment. **High scores at baseline offer clues to engagement levels and are the momentum drivers to positive movement in the scores as well as maintenance of follow-up scores.**

Schools effectively “win” the show and working with the JWW team is gaining back stage access. TDA selects schools based on their involvement with other nutrition programs. With an eye on wellness, schools are applying because they have heard of and value JWW, which they may have seen from the many conferences, social media posts, and past appearances throughout the state. Selected schools then work with the JWW team for ongoing preparations. The anticipation of the show alone has a priming effect, which can be illustrated by the Comparison group. The CRATE, TASTINGS, and anticipation of the show resulted in positive changes and high try rates, though not to the extent of the SHOW SCHOOLS.

The show has the greatest impact than any of the component pieces, but the pieces amplify the effect of the show. The physical CRATE serves an essential priming role for the show and reinforces message from the show in the classroom; the TASTINGS bring the show’s messages to life and its effects are best felt *after* seeing the show. The TASTINGS measured as a try rate also allow us to look at an actual behavior instead of just saying that they might. Try rates were unbelievably high, but highest when schools had the show. JWW makes students feel confident and feel good! Good enough to try a new food.

JWW creates positive impressions of healthy foods, moderating negative responses. Composite scores for willingness to try a new healthy food, confidence that choosing healthy foods will improve health, and enthusiasm for nutrition education demonstrates JWW improves scores - away from the negative extreme and out of Not Sure. These improvements were maintained over time (through the three week follow-up). This is highly unusual for a typical nutrition education intervention.

Kids define themselves by what they don’t eat. JWW deconstructs the framework that kids have built with their dislikes and breaks ground with newfound attitudes and aspirations. The students with negative attitudes only showed improvement in the follow-up, not the post-survey, suggesting that when you’ve dug your heels in that deep,

Figure 8: Welcome Jump with Jill: Highly Engaged School Give the Cast Star Treatment



it's going to take some time to be won over. It comes as an interesting juxtaposition to their confidence, a continued reminder that *knowledge* is not enough to influence behavior.

The positive experience derived from JWJ helps audiences develop deep intrinsic motivations that positively influence health outcomes³ and lead to high levels of program satisfaction among participants.⁴ Through the many touch points of the program, students and teachers attach to the characters. Their relationship deepens as they go from viewing videos, to watching the show in real life, to working one-on-one in the flesh in the taste test. Teachers felt accountable to these characters and all did at least some classroom instruction and almost all completed the survey.

Materials sent in advance of the show empower teachers to take nutrition into the classroom. Although teachers consider nutrition education valuable for students,⁵ Common Core State Standards and high-stakes standardized testing make nutrition and physical education expendable.⁶ JWJ has successfully overcome these much documented barriers, enticing classroom teachers to incorporate nutrition education in a cost effective way.⁷ Teachers reported they made time for JWJ, using the curated CRATE to make quick decisions about how to inject it into their busy instructional time.

When the rockstars arrive, the entire school is empowered in a school-wide assembly. It is powerful social marketing that positions fun and enjoyment as the primary reason to be healthy, like your favorite characters, Jill and DJ. Most studies don't report about perceptions of nutrition education but it's a critical metric for our success.

RECOMMENDATIONS

- **JWJ is a cost-effective way to reach schools across the vast Texas geography.** JWJ goes everywhere and rocks with kids of all backgrounds. This is the third evaluation to establish the efficacy of the show and its program components.
- **We know the show works. Future studies could look more at teachers to learn more about the utilization of the CRATES:**
 - Which materials are used and how are they used across a larger teacher population? This will allow us to hone what's included in the CRATE as well as how they are distributed. Proper curation of the CRATE is critical since teachers appear to only use what they are provided with.
 - Consider the amazing results we collected from survey classroom teachers – each received *own* CRATE as part of the study and worked only from the physical CRATE. We'd like to explore giving CRATES to classroom teachers at schools that receive the show vs. one copy to all schools in the district regardless if they receive the show. To reproduce the same CRATE distribution numbers, we could give CRATES to teachers at one grade level per school but ask all classroom teachers at the school to complete a pre-, post-, and follow-up e-surveys. Within a single school, we'd see several study groups depending on level of exposure – those that receive

the CRATE, those that pursue access (borrow or use the web), and those without exposure whether through time barriers or lack of interest.

- Given how well survey classroom teachers complied, surveying *more* teachers with the digital survey with the expectation that we will follow-up is a great way to build engagement!
- Look at how teachers' attitudes shift throughout the show preparation process. Given that JWJ is able to override time barriers for teachers, it would be interesting to understand the mechanism.
- **If we do the student portion of the study again:**
 - Add a third question (for a total of nine) so that the enthusiasm composite score has three questions (three is statistically stronger than two).
 - Choose 4th graders instead of 3rd!
 - We have learned an interesting truth over these three years of evaluations, verified by many other more rigorous studies:
 - fruit is well liked even before the intervention so there is not much room for growth with such high baseline scores
 - raw vegetables are disliked no matter which one you choose so it takes a lot of time and energy to even move the needle slightly
 - kids are indifferent about low fat dairy at pre-survey and come to like it with the intervention.

Rather than obsessing over choosing a vegetable that we think students will accept to be a representative sample (carrots in year one, cucumber in year two, bell peppers in year three), using the composite score (combining the well-liked fruit, the disliked vegetable, and the indifferent dairy) to assess willingness to try a new, healthy food is a better way to understand the trend.

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