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Abstract

The purpose of our research was to determine if attending a U.K. livestock show changed attendees' attitudes about agriculture and to compare those changes in attitudes to attendees of a U.S. state fair similar in size and dynamic. The sample was livestock show attendees at the Great Yorkshire Show (GYS). The mixed-method design included a *then* and *now* semantic differential scale with bipolar adjective pairs to measure attendees' attitudes about agriculture before and after the experience and qualitative interviews with photo elicitation to learn about how attendees developed attitudes about agriculture. Participants had positive attitudes about agriculture before they attended the Show and had more positive attitudes after attending. Participants had more positive attitudes before and after attending the Show than did California State Fair attendees. In addition, participants lacked prior experiences with agriculture, but attending the GYS provided them the opportunity to develop positive attitudes through cognitive, behavioral, and environmental factors. Fair attendance should be promoted because they provide unique opportunities for experiential learning and U.S. fairs should adopt experiential tactics used at the GYS. Further research is needed to better understand how GYS attendees developed positive attitudes about agriculture prior to attending the Show and what elements of the GYS experience were most influential to attendees' attitude development.

Keywords

attitudes; agriculture; California State Fair; Great Yorkshire Livestock Show; mixed methods

Authors

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Introduction

Agricultural producers and consumers of their production lack opportunities to engage with each other because of the societal and geographic shift away from the farm (Rumble & Irani, 2014; Wachenheim & Rathge, 2002), creating a decrease in agricultural literacy. Even though an agriculturally literate society could mitigate challenges facing the multi-billion-dollar food production industry (Boogaard et al., 2011; Kovar & Ball, 2013), agricultural literacy continues to be a global issue. This dynamic creates “compounding issues of feeding the world, while establishing and maintaining sustainable” food and fiber production practices (Kovar & Ball, 2013, p. 175). Thus, it is crucial to educate the public about agriculture. To do so, those tasked with improving agricultural literacy need to understand consumers’ attitudes about agriculture because understanding such may lead to more effective communication strategies (Goodwin et al., 2011; Schroeder, 2015). So, to meet consumers’ demands to know more about agriculture, agricultural communicators should investigate experiences that lend to their development of attitudes about agriculture. One of the few opportunities for the public to experience agriculture firsthand is at agricultural fairs (Anderson-McCoon et al., 2016).

From the beginning, fairs in the United States (U.S.) sought to “educate and entertain, with special emphasis on the ‘to educate’” (Marsden, 2010, p. 25). Agricultural societies used fairs to teach farmers how to improve their production (Kniffen, 1949; Rasmussen, 1999). Farm families would “rest from their labors and travel to town to mingle and enjoy each other’s company” (Marsden, 2010, p. 25). By the mid-1800s, though, fairs began incorporating entertainment activities to attract non-agricultural audiences (Betts, 1953). The prevalence of entertainment activities at fairs upset those who wanted to preserve the traditional agricultural focus of fairs and those who wanted to foster their economic potential (Lauzon, 2010). As the popularity of fairs grew, entertainment (e.g., non-agricultural activities) increased and overshadowed fairs’ original mission of educating about agriculture (Kniffen, 1949; Lauzon, 2010). Ultimately, agricultural societies decided fairs could be a place for both education and entertainment (Lauzon, 2010).

Today, U.S. fairs attract many different visitors (both non-agricultural audiences and agricultural audiences) and still provide a unique venue for promoting agriculture to the public (Lauzon, 2010). Fairs help decrease the gap between consumers and producers because they create opportunities for consumers to learn about agriculture from the experts (Kniffen, 1949). They “provide a common place to meet, interact, and inform the general public” about domestic agriculture and its impact on the U.S. food supply (Acharya & Lillywhite, 2016, p. 1). Most fairs also include animal exhibits where “the public has free access to barns where animals are housed and barriers between animals and the public are minimal” (LeJeune & Davis, 2004, p. 1,440). Therefore, fairs provide unique attractions not available at other events (Lillywhite et al., 2013), and serve as opportunities for consumers to experience agriculture up-close and in person, which positively influence attitudes about the industry (Boogaard et al., 2011; Wachenheim & Rathge, 2002).

Agricultural shows in the United Kingdom (U.K.) are similar to those in the U.S.; however, compared to U.S. fairs, they promote agricultural education more heavily and provide attendees with more opportunities to learn about and experience agriculture. Several agricultural shows in the U.K, such as the Great Yorkshire Show (GYS), seek opportunities to combine agricultural education with entertainment to narrow the gap between producers and consumers and to improve agricultural education (Holloway, 2004). The GYS is a prestigious agricultural show, presenting the very best of British farming and food along with a unique mix of entertainment and competition (Joy, 2008). About 130,000 people attend the Show annually and learn about agriculture and rural life through demonstrations and

exhibitions. Each year, the GYS “educates, demonstrates, informs, and inspires” (Joy, 2008, p. 7) by displaying the great diversity that exists in the agricultural industry.

The GYS is still dedicated to its original mission of educating about agriculture. According to the Charity Commission for England and Wales (n.d.) website, it has several charitable objectives:

To support and promote agriculture, rural and allied industries throughout the north of England including championing the role of farmers as providers of high quality produce and encouraging consumers to choose healthy and local produce; to advance and encourage agricultural research and greater understanding and empathy with farming and the countryside amongst the general public and particularly children; to advance and encourage the protection and sustainability of the environment; [and] to hold in pursuance of its main objectives an annual agricultural show. (p. 12)

Reviewing the literature, we found no research investigating the impact a U.K. fair had on attendees, or more specifically, attendees’ attitudes about agriculture. However, we did find research conducted at the California State Fair (CSF), a traditional U.S. fair where agriculture and the livestock show comprise only a small part of the overall attendee experience (Anderson-McCoon et al., 2016). Although the CSF does not focus all education and entertainment on agriculture like the GYS does, Anderson-McCoon et al. (2016) still found that CSF attendees’ attitudes about agriculture changed in a positive manner. Even though Anderson-McCoon et al. (2016) conducted their study in the U.S., it supported a British movement described in Holloway (2004) “to improve perceptions and knowledge of agriculture by increasing communication, interaction, and imagery between farming and non[-]farming publics” (p. 64). Thus, a comparison between attendees’ attitudes about agriculture after attending the CSF and GYS livestock shows might help portray the impact attending a fair with the primary purpose of promoting agriculture has on attendees’ (non-agricultural audiences and agricultural audiences) attitudes about agriculture.

Theoretical Framework

We investigated the influence that attending the GYS livestock show had on attendees’ attitudes about agriculture through the lenses of the social cognitive theory—a theory of how an individual’s psychosocial functions through triadic reciprocal causation (Bandura, 1986). Bandura (2001) argued that “personal factors in the form of cognitive, affective, and biological events, behavioral patterns, and environmental events all operate as interacting determinants that influence each other bidirectionally” (p. 265–266). People, therefore, are both the “products” and “producers of their own environment” (Bandura, 1997, p. 6).

Each social cognitive theory component has the power to dominate the relationship, allowing different stimuli to influence human thought and behavior in a variety of ways (Young et al., 2005). Our study used the key constructs of the social cognitive theory to better understand which components of GYS attendees’ experiences shaped or changed their attitudes, the cognitive processes that attendees experienced at the Show, and the impact the Show had on their thoughts or behaviors. Specifically, we sought to determine if attending a U.K. livestock show changed attendees’ attitudes about agriculture. Three research objectives guided the study:

- (1) Determine if attending the GYS livestock show changed attendees’ attitudes about agriculture.
- (2) Compare GYS livestock show attendees’ changes in attitude about agriculture to fairgoer’s changes in attitude about youth livestock exhibits at the CSF.

- (3) Explore how GYS livestock show attendees formed attitudes about agriculture before and after the experience using social cognitive theory.

Methods

We selected a mixed-method, embedded design study because findings can be enhanced by using more than one way to measure a concept (Webb et al., 1966) and “a more complete set of research questions can be achieved by including both quantitative and qualitative methods” (Bryman, 2012, p. 644). We used quantitative research to identify attendees' attitudes about agriculture before and after attending the GYS Livestock Show and used qualitative interviews to explain participants' observations, emotional expressions, and thoughts (Bryman, 2012).

Phase One

We used a *then/now* data collection method to assess retrospectively GYS livestock show attendees' attitudes about agriculture before and after their experience because we sought to collect attitudinal data, remove response shift bias (Townsend & Wilton, 2003), and capture how attendees perceived the “changes they made in knowledge, skills, attitudes or behaviors” (Colosi & Dunifon, 2006, p. 5).

Participants

We conducted research at the GYS in the U.K. because it is a traditional agricultural fair, the daily attendance is comparable to the CSF, and it has a large livestock show. Our target population was GYS livestock show attendees. According to GYS data, 133,542 people attended the show in 2017. The average attendee was 49 years old, 39% of attendees identified as male, and 61% identified as female. Additionally, 5% worked in agriculture, 1% worked in farm-related businesses, 8% were from a farming family, and 50% were not farmers but were interested in farming. Attendees spent an average of the 6.5 hours at the show. The sample comprised 556 GYS Livestock Show attendees. Demographic characteristics of the sample are included in Table 12. For the sake of space, we only included demographic information in the results section since we used it to achieve objective two—comparing GYS attendees to CFS attendees.

Procedures

We used Anderson-McCoon et al.'s (2016) instrument, which included two semantic differential scales to assess livestock show attendees' attitudes about agriculture before and after attending the Show (see Table 1). We made small modifications to the instrument to adapt it for the GYS. A semantic differential is composed of dichotomous terms separated by a seven-point scale (Osgood et al., 1965). Participants described their attitudes about agriculture before attending on the *then* scales and described their attitudes about agriculture after on the *now* scales. Participants responded to “Livestock shows at the Great Yorkshire Show are?” by marking an X in one of the seven boxes between the two adjectives. We also included eight demographic questions to understand attendees' age, sex, education, Young Farmer participation, residence, time spent at show, work in agriculture, and relative on a farm.

Table 1

Number of Valid Responses on the Semantic Differential Scale per Word Pair (N = 556)

Word Pairs	<i>n</i> for <i>Then</i>	<i>n</i> for <i>Now</i>
Good/Bad	551	550
Pleasant/Unpleasant	547	549
Happy/Sad	551	551
Clean/Dirty	546	550
Important/Unimportant	550	548
Beautiful/Ugly	550	550
Successful/Unsuccessful	551	552
Interesting/Boring	548	551
Honest/Dishonest	547	547
Positive/Negative	549	550
Kind/Cruel	549	547
Valuable/Worthless	550	550

Note. Word pairs did not appear in the same order on the pre-test as they did on the post-test.

The instrument was internally consistent according to Anderson-McCoon et al. (2016) (Cronbach's alpha of 0.85 for the *then* items and 0.83 for the *now* items) and we conducted a pilot study to further assess reliability. Thirty-six people participated in our Sacramento County Fair pilot study. The *then* items yielded a Cronbach's alpha coefficient 0.90 and 0.67 for the *now* items. Additionally, we established validity in three ways: Anderson-McCoon et al. (2016) established content and face validity of their instrument, and we established face validity of our instrument by having the GYS executive director review it to ensure it was culturally appropriate. We also tested the data collection process by conducting a second pilot study at the Howden Show with 50 participants. We collected final data near the GYS livestock show ring after participants experienced the livestock show. To participate in the study, the participants had to attend the GYS on July 12 or 13, 2017, between 9 a.m. and 4 p.m., be near the livestock show ring, be 18 or older, and attend the livestock show.

Using SPSS23, we calculated descriptive statistics of the demographic variables and the percentages and means for constructs associated with the semantic differentials. We assigned each box within the scale a numerical value based on its placement between the opposite adjectives (i.e., higher values (5, 6, or 7) represented a positive attitude, middle value (4) represented a neutral attitude, and lower values (1, 2, or 3) represented a negative attitude). We summed responses to the semantic differential, with the range of possible scores being a completely negative attitude of 12 to a completely positive attitude of 84, with a neutral attitude possible of 48. Next, we compared the *then* and the *now* responses with a paired-samples *t*-test and determined statistically significant differences before and after attendance. Our Cronbach's alpha coefficient was .92. We set the confidence level a priori at $\alpha = .05$. Next, we used mixed design ANOVAs with a repeated measure of attitude before (*then*) and after (*now*) attending the show and between-subjects variables (demographics) to identify any differences in attitude changes about agriculture based on demographics. Finally, we compared frequencies, percentages, and results of the paired sample *t*-test to those in the Anderson-McCoon et al. (2016) study to compare participants' attitude changes during the two fairs.

Phase Two

We conducted semi-structured qualitative interviews and asked open-ended interview questions (see Table 2) to evoke participant opinions (Creswell & Zhang, 2009).

Table 2

Interview Questions used at the GYS Livestock Show

Interview Questions
Describe the experiences you have had with livestock animals prior to attending the GYS Livestock Show.
Describe the opportunities you have had to learn about animal agriculture or agriculture in general.
How did those experiences influence your attitudes about agriculture?
Do you feel like you have the information you need about agriculture?
What elements of your experience at the GYS Livestock Show influenced your attitudes or understanding of agriculture?
What elements of your experience at the GYS Livestock Show influenced or changed your understanding or attitudes about agriculture in general?
What was the best part of your experience at the GYS Livestock Show?

Participants and Procedures

We interviewed 10 participants before reaching data saturation. Eight were between 18 and 45 years of age. Seven identified as female; three identified as male. Half lived on farms or in rural residences, and half lived in urban or suburban areas. Six owned livestock, and four worked in agriculture. We selected the sample from the phase one participants using a theoretical sampling method and developing a list of attributes essential to our investigation (LeCompte et al., 1993). Initially, we looked for characteristics within the larger sample that indicated the participant had minimal prior exposure to agriculture and had a large attitudinal change because of attending the GYS. However, applying the principles of emergent design (Glaser & Strauss, 1967), after collecting 300 surveys, we realized that results did not yield the ideal qualitative interview candidate who met the requirement of the theoretical sampling method. Therefore, we adjusted the method to allow for higher *then* responses on the survey to explore how attendees developed an initial positive attitude about agriculture prior to attending the livestock show.

We approached potential interviewees seeking their willingness to participate in a 10-minute interview. We collected interview data using audio recorders and written notes to create an audit trail (Creswell & Zhang, 2009). We used photo elicitation (i.e., three photos depicting livestock animals exhibited at the GYS; Harper, 1986; Heisley & Levy, 1991) to focus participants and minimize distractions in the interview phase. We transcribed the interviews and coded the transcripts (Creswell & Zhang, 2009). We assigned each participant a random two-digit number paired with the letter "P" to represent each participant. We read the transcripts to determine concepts and categories within the data and used words, phrases, sentences, and paragraphs as the units of analysis. We used the constant comparative method to sort the data into initial themes (Glaser & Strauss, 1967). Using content analysis, we further sorted the data into categories (Fraenkel et al., 2019) with social cognitive theory (Bandura, 1989) as the framework. We reported findings through detailed descriptions and narratives supported by quotations (Creswell & Zhang, 2009; Lincoln & Guba, 1985).

Trustworthiness

We established trustworthiness using credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). We allowed participants to refuse participation to help ensure honesty of informants, and we employed frequent debriefing sessions and peer scrutiny of the study to “keep the inquirer honest” (Lincoln & Guba, 1985, p. 308) and establish credibility. We examined the literature to determine the degree to which the study’s results were congruent with those of past studies. Because transferability represents the generalizability of the findings (Merriam, 2009), it is not possible to separate the study from its context. Therefore, we provided descriptive examples and narratives for readers to draw inferences of transferability (Lincoln & Guba, 1985). To establish dependability and confirmability (consistency of the results with the data; Merriam, 2009), we employed an external audit by a credible peer (Creswell, 2003). We circulated two peer-debriefing memos to peers to establish dependability and achieved confirmation in the results through “triangulation [of participant observations and interview data] and the keeping of a reflexive journal” (Lincoln & Guba, 1985, p. 318–319). We also kept an audit trail with our data analysis, units, and codes to ensure dependability and confirmability (Lincoln & Guba, 1985).

Limitations

The study has three primary limitations. First, we attended only one major fair in the U.K. to collect data. Because of this, the results cannot be generalized beyond the GYS. Second, for phase two of the study, though we did not know beforehand, we interviewed only attendees who had positive attitudes about agriculture before attending the GYS. This could have limited our findings because data from attendees who did not have positive attitudes beforehand may have provided a different and valuable perspective. Third, the data were collected six years ago in 2017. Although not timely, the study yielded valuable data that helps us better understand how fairs provide opportunities for attendees to develop positive attitudes about agriculture.

Results and Findings

Objective One

Participants’ responses to the *then* and *now* semantic differential scale indicated positive attitudes about agriculture before and after attending the Show (see Tables 3 and 4). We summed the means of attendees’ *then* and *now* scores using their demographic characteristics (see Table 5). On the semantic differential scale of 0 to 84, attendees had a mean of at least 69.10 across the demographic characteristics, indicating positive attitudes.

Table 3

*Participants' Responses to the Bipolar Adjective Pairs on the **Then** Semantic Differential Scale*

Positive	7		6		5		4		3		2		1		Negative
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
Good	347	63.0	124	22.5	57	10.3	17	3.1	5	0.9	1	0.2	0	0.0	Bad
Pleasant	307	56.1	139	25.4	67	12.2	26	4.8	7	1.1	1	0.2	0	0.0	Unpleasant
Happy	316	57.1	131	23.8	65	11.8	33	6.0	5	0.9	1	0.2	2	0.4	Sad
Clean	192	35.2	134	24.5	105	19.2	79	14.5	15	2.7	9	1.6	12	2.2	Dirty
Important	299	54.4	102	18.5	72	13.1	65	11.8	10	1.8	1	0.2	1	0.2	Unimportant
Beautiful	209	38.0	112	20.4	119	21.6	94	17.1	12	2.2	3	0.5	1	0.2	Ugly
Successful	274	49.7	150	27.2	79	14.3	41	7.4	6	1.1	1	0.2	0	0.0	Unsuccessful
Interesting	298	54.4	139	25.4	65	11.9	36	6.6	3	0.5	1	0.2	6	1.1	Boring
Honest	239	43.7	127	23.3	97	17.7	74	13.3	5	0.9	3	0.5	2	0.4	Dishonest
Positive	296	53.9	146	26.6	60	10.9	40	7.3	4	0.7	2	0.4	1	0.2	Negative
Kind	269	49.0	122	22.2	78	14.2	70	12.8	5	0.9	2	0.4	3	0.5	Cruel
Valuable	316	57.5	112	20.4	54	9.8	59	10.7	7	1.3	0	0.0	2	0.4	Worthless

Table 4

*Participants' Responses to the Bipolar Adjective Pairs on the **Now** Semantic Differential Scale*

Positive	7		6		5		4		3		2		1		Negative
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
Good	379	68.9	115	20.9	36	6.5	14	2.5	3	0.5	3	0.5	0	0.0	Bad
Pleasant	384	69.9	124	22.6	30	5.5	7	1.3	3	0.5	1	0.2	0	0.0	Unpleasant
Happy	368	66.8	115	20.9	44	8.0	16	2.9	5	0.9	1	0.2	2	0.4	Sad
Clean	227	41.3	143	26.0	89	16.2	56	10.2	17	3.1	12	2.2	6	1.1	Dirty
Important	344	62.8	108	19.7	51	9.3	35	6.4	5	0.9	3	0.5	2	0.4	Unimportant
Beautiful	269	48.9	127	23.1	82	14.9	58	10.5	6	1.1	3	0.5	5	0.9	Ugly
Successful	341	61.8	137	24.8	44	8.0	22	4.0	5	0.9	3	0.5	0	0.0	Unsuccessful

Table 4 Continued

Positive	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
Interesting	358	65.0	112	20.3	49	8.9	16	2.9	4	0.7	6	1.1	6	1.1	Boring
Honest	299	54.7	131	23.9	63	11.5	42	7.7	5	0.9	5	0.9	2	0.4	Dishonest
Positive	362	65.8	124	22.5	41	7.5	20	3.6	1	0.2	1	0.2	1	0.2	Negative
Kind	298	54.5	132	24.1	57	10.4	42	7.7	4	0.7	11	2.0	3	0.5	Cruel
Valuable	341	62.0	118	21.5	54	9.8	26	4.7	6	1.1	3	0.5	2	0.4	Worthless

Table 5

Summed Means and Standard Deviations for Attendees' Then and Now Scores by Demographic Characteristics

Demographic	Then			Now		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Residence						
Farm	76.7	9.5	140	78.6	8.9	140
Rural	73.7	9.4	180	76.6	8.9	180
Suburban	70.5	9.4	125	73.5	8.9	125
Urban	71.4	9.4	102	73.8	8.9	102
Overall	73.1	19.1	547	75.3	18.10	547
Livestock Ownership						
Yes	76.4	9.2	275	78.3	8.8	275
No	70.3	9.2	277	73.4	8.8	277
Overall	73.4	13.0	552	75.9	12.5	552
Young Farmer Participation						
Yes	75.2	9.6	161	77.1	9.1	161
No	72.0	9.6	391	75.6	9.1	391
Overall	73.6	14.6	552	76.4	13.9	552
Employment in Agriculture						
Yes	76.4	9.4	182	78.0	9.0	182
No	71.7	9.4	368	74.8	9.0	368
Overall	74.1	13.9	550	76.4	13.3	550
Relative on a Farm						
Yes	75.2	9.4	291	77.2	9.0	291
No	71.0	9.4	261	74.3	9.0	261
Overall	73.1	20.2	552	75.8	12.7	552
Time Spent at Show						
One Hour or Less	69.1	9.6	51	77.2	9.1	51
Over One Hour	73.7	9.6	453	76.1	9.1	453
Overall	71.4	20.2	504	76.7	19.1	504

Note. Median score = 48.

We found a statistically significant difference in attitude based on residence ($F_{3, 542} = 11.83, p < .001$). The change in attitude from *then* to *now* was statistically significant ($F_{1, 542} = 74.18, p < .001$; see Table 6). However, the change in attitude was not different based on residence ($F_{3, 542} = 0.87, p = .46$). We also found a statistically significant difference in attitude based on livestock ownership ($F_{1, 550} = 60.17, p < .001$). The change in attitude from *then* to *now* was statistically significant ($F_{550} = 79.15, p < .001$; see Table 7). The difference was also statistically significant based on livestock ownership ($F_{1, 550} = 5.32, p = .021$).

Table 6

Mixed Design ANOVA Results for Attitude about Agriculture by Within-Subjects Then/Now and Residence

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between-subjects					
Residence	3	5145.52	1715.18	11.83	< .001
Error 1	542	78431.84	144.71		
Within-subjects					
<i>Then /Now</i>	1	1669.19	1669.19	74.18	< .001
Residence x <i>Then /Now</i>	3	58.38	19.46	0.87	0.460
Error 2	542	12196.00	22.50		

Table 7

Mixed Design ANOVA Results for Attitude about Agriculture by Within-Subjects Then/Now and Livestock Ownership

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between-subjects					
Ownership	1	8391.20	8391.20	60.17	< .001
Error 1	550	76698.94	139.45		
Within-subjects					
<i>Then /Now</i>	1	1760.23	1760.23	79.15	< .001
Ownership x <i>Then /Now</i>	1	118.36	118.36	5.32	.021
Error 2	550	12232.29	22.24		

Moreover, we found a statistically significant difference in attitude based on Young Farmer Participation ($F_{1, 550} = 7.47, p = .006$). The change in attitude from *then* to *now* was statistically significant ($F_{550} = 56.44, p < .001$; see Table 8). However, the change in attitude was not different based on Young Farmer Participation ($F_{1, 550} = 1.78, p = .182$). We also found a statistically significant difference in attitude based on employment in agriculture ($F_{1, 550} = 25.76, p < .001$). The change in attitude from *then* to *now* was statistically significant ($F_{550} = 57.08, p < .001$; see Table 9). The change in attitude was also different based on employment in agriculture ($F_{1, 550} = 5.82, p = .016$).

Table 8

Mixed Design ANOVA Results for Attitude about Agriculture by Within-Subjects Then/Now and Young Farmer Participation

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between-subjects					
Participation, Young Farmer	1	1139.38	1139.38	7.47	.006
Error 1	550	83950.77	152.67		
Within-subjects					
<i>Then /Now</i>	1	1263.30	1263.30	56.44	< .001
Participation x <i>Then /Now</i>	1	39.93	39.93	1.78	.182
Error 2	550	12310.72	22.38		

Table 9

Mixed Design ANOVA Results for Attitude about Agriculture by Within-Subjects Then/Now and Employment in Agriculture

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between-subjects					
Work in Agriculture	1	3807.13	3807.13	25.76	< .001
Error 1	550	147.79	147.79		
Within-subjects					
<i>Then /Now</i>	1	1268.25	1268.25	57.08	< .001
Work in Agriculture x <i>Then /Now</i>	1	129.23	129.23	5.82	.016
Error 2	550	12221.42	22.22		

Additionally, we found a statistically significant difference in attitude based on relative living on a farm ($F_{1, 550} = 24.52, p < .001$). The change in attitude from *then* to *now* was statistically significant ($F_{550} = 81.40, p < .001$; see Table 10). The change in attitude was also different based on relative living on a farm ($F_{1, 550} = 5.57, p = .019$). We also found a statistically significant difference in attitude based on time spent at Show ($F_{1, 502} = 11.38, p < .000$). The change in attitude from *then* to *now* was statistically significant ($F_{502} = 28.21, p < .001$; see Table 11). However, the change in attitude was not different based on time spent at Show ($F_{1, 502} = 5.57, p = .647$).

Table 10

Mixed Design ANOVA Results for Attitude about Agriculture by Within-Subjects Then/Now and Relative Living on a Farm

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between-subjects					
Relative on a Farm	1	3631.48	3631.48	24.52	< .001
Error 1	550	81458.67	148.12		
Within-subjects					
<i>Then/Now</i>	1	1809.44	1809.44	81.40	< .001
Relative on a Farm x <i>Then/Now</i>	1	123.82	123.82	5.57	.019
Error 2	550	12226.84	22.23		

Table 11

Mixed design ANOVA Results for Time Spent at Show and Attitude about Agriculture

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between-subjects					
Time Spent at Show	1	1748.07	1748.07	11.38	< .001
Error 1	502	77107.75	153.60		
Within-subjects					
<i>Then/Now</i>	1	635.89	635.89	28.21	< .001
Time Spent at Show x <i>Then/Now</i>	1	4.74	4.74	0.21	.647
Error 2	502	11316.40	22.54		

Objective Two

To compare GYS attendees to CSF attendees (Anderson-McCoon et al., 2016), we compared the demographics of the livestock show attendees at the CSF and the GYS and compared the results of a paired-samples *t*-test for GYS and CFS attendees' attitudes about agriculture. GYS participants were either younger or older than CSF participants with one-third of GYS participants ($f = 180$; 32.9%) living in a rural area and a majority ($f = 326$; 82.6%) of CSF participants living in suburban or urban areas. Half of the GYS participants ($f = 275$; 49.8%) and 35.2% ($f = 135$) of CSF participants owned livestock. Participants at both fairs had varying agricultural-related experiences: 33.1% ($f = 182$) of GYS participants and 5.1% ($f = 20$) of CSF participants worked in agriculture (see Table 12). Furthermore, most of the CSF participants spent one hour or less at the show (98.1%; $f = 373$), and most of the GYS participants spent more than one hour at the show (90.4%; $f = 443$).

Table 12*Demographic Characteristics of GYS and CSF Participants*

Characteristic	GYS			CSF		
	<i>F</i>	%	<i>N</i>	<i>f</i>	%	<i>n</i>
Age (Years)			556			377
18–25	128	23.6	128	51	13.5	51
26–35	83	14.9	88	95	25.2	95
36–45	46	8.6	46	67	17.8	67
46–55	120	22.0	122	93	24.7	93
56–65	95	17.6	99	46	12.2	46
Over 65	72	13.3	74	25	6.6	25
Education			545			395
High school	187	34.3	187	72	18.2	72
Some higher education	187	34.3	187	140	35.2	139
Bachelor's degree	129	23.7	129	118	29.9	118
Advanced degree	42	7.7	42	65	16.5	66
Gender			550			377
Female	309	56.2	309	219	58.2	219
Male	241	43.8	241	158	41.8	158
Livestock Ownership			552			384
Yes	275	49.8	275	135	35.2	135
No	277	50.2	277	249	64.8	249
Relative on Farm			552			395
Yes	291	52.7	291	168	42.5	168
No	261	47.3	261	227	57.5	227
Residence			547			391
Farm	140	25.6	140	14	3.6	14
Rural	180	32.9	180	51	12.9	51
Suburban	125	22.9	125	240	60.8	240
Urban	102	18.6	102	86	21.8	86
Work in Agriculture			550			392
Yes	182	33.1	182	20	5.1	20
No	368	66.9	368	372	94.9	372
Time Spent at Show			496			380
One hour or less	53	9.6	53	373	98.1	373
More than one hour	443	90.4	443	7	1.8	7
4-H						389
Yes				58	14.9	58
No				331	85.1	331
FFA						387
Yes				28	7.1	28
No				359	90.9	359
Young Farmers			552			
Yes	161	29.2	161			
No	391	70.8	191			

We summed the GYS participants' responses for the 12 word pairs for the *then* scale ($M = 73.28$, $SD = 9.66$) and the *now* scale ($M = 75.81$, $SD = 9.13$) and compared them to CSF participants' responses for the *then* scale ($M = 67.35$, $SD = 12.36$) and the *now* scale ($M = 73.04$, $SD = 10.30$) to determine if attending the livestock show influenced attendees'

attitudes. The differences in both *then* and *now* attitudes were statistically significant (see Table 13). CSF attendees demonstrated a greater mean change (M change = 5.69) in attitude compared to GYS attendees (M change = 2.53).

Table 13

Then/Now Independent Samples T-Test for Mean Attitudes about Agriculture from the GYS (n = 496) and CSF (n = 380)

Summed <i>Then/Now</i>	GYS		CSF		<i>df</i>	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Summed <i>Then</i>	73.28	9.66	67.35	12.36	550	-8.87	< .001	.48
Summed <i>Now</i>	75.81	9.13	73.04	10.30	374	-13.20	< .001	.27

Objective Three

Participants were aware of the disconnect between the public and agriculture and attributed it to lack of exposure or experience. One participant attributed it to people's overall lifestyles—"We live quicker so we need everything quicker, faster, bigger, and more production" (P01). Another participant said, "I think sometimes you have to actively seek information about agriculture. It's not in the mainstream all of the time" (P10). This lack of exposure and education hinders people's abilities to seek information about agriculture—"I think if you don't know what you're looking for, then you probably feel there's nothing that supports agriculture or promotes it" (P10). School might be one of the few opportunities for people not exposed to agriculture in their everyday lives to learn about it, but participants noted that they did not learn about agriculture there either (P07).

Furthermore, one participant said the public does not understand agriculture or its importance because it has changed (P02). For example, changes in technology make understanding modern agriculture even more challenging for the public. "Sometimes it feels like agriculture is losing its roots. I think 50 years ago, when everything was done by tractors and horses, agriculture was easier to understand" (P01). Today, there are many new technologies associated with satellites, precision farming, and breeding (P04). Despite these changes, participants expressed a desire to learn about their food. "I think, especially recently, that people are more interested in where food comes from and they want to know" (P01). Interestingly, although some participants did not know much about agriculture, they still valued and had positive attitudes about it. P02 said, "I know how important agriculture is." One of the reasons participants said they valued agriculture was for the existence of the overall, idyllic farm life (P02). Several participants also indicated they buy British agricultural products and value local food (P02, P08, P10). "Well, I think we like to support local producers. We like homegrown produce and are keen to keep things British."

Cognitive Influences Before Attending the Show

Participants' childhoods influenced their positive attitudes about agriculture. Participant 4 had a strong connection to agriculture. He worked in arable agriculture, and as a child, his family raised pigs before becoming arable farmers and raising horses while his aunts and uncles raised beef cattle and owned dairies. Participant three, who currently works in the fresh produce industry, said her experience growing up around livestock influenced her attitude about agriculture in a positive way. Furthermore, participant 10 had some exposure

to agriculture as a child but could not recall how she learned about agriculture—"I don't know how I learned about agriculture. I guess spending time with family and going round the farm and the local auctions and farmers markets." Participants who did not grow up on a farm mentioned their general exposure to agriculture, including neighbors, friends, and media. "I live around quite a lot of farms, and I've never seen much factory farming. They are all more like free range kinds of things so that's been my experience" (P09). Although several participants did not grow up directly involved in agriculture, their few experiences contributed to their positive attitude.

Participants' education about agriculture can be divided into two categories: experiential education and formal education. Experiential education included personal experiences learning about agriculture, school trips, and teachers incorporating agricultural education in class. Participant 9 had experiential education related to agriculture in primary school delivered by a nearby small farm, and participant 6 said that she learned a small amount about agriculture in science classes and when visiting zoos and farms with her family and on school trips. Additionally, half of the interviewees had formal agricultural education at the college level. For example, participant 8 is currently working as a veterinary nurse. To become a nurse, she completed a veterinary nurse course at Harper Adams University that included units on the farm and completed a farm animal health module.

Behavioral Influences Before Attending the Show

By actively seeking current and relevant information, choosing to be involved in agriculture, or pursuing a career in the industry, participants indicated they sought connection to agriculture. "If I needed to know something I would just go 'round and ask a friend who has a pig farm" (P09). Furthermore, some sought connection through personal experience. Participant 7, for example, recently became involved in agriculture when she bought sheep to raise her own meat. Participant 3 has a poultry farm and uses many resources to seek out information about agriculture.

Participants maintain their connection to agriculture by attending the GYS and connecting with friends, family, and community members involved in agriculture. Two participants (P02, P10) said that the experience contributed to their positive attitude about agriculture. Participant 10 said her whole family comes to the Show and that, although her family was not involved in agriculture, the GYS helped to educate her about it. Ultimately, attending GYS gave participants the opportunity to interact with farming and non-farming publics and to increase their positive attitudes about agriculture.

Environmental Influences After Attending the Show

Attending the GYS further enhanced participants' positive attitudes about agriculture. The GYS environment allowed them to see the diversity of agricultural products, practices, and industries. One participant enjoyed the agricultural side best (P05) while another loved the variety—"you could choose to see and experience whatever you want to see and experience" (P10). Another participant said that the GYS is "all about farming. You can see all sorts of animals and what goes on at a farm" (P09). A highlight of such is watching exhibitors take pride in showing their animals. "There is a lot of care and attention that goes into the animals in the ring. So, you know exhibitors have great pride in what they do" (P05). Similarly, "it's quite nice to see the farmers actually being able to show their animals because you only see them working day-to-day. So, it's quite nice to actually see them with their animals and the pride they take in them" (P10). Though participants may not have many opportunities to interact with farmers in their daily lives, they could at the GYS.

Participants had a unique opportunity to see livestock breeds up-close. One participant said that she enjoyed looking at the different breeds because “you don’t always get to see that” (P03). Two participants said they did not realize there were so many different sheep varieties before coming to the GYS (P06, P10). Additionally, participant 10 said that attending the GYS increased her awareness of farming and agriculture, and if she had not attended, she probably would not think about it. The knowledge and awareness about agriculture that attending the GYS generated affected participants’ attitudes about agriculture as well as their behavior.

Furthermore, in addition to the judge, each show ring had an announcer who provided the public with information about the animals, industry, and exhibitors. One participant said she thought it was very beneficial because “many people don’t understand what they are doing [in the show ring] or what the breeds are” (P07). Another described feeling removed from the industry yet feeling connected. “Feeling completely removed from things, you can feel involved in it and learn about healthy food and healthy ways to live” (P10). Therefore, just by attending the Show, participants felt more connected to the industry.

Attending the GYS was a positive experience for participants, which could explain why people return year after year. The participants returned to the GYS to see friends, family, and community members and connect with livestock experts (P01, P04). “It is always good to come and see people, get in touch, and see what new information they have about sheep” (P01). Connecting with people and agriculture were the main reasons participants attended the Show. “Agriculture is the reason we are all here. There wouldn’t be a Show without it” (P04).

Discussion and Conclusions

A majority of U.K. and U.S. people are unfamiliar with food and fiber production because of a societal shift away from agrarian ideals. Fairs, however, provide a solution as they offer hands-on experiences needed to develop and shape attitudes about agriculture. After conducting the study described herein, we believe fairs provide unique opportunities for experiential learning and U.S. fairs should adopt experiential tactics used at the GYS.

Did the GYS Livestock Show Change Attendees’ Attitudes about Agriculture?

Our study was parallel with the Anderson-McCoon et al. (2016) study as participants at both fairs had more positive attitudes about agriculture after attending the livestock shows than they did before. Similar to findings in the Wachenheim and Rathge (2002) and the Boogaard et al. (2011) studies, we found that participants who had a firsthand connection to agriculture had more positive attitudes about the industry before and after attending the Show than those who did not. Just as Bandura (1989) described how those first-hand experiences affect attitude development, the GYS provided a rare opportunity for participants to experience and shape their attitudes about agriculture. We also found that the GYS experience could, perhaps, equal the influence of Young Farmers participation as attitudes of those who did not participate in Young Farmers were similar to participants’ *then* attitudes. This indicates that positive attitudes cannot develop only over long periods of time but also through high-impact experiences like the GYS. Thus, the unique experience for participants to see, smell, touch, and learn about the diverse elements of the agricultural industry allowed them to create knowledge within their physical and social environments (Bandura, 1989).

Participants desired to know more about agriculture but did not believe they knew how to find accurate information. Aside from attending the Show, they had to actively seek out information about food because it was not readily available. Although participants

sometimes learned about agriculture in school, they had few opportunities as adults to experience agriculture, which supported Rumble and Irani's (2014) study. Because consumers would like to know more about agriculture but lack opportunities to do so, agricultural educators and Extension agents should provide more easily accessible opportunities (e.g., field days, interactive experiences, or agricultural-based elements at fairs) for consumers to engage with agriculture.

To provide consumers with the agricultural information they seek, agricultural communicators must have firmer understandings of what the word "agriculture" means to people. Agriculture is many things, and participants had varying definitions of the word. If a person has a simplified notion that includes tractors and a red barn, do they have more positive attitudes about agriculture than a person with a more complex notion who thinks of GMOs and precision agriculture? As the U.S. Farmers and Ranchers Alliance suggests, understanding consumers' attitude toward food is important (Schroeder, 2015). Therefore, to do so, perhaps understanding what consumers associate with the word "agriculture" could help agricultural communicators to clear misconceptions and expand the definition of agriculture to include 21st century production and practices. In addition, it could help show organizers better plan educational elements and more accurately target messaging strategies about agriculture. Therefore, we recommend further research on how consumers define agriculture and what factors influence their definition.

As evidence shows that fairs positively influence attitudes about agriculture, we recommend that fair organizers, agricultural communicators and educators, and Extension agents evaluate how they can further enhance an adult's experience attending a fair by including more agricultural-based education and entertainment. This could be done by placing the livestock show in more prominent locations on the showground, selecting entertainment that involves agriculture (e.g., herding dogs), or adding interactive experiences with producers (e.g., Q&A's), all of which were key components of the GYS. In the future, researchers should seek to determine the types of agricultural-based education and entertainment consumers want to see at fairs, how to best market those experiences, and how to effectively implement such changes at fairs to make those experiences a reality. As Holloway (2004) found, fairs provide the physical place necessary for the convergence of producers and consumers. As few opportunities exist for consumers to have first-hand experiences with agriculture, fairs should seek to maximize attendees' experience to increase positive attitudes about agriculture.

How were GYS Livestock Show Attendees' Different than CFS Fairgoers?

GYS attendees had more positive attitudes than CSF attendees. Additionally, CSF attendees' attitudes after attending the livestock show were not as high as GYS attendees' attitudes prior to attending. Perhaps, this is largely because CSF does not focus all entertainment and educational elements on agriculture. As Joy (2008) found, the GYS remains committed to its original mission of promoting agriculture—entertainment is related to agriculture, livestock shows are major events, and many displays and activities educate attendees. GYS does not have a carnival to compete with the cows for attendees' time and attention.

Participants in the Anderson-McCoon et al. (2016) study spent an hour or less viewing the livestock show, and participants in our study spent more than an hour at the livestock show. This could be because the GYS provided more agricultural-based attractions and events than the CSF and participants stayed longer as a result. The CSF has a livestock show, but attendees are often drawn to the carnival rides and the midway. The CSF livestock show ring's location is not prominent, which might also keep attendees from attending. As

our society shifts away from the agrarian lifestyle (Rumble & Irani, 2014; Wachenheim & Rathge, 2002), it is not surprising participants would choose to take part in elements of the CSF that have nothing to do with agriculture. Providing more opportunities for attendees to experience the diversity of agriculture could help consumers to have a clearer definition of agriculture and more positive attitudes about it.

How did Livestock Show Attendees Form Attitudes about Agriculture?

Before

Participants in our study had positive attitudes about agriculture before the Show despite their disconnect from agriculture. Although they might not often, or ever, experience agriculture, attending an agricultural fair provided GYS attendees with the connection to and information about agriculture that satisfied their need to know (Acharya & Lillywhite, 2016; Holloway, 2004; Kniffen, 1949). Perhaps, experiences at a fair like the GYS would influence attitudes about agriculture more than a social media post. Because we believe this warrants more investigation, we propose research to understand the opportunities consumers have to learn about agriculture every day. What information and delivery mechanism is most impactful to consumers and how does it shape attitudes about agriculture?

After

We applied Bandura's (1989) social cognitive theory to our study and evaluated the cognitive, behavioral, and environmental factors that influenced how participants shaped their attitudes about agriculture. However, a limitation emerged. Although we believe that the experience of attending the GYS had a large influence on attendees' positive attitudes about agriculture, it is unclear how the interplay between such factors influenced attitude. We recommend further research to understand how attending fairs influence attendees' cognitive, behavioral, and environmental factors and which has a more dominant influence on attitude. For example, how did participants' attitudes change after they observed farmers exhibiting their lambs, listened to the judge's reasons, or learned about robotic milking machines? Knowing what elements of the GYS experience most influenced participants' attitudes could help fair organizers, agricultural educators, and Extension agents replicate those elements at fairs or similar events in the U.S.

Just as Acharya and Lillywhite (2016) found, fair attendees, like GYS participants, encountered information about agriculture that they would not normally experience in their daily lives. Therefore, researchers should investigate if the information fair attendees gain informs their buying and voting decisions and if the information is a factor in attendees' positive attitudes about agriculture. This would help to quantify the impact that fairs have and, perhaps, encourage fair administrators to increase the prominence and presence of agriculture at their events.

Finally, though fairs provide opportunities for attendees to have experiences with agriculture, do they present an accurate portrayal of agriculture? It is likely far easier to provide a depiction of agriculture that includes red barns, cute lambs, and green tractors than it is to educate the public about GMOs, precision agriculture, or sustainability. Therefore, fairs should provide agricultural displays and activities that do not oversimplify the dynamic reality of 21st century agriculture and, therefore, mislead consumers about the complexity of the industry.

Because our society relies on agriculture for its very existence, it is important for consumers to have first-hand experiences with the complex industry. Opportunities to see

livestock, producers, and agricultural technologies could help consumers connect with agriculture, which could positively impact consumer's buying and voting decisions. Unfortunately, few opportunities exist aside from attending fairs. In the U.S., perhaps, fairs do not capitalize on the opportunity to provide agricultural experiences and education for attendees like U.K. fairs do. Ultimately, those tasked with connecting consumers and producers should use fairs to improve the public's attitude about agriculture.

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