In First Place...: A study of visual aesthetic response as it relates to show design in WGI

An Honors Thesis (HONR 499)

by

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May 2018

Expected Date of Graduation
May 2018
Abstract

The Winter Guard International (WGI) organization facilitates the competitive sport of indoor percussion. Founded in 1993, WGI has seen a multitude of changes in the activity such as the introduction of visual-lines and a development towards a more theatrically-inclined production, including large props, intricate costumes, and detailed storylines and concepts for shows. The last few years especially have seen tremendous growth and by using a survey and performance analysis, this study explores what currently affects an audience's visual reaction. Dance plays a large role in audience reception, as do interactive props and color. All medalist groups from 2013-2017 used the visual elements: props, color, and highlighted characters. Marching movement did not appear to be as important of a visual factor as it has in the past.

Acknowledgments

I would like to say thank you to Jenn Blackmer first, for not only advising me on this project but teaching the first course I've ever taken where combining science and art was encouraged. It is a relief to know someone who successfully lives in both worlds!

Thank you to my parents as well, for always encouraging me to pursue my interests and to reach for success in all my endeavors. None of this would have been possible without you!

Thank you, Mike, for all of the continued support (and caffeine), this semester especially!

Last but not least, I would like to express my thanks for the marching arts, an activity that has majorly shaped me into the person I am today. Thank you to all of my band families: Lakes Community High School, Pioneer, Phantom Regiment, and Legacy Performing Arts.
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Process Analysis Statement

This was my first time designing a study that included collecting people's thoughts and opinions rather than the quantitative data a biology student usually collects in class experiments. I learned that the IRB review process is extremely lengthy, and my project was even exempt from review. I cannot imagine how much longer it takes for other studies. I can really appreciate the process that researchers have to go through to collect accurate and meaningful data in the correct manner and in the future, I already know what to expect. One problem I had was getting people to actually take my survey and finish it completely. Just under 200 participants started my survey but only 30 or so fully completed it. Thankfully I was able to use responses from incomplete surveys as a large part of this project was finding out what aspects really stood out to people. I purposely left the wording vague on the survey because I didn't want people to feel limited in their answers, however I do think I should have given some examples, so participants would have had a guideline for the kind of responses I was looking for. A lot of comments were somewhat unfocused, talking about music or comparing the show at hand to other WGI shows in general. Again, there is not much research into WGI so it was somewhat difficult for me to find sources that were truly meaningful to this project, but I was definitely able to pull from other aesthetic areas of study. I wanted to format my thesis as if it were an article from a specialized, scientific journal. Approaching a highly aesthetic activity from a scientific standpoint was difficult, but the challenge was interesting and I'm very glad that I took it on! In the end this project was really special to me because of my involvement in the marching arts. I have wanted to participate in WGI since I first learned about it in high school, and now I have completed my second season with a world class ensemble. The visual side of indoor percussion shows and show design in general have always been really interesting to me and I would love to be on a design team when I'm older. My inner scientist loves to watch shows and try to figure out why exactly I liked one show over another and I was really curious as to if there was any "science" to writing a show. There currently isn't much published research on the marching arts, WGI especially, so it was also really special to know that my thesis is some of the first. I'm hoping it will help designers make shows that are effective for their ensemble. A smaller program may be able to better allocate their budget and create a really successful product using some of the elements discussed in this paper. I'm really excited to share this paper with some of my friends and staff in the activity and hope that it inspires designers to continue to push this sport to its limits.
In First Place...: A study of visual aesthetic response as it relates to show design in WGI

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Abstract

The Winter Guard International (WGI) organization facilitates the competitive sport of indoor percussion. Founded in 1993, WGI has seen a multitude of changes in the activity such as the introduction of visual-lines and a development towards a more theatrically-inclined production, including large props, intricate costumes, and detailed storylines and concepts for shows. The last few years especially have seen tremendous growth and by using a survey and performance analysis, this study explores what currently affects an audience's visual reaction. Dance plays a large role in audience reception, as do interactive props and color. All medalist groups from 2013-2017 used the visual elements: props, color, and highlighted characters. Marching movement did not appear to be as important of a visual factor as it has in the past.

Introduction

What is WGI?

Winter Guard International (WGI) is an organization that facilitates a competitive circuit for indoor color guards, wind, and percussion ensembles. WGI percussion (referred to as WGI) began in 1993 with 9 ensembles. Now, almost 500 ensembles compete in this circuit (Winter Guard International, 2018a). A percussion ensemble is usually made up of marching percussion instruments and a stationary front ensemble. The marching portion of the ensemble, or the battery, usually includes snare, bass, and tenor drums, and a marching cymbal line. The front ensemble (front) includes keyed instruments like marimbas, vibraphones, and xylophones. Often a front will include timpani, drum-set, synth, bass guitar, and a "rack" which is a collection of auxiliary percussion instruments played by a single performer. Recently it has become common to have visual performers, who do not play an instrument but add to the story of the ensemble's production. As a result of a recent rule change, stringed and wind instruments are allowed in ensembles as well (Winter Guard International, 2018e). WGI ensembles can compete at various levels, referred to as classes: A, Open, and World. Groups are judged with a set of expectations that increase in difficulty. These classes are further divided into Scholastic and Independent distinctions. Scholastic groups are those that
are associated with a high school while independent groups do not have this relationship. A scholastic group is the same as a school’s sports team, while an independent group’s equivalent would be a club sports team. The WGI season begins in the late fall with an audition process to select the members of an ensemble. Groups rehearse throughout the winter learning their show and preparing it for the latter part of the season when they will travel to shows and compete against each other. The season culminates with World Championships in April, which takes place in Dayton, Ohio at University of Dayton’s UD Arena (Winter Guard International, 2018a).

Rules and Scoring

A WGI show is typically judged by five judges, except World Championships (and Finals competition at Power Regionals, a specific distinction for certain WGI shows) which are judged by nine. At a judged event, there is one judge in each of the following four categories, called captions: Effect - Music, Effect - Visual, Music, and Visual. The additional Timing & Penalties judge assigns score deductions based on the WGI rulebook. At Power Regional Finals and World Championships, there is a double panel, meaning that the four captions each have two judges. The Effect – Music, and Music captions are each worth 30% of an ensemble’s overall score, while the Effect – Visual, and the Visual captions are each worth 20%. In the two Effect captions, half of the score is based on overall effect and the other half is based on music or visual effect according to the caption. In the Music and Visual captions, 10% of the caption score is based on composition while the remainder of the score is based on performance quality (Winter Guard International, 2018e). Due to the nature of this study, focus will be placed on the Effect – Visual caption (see Appendix B).

Aesthetic Response

Aestheticism was first defined as “the science of sensory cognition” (Beardsley, 2003). To study aesthetics is to question art, “What makes it art,” “Is it good,” “Why?” Aesthetic experiences are those that involve the “unusually intense absorption in a phenomenal object,” (Beardsley, 2003). Each individual art form brings unique problems, and WGI is no different. Though not yet extensively explored, WGI can offer a new frontier of aesthetic study as it combines visual forms, music, dance, and athleticism. In the late 20th century, critics argued whether or not sports are considered art, as moments in sport can be aesthetic experiences (Elcombe, 2012). The question becomes even more difficult to answer considering the existence of aesthetic sports: gymnastics, figure skating, bodybuilding, and cheerleading for example. In a study of contemporary dance, researchers found that some factors of an individual’s fitness were correlated with aesthetic competence (Angioi et al., 2009). WGI is especially unique in that the
performer is creating both the visual and musical experience simultaneously rather than performing one aspect in respect to another, for example dancing to pre-recorded music. General principles of aesthetics do exist, however, there is no formula for judging it (Conrad, 2010). This study will attempt to discover patterns in aesthetic response in the WGI activity.

The Visual Elements of This Study

As previously mentioned, WGI encompasses multiple aesthetic realms, however, I have chosen to analyze visual aspects, and propose several elements of performance to focus on.

1. Props
2. Color
3. Costumes
4. Dance
5. Marching Movement
6. Highlighted Characters
7. Plot or Storyline

These elements were chosen due to their importance in theater, considering WGI is rapidly shifting towards productions with a greater emphasis on thetракти than music alone. For example, technological advances like digitally printed tarps and innovative designing, like using a rolling scaffolding, allow an ensemble to do something like climb a mountain while inside of an arena. In theater, scenography involves the “spatial and visual elements that create a stage setting,” and in WGI can include the tarp size and shape, props, lighting, and set changes (Kennedy, 2010). Color is a commonly analyzed aesthetic character and can be implemented multiple ways in a show. Color can be used to convey certain feelings, and observers may have preferences for certain combinations. In a study analyzing preferences of color pairs, Schloss and Palmer found observers preferred warm figures on cool backgrounds, cool figures on warm backgrounds, and that observers generally preferred objects on a contrasting background (Schloss & Palmer, 2011). Another study found that “faster music in the major mode” was associated with colors that were more saturated, lighter, and yellower, as well as happier-looking faces, while less saturated, darker, and bluer colors were associated with “slower music in the minor mode” and sadder-looking faces (Palmer et al., 2013). Dance and other choreographed movement are starting to be used as frequently as marching movement, and so both aspects are important in an aesthetic exploration of WGI. A study of joint-action aesthetics shows that “some of the aesthetic appeal of the performing arts lies in communicating cooperation within a group of
performers to a group of spectators," (Vicary et al., 2017). Synchronized movement can apply to both dance and marching movement but the distinction between the two lies in the types of body movement. Dance movement will be considered more involved, or full-bodied, and almost always without instruments. It can be individualized or involve the whole group. Marching movement concerns mostly the movement around the tarp while playing an instrument and especially drill, the “pictures” performers make by being in a certain place at a certain point of time. Costumes traditionally play a role in theater, and in early WGI were not as significant, however, they are becoming more specialized to reflect show themes and storylines. Highlighted characters and plot are not necessarily visual elements but are achieved through visual means, so it may be beneficial to include them. Certain forms may highlight certain characters or represent major plot points. Color, costuming, and props may be involved in highlighting specific performers or to help an audience focus on a storyline. As the WGI activity has changed drastically in recent years from “drums in a gym” to full-out productions, it will be interesting to observe how these aesthetic elements affect audience perception of shows as well as any potential relationships to scoring.

**Methods**

Obtaining data for this project involved two parts, a survey and score analysis. For the survey participants went through a pre-screening to determine their eligibility for the survey and their familiarity with WGI. Those who were eligible were guided to the survey. Participants then watched a recording of a WGI performance and were asked what visual elements caught their attention and why. An “other” category was included to account for any aspects outside of those discussed. The next question was modeled after a judge’s sheet (see Appendix B) asking them to score how often the group achieved certain aspects of performance during their production. The categories were *Creativity, Communication, Engagement, and Excellence & Artistry* and the ratings were 1: *Never*, 2: *Rarely*, 3: *Sometimes*, 4: *Frequently*, and 5: *Consistently*. This process was then repeated with a second video. The last portion of the survey asked the participant to say which show they liked better and explain if any of the visual elements were the cause. Although each participant only viewed two shows, there were four shows used in the survey. The survey was established to show each participant two shows at random, but to distribute shows so that they were viewed by an equal number of participants. The shows included *Music City Mystique 2017, The Hand of Man, Rhythm X 2013, The Man in the Arena, Matrix 2015, Mine, and Pulse Percussion 2014, That Which Confines Us*. These shows were selected because all of the visual elements asked for were present in this group, but none of the shows included every
element (see Appendix A, Table 1). Although, Matrix 2015 did not medal like the other shows it was selected because of a uniquely emotional moment, a live proposal. Participants signed an informed consent document prior to taking the survey. The study was reviewed by the Ball State University Institutional Review Board and approved as exempt. For the score analysis portion of this study, the top three finalist shows from the past five years were analyzed to determine if any of the visual elements were present. This portion of the survey is to be considered subjective, and the results are intended only to determine if any potential scoring patterns emerge and merit further investigation. For consistency, all videos used in this study were of WGI finals performance. In many cases, the video was a professional recording. Although experiencing a live show is vastly different from watching a recording, this is only an exploratory study and this method enables a wider audience to participate in the study.

Results

There were 92 individual show responses completed. However, some participants did not fully complete the survey. 33 complete responses that involve both performance responses, as well as the comparison between the two, were collected. All 92 individual show responses were used to evaluate which visual elements were most important, but only the 33 completed responses were used to establish a comparison for scoring. In the video analysis, the second and third place performances in 2015 were not evaluated due to a lack of adequate recordings.

![The Hand of Man, MCM 2017](chart1.png)

**Figure 1.1**
27 respondents viewed this performance. Dance, marching, and costumes were some of the most eye-catching features of this performance.

![The Man in the Arena, Rhythm X 2013](chart2.png)

**Figure 1.2**
28 respondents viewed this performance. Dance, costumes, and marching were some of the most eye-catching features of this performance.
Figure 1.3
17 respondents viewed this performance. Dance, marching, and color were some of the most eye-catching features of this performance.

Figure 1.4
20 respondents viewed this performance. Props, Dancing, marching, and color were some of the most eye-catching aspects of this performance.

Figure 1.5
Out of 92 individual performance views the aspects that participants noticed most frequently were dance, marching, and costumes.

Figure 2.1
2013-17 medaling finalist scores and visual elements. All medalist groups incorporated these elements into their production in an eye-catching manner: Props, color, and individual characters. All 1st place groups incorporated these elements in an eye-catching manner: props, color/color scheme, dance, marching movement, and individual characters. Note: 2015 1st place data is excluded from this graph as the 2nd and 3rd place groups were not included in this analysis (see Appendix A, Table 1).
Discussion

The survey used does have a potential for bias, as it is likely not an accurate representation of a general WGI audience. Survey participants had to be at least eighteen years old, which excludes the majority of people who participate in WGI at a scholastic level. Additionally, extremely insufficient data was collected from people unfamiliar with the WGI activity and so their opinions are not represented in this analysis. Participants may have certain personal biases as well, favoring one show over another if they were a part of that ensemble if they knew how well the show scored before watching, or for other reasons. However, people who are familiar with the activity may actually be better at picking up smaller visual nuances, especially those who have participated as performers because they received the specific training necessary of the activity (Montero, 2011). Perception and interpretation largely affect aesthetic response and each respondent differs in these aspects, making it difficult to standardize the measurement of aesthetic response (Conrad, 2010).

Dance and choreography had the highest number of comments in three of the four performance views (Fig. 1.1, 1.2, and 1.3). In the fourth show dance and choreography was only one comment less than props (Fig. 1.4). Overall, dance was the visual aspect mentioned most frequently in the survey, as well as one of the three visual elements all medalist groups used (Fig. 1.5 & 2.1). Common explanations for selecting this category included the appropriateness of the choreography and technique. Specifically, motions reflecting the music, motions reflecting the theme or plot, the precision of movements, and the togetherness of movements were mentioned multiple times, which aligns with Vicary et al.’s findings that some aesthetic appeal can come from synchronized movement (Vicary et al., 2017). Precision and togetherness were also often associated with marching movement. Respondents mentioned difficulty level when talking about marching movement, which perhaps can be seen as a similar trait to appropriateness in dance. Perhaps more people responded to dance because it utilizes a greater portion of the body, but also excludes instruments. People may have had an easier time interpreting motion when they were not hindered by an instrument. Props were also an influential visual aspect, but only in some shows, for example in That Which Confines Us, and The Hand of Man (Fig. 1.1 & 1.4). In Mine, the props were of little importance, acting as backdrops (Fig. 1.3). In the aforementioned shows the performers interact with the props throughout the production, and in Pulse’s show, the props were mobile as well, allowing the performers to change the structure of the performance space. Props were also one of the three elements used by every medalist show (Fig. 2.1). This suggests that props are an effective visual component, but only when the performers interact with them. In relation to scenography, tarp shape did not appear to make much of a difference as only one respondent mentioned it (Rhythm X). Color, another of the
visual elements that every medalist group incorporated was chosen as many times as the prop element (Fig. 2.1 and 1.5). One of the most common words used in participants' explanations of color was "contrast." Consistent with the study by Schloss and Palmer, people appeared to enjoy when color contrast was present (Schloss & Palmer, 2011). Notable uses included costumes contrasting from the tarp (MCM), contrasting patterns on costumes (Pulse), and contrasting color blocks on the costumes (Matrix). Costumes appeared to be more relevant to the viewer when they were interactive, similar to props. For example, in The Man in the Arena, performers take off a hooded jacket. This enables an ensemble to have a color change in a show to signify a change in mood, and also keep audiences engaged. Plots or storylines did not appear to be a major visual element for viewers and many medalist groups did not have one, opting for a general theme instead. However, many participants remarked that they enjoyed the emotional aspect of the proposal in Mine (Fig. 1.5 & 2.1). Highlighted or specific individual characters and novelty were the least commonly mentioned elements from the survey, however, this element was used by all of the medalist groups (Fig. 1.5 & 2.1). Plot, character development, and theme are often considered aspects of unity which tie together time-based art forms, theater and film namely (Conrad, 2010). Unity is a greater aspect of aesthetic response, and so perhaps inclusion of at least one of these factors will illicit an aesthetic response. Novelty was mentioned quite often in response to The Hand of Man, when parts of the front ensemble would move onto the floor through the show, and to That Which Confines Us, when the bass drums are played by hanging them from the props. Playing instruments in a way that is unusual is an element present in other medalist groups suggesting it may be a minor factor in overall aesthetic appeal when utilized.

The elements used by all medalist groups were props, color, and highlighted characters (Fig. 2.1). 1st place groups often utilized more than half of the elements (see Appendix A, Table 1). Pulse, Rhythm X, and MCM received comparable scores for their performances, 98.000, 98.263, and 98.00, respectively (Winter Guard International, 2018b). These shows involved most, if not all of the visual elements discussed in this paper suggesting that greater involvement of these elements is related to higher scoring. The survey's comparison portion showed that people preferred Pulse more than MCM and MCM more than X, which is not what occurred score-wise. To better analyze what visual elements affect scoring, a larger study, perhaps using preliminary performances, should be used to better determine what a judging panel finds aesthetically pleasing. In further investigations of this topic, I propose that technology should have its own category as well. Because of technological advances, groups are able to easily use lights and monitors in their shows and this was prevalent throughout the 2018 season. Of the visual elements discussed in this paper, it was surprising to see that dance movement and color appear to have the greatest effects on the
observer’s aesthetic response to the show. WGI traditionally involves playing music while marching “drill” to create forms and the fact that marching movement was not a major element depicts the change in the activity, as it develops into one that perhaps requires a different kind of aesthetic appreciation than when it first began.

Literature Cited


Videos Cited
Appendix A

<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Group Name</th>
<th>Finals Score</th>
<th>Large Props</th>
<th>Color/Color Scheme</th>
<th>Costumes</th>
<th>Dance/Choreography</th>
<th>Marching Movement</th>
<th>Individual Characters</th>
<th>Plot/Story Line</th>
<th>Novelty/Other</th>
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<td>1st Rhythm X</td>
<td>98.263</td>
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<td>96</td>
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</table>

Table 1
Raw data table from the video-score analysis (Winter Guard International, 2018b).

<table>
<thead>
<tr>
<th>Total Responses</th>
<th>Pulse vs. MCM</th>
<th>Pulse vs. Rhythm X</th>
<th>Pulse vs. Matrix</th>
<th>MCM vs. Rhythm X</th>
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<td></td>
<td>2 selected MCM</td>
<td>2 selected X</td>
<td>1 selected Matrix</td>
<td>4 selected Rhythm X</td>
<td>1 selected Matrix</td>
<td>0 selected Matrix</td>
</tr>
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Table 2
Data table for comparison section of the survey.
Appendix B
Sample WGI Effect – Visual Score Sheet (Winter Guard International, 2018d)

effect-visual

marching percussion ensembles

overall effect

- Program
- Creativity
- Communication
- Engagement
- Coordination
- Range of Effects

visual effect

- The Visual Journey
- Creativity
- Musicality
- Artistry
- Excellence as Effect

score
100

score
100

judge signature

Class A
Basic Concepts & Skills

Intermediate Concepts & Skills

World Class
Advanced Concepts & Skills

overall effect

who had the greater understanding/achievement as it relates to...

Program: The degree to which, in concept, an engaging, meaningful, and entertaining program is achieved.

Communication: The degree to which the performance techniques are effectively conveyed to the audience.

Originality/Innovation: The degree to which original concepts, ideas, and execution are evident.

Musicality: The degree to which musicality is evident in the program and presentation.

Excellence as Effect: How effectively the program/ensemble presents itself, through the use of creativity, innovation, and execution via original concepts and execution.

Class A
Basic Concepts & Skills

Intermediate Concepts & Skills

World Class
Advanced Concepts & Skills

visual effect

who had the greater understanding/achievement as it relates to...

The Visual Journey: The effective use of form, movement, color, and character to establish and sustain visual elements, and with the elements last by the audience.

Creativity: The originality, uniqueness, and originality of the visual program and presentation.

Musicality: The degree to which the program is presented as a visual and artistic experience.

Excellence as Effect: The visual and artistic execution of the performance that results in effective presentation of the visual elements.
The Institutional Review Board reviewed your protocol on March 8, 2018 and has determined the procedures you have proposed are appropriate for exemption under the federal regulations. As such, there will be no further review of your protocol, and you are cleared to proceed with the procedures outlined in your protocol. As an exempt study, there is no requirement for continuing review. Your protocol will remain on file with the IRB as a matter of record.

**Exempt Categories:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1:</td>
<td>Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.</td>
</tr>
<tr>
<td>Category 2:</td>
<td>Research involving the use of educational test (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior.</td>
</tr>
<tr>
<td>Category 3:</td>
<td>Research involving the use of educational test (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under category 2, if (i) the human subjects are elected or appointed officials or candidates for public office; or (ii) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.</td>
</tr>
<tr>
<td>Category 4:</td>
<td>Research involving the collection of study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or</td>
</tr>
</tbody>
</table>

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-1-
if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

| Category 5: Research and demonstration projects which are conducted by or subject to the approval of Department or agency heads, and which are designed to study, evaluate or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in methods or levels of payment for benefits or services under these programs. |

| Category 6: Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed which contains a food ingredient at or below the level and for a use found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture. |

Editorial Notes:

1. Approve

While your project does not require continuing review, it is the responsibility of the P.I. (and, if applicable, faculty supervisor) to inform the IRB if the procedures presented in this protocol are to be modified or if problems related to human research participants arise in connection with this project. Any procedural modifications must be evaluated by the IRB before being implemented, as some modifications may change the review status of this project. Please contact (ORI Staff) if you are unsure whether your proposed modification requires review or have any questions. Proposed modifications should be addressed in writing and submitted electronically to the IRB (http://www.bsu.edu/irb) for review. Please reference the above IRB protocol number in any communication to the IRB regarding this project.

Reminder: Even though your study is exempt from the relevant federal regulations of the Common Rule (45 CFR 46, subpart A), you and your research team are not exempt from ethical research practices and should therefore employ all protections for your participants and their data which are appropriate to your project.

D. Clark Dickin, PhD/Chair
Institutional Review Board

Christopher Mangelli, JD, MS, MEd, CIP/
Director
Office of Research Integrity