THE PENNSYLVANIA STATE UNIVERSITY
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DEPARTMENT OF COMMUNICATION SCIENCES AND DISORDERS

DETERMINING VOCAL RISK FOR MALE CHEERLEADERS

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A thesis
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ABSTRACT

While there has been research on the vocal quality and female cheerleaders dating back to the mid 1960's, there has not been any research completed on male cheerleaders. It has been noted by Andrews and Shank (1983), that "prolonged or strenuous use of the voice when excessive tension is present may predispose cheerleaders to a higher incidence of vocal problems". Because only female participants were used in those experiments, and all of the others, we will use male subjects to determine if the experiment yields similar results. The vocal mechanism for males and females are different, in that the male's vocal folds are longer, more massive, and have a greater extent of glottal closer. There may be a difference then in how males' vocal folds react to vocal strain, especially after yelling and screaming at a cheerleading event.

A review of the literature reveals that female cheerleaders and their voices have been studied, however, there is no past research on male participants. Records show that there are differences in voice quality after an event for female cheerleaders. Therefore, this Thesis researched and analyzed Penn State Varsity male cheerleaders and their voices before and after a cheerleading event to see if there are differences in voice quality. The results show that there were significant differences in fundamental frequency before and after a cheering event. However, no significant differences were found for intensity, mean autocorrelation, harmonics-to-noise ratio, jitter, or shimmer.

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I would also like to express sincere thanks to Dr. Carol Miller for guiding me to become an Honors Student through the Gateway Program, as well as for introducing to me the idea of conducting research on something that I am familiar with: cheerleading. Without you, I would not be where I am today educationally or personally. Words cannot describe how thankful I am for you believing, pushing and encouraging me to become the best student I can possibly be. Thank you from the bottom of my heart.

Finally, I would like to thank Dr. Ingrid Blood. Thank you for also believing in and supporting me. Your essence in my life as a professor and advisor is inspiring. I appreciate your willingness to be there for me and to help and assist me as I continue through my educational journey.

Chapter 1

Introduction

While many events in life require physical activity, some activities are more demanding, strenuous, or threatening than others. For example, snowboarders risk falling face first on hard ice, injuring a limb or worse (Federiuk, Schlueter, & Adams, (2002). An overlooked activity that can cause harm to the body is cheerleading. There is an increasing concern about the risky and dangerous activity of cheerleading, especially for those watching girls being tossed in the air above the hard floor surfaces (Ludka, 2012). This sport poses great risk for injuries, especially concussions and broken bones, quite similar to snowboarding (Federiuk et al.). Yet, there is another potential danger looming, the potential to damage the vocal mechanism.

Research concerning female cheerleaders and vocal problems dates back to the 1960s, first presented by Jensen (1964), and has continued through the early nineties by other researchers such as Andrews and Shank (1983), Campbell (1988), and Aaron and Madison (1991). Each research study used various acoustical, physiological, and survey techniques to investigate female cheerleaders and their voices. Some of the studies examined questionnaire responses based on personal vocal use/habits, some of them focused on evaluating the actual voice through recordings, and others focused on education and prevention of vocal disorders. Importantly, all concluded that female cheerleaders are at risk for vocal abuse, and that it is beneficial to provide education to the at risk population for prevention.

Previous research studies reveal that female cheerleader's voices are effected by vocal cheerleading behaviors. Conversely, there is no current research, or any research at all, on the voices of male cheerleaders. Therefore, this study focuses on male cheerleaders and their

voices. For this study, male cheerleaders were recorded before and after a cheerleading event in order to obtain acoustical data. After the voices were recorded, acoustical analysis was performed to determine if there were differences in the voice pre vs. post event. The acoustical analysis focused on six aspects of the voice that directly relate to the vocal mechanism. Vocal fatigue and hoarseness can occur after shouting for hours (Jensen, 1964). The vocal mechanism can be damaged in various ways. The purpose of this investigation was to determine if there are acoustical differences after cheering for a male population of cheerleaders, not the type or amount of damage that occurred. Therefore, if there were statistically significant differences before the event to after, this only would indicate that the vocal mechanism changed, signifying a possible risk of vocal damage.

Chapter 2

Literature Review

Jensen (1964) introduced the issue of increased risk of vocal problems for the female cheerleading population, as well as the idea of collecting individual information by recording the voice and studying cheerleading's effects. Andrews and Shank (1983) explored the chronic vocal differences, or those that occurred over time through cheerleading, but did not explore the direct effects of cheerleading on the voice. Campbell (1988) and his colleagues addressed this issue, as well as studied the acute, or short-term effects of vocal differences after taxing use of the voice, which was classified as "non-cheering behaviors." In 1991, researchers sought to create, implement, and rate the effectiveness of a vocal protection program administered to female cheerleaders to see if through education, the participants decreased vocal abuse due to their knowledge of its harmfulness (Aaron & Madison, 1991). Although these studies varied characteristically and functionally in many ways, ranging from questionnaires to the actual recording of voices, utilizing a few subjects to hundreds, etc., all of them came to one common conclusion: that female cheerleaders are at risk for vocal problems.

The preponderance of research evidence from several studies has indicated that cheering behaviors of female cheerleaders can negatively impact the voice. The two previous studies by Jensen (1964) and Andrews and Shank (1983), examined female cheerleaders and their voices by recording the voices of their participants. Jensen (1964) though, did not use statistical information. He listened to the recordings and noted whether the subjects sounded hoarse or not, which is opinion-based rather than numerical evidence. Andrews and Shank (1983) concluded "prolonged or strenuous use of the voice when excessive tension is present may predispose

cheerleaders to a higher incidence of vocal problems" (154). However, Andrew and Shank (1983) mentioned that they did not specify the exact vocal deviations that were observed. Research findings of Jensen (1964) and the others that followed through 1991, indicate that female cheerleaders are at risk for vocal problems. Research has ceased in this area with no further reports in the last 30 years. While this conclusion has been made for females, there is a lack of research concerning male cheerleaders. With the number of male cheerleaders on the rise, and the larger vocal dimensions, the same research questions need to be answered.

Chapter 3

Hypothesis

Each human has two vocal folds that are responsible for voice production: one on the right side, one of the left. The vocal folds are located in the larynx, which is a major structure involved in voice production (Ferrand, 2012). Also according to Ferrand, "the larynx is a small hollow tube-like structure" that sits above the trachea, below the oral-pharynx and is a protective mechanism for the lower respiratory system. (2012, p. 17). However, the vocal folds in the larynx function not only as a protective valve, but as the source of sound for speech. When a person is breathing or at rest position, there is space between the vocal folds known as the glottis. In order to produce sound, the vocal folds must come together to vibrate. For this to happen, sub-glottic air pressure builds beneath the vocal folds. When the person wants to produce sound, the air pressure forces the folds to vibrate very quickly back and forth. Since the male vocal folds are more massive and longer in length than female's, the hypothesis is that the male vocal folds will be able to withstand greater collision forces. Therefore, there will not be statistically significant differences from the pre vs. post recordings or evidence supporting an increased risk of vocal damage for the male cheerleaders.

Chapter 4

Methods

Context

The male cheerleaders from the Pennsylvania State University were recorded before and after a cheerleading event of at least an hour's duration. Each cheerleader was recorded at a Penn State basketball game in the Bryce Jordan Center. Basketball games typically last between two and two and one half hours. During the game, the men yell cheers out loud to the crowd for at least an hour or more during the game. Cheers are continually being called unless there is a reason to not yell, such as when a time-out or a foul is called. The pre-game and post-game recordings took place in a locker room in the Bryce Jordan Center. The room was about 15 ft. by 15 ft. with plaster walls, a carpeted floor, and ceiling height of about 8 feet.

Participants

In order to conduct this experiment, the Institutional Review Board (IRB) granted permission to use human subjects. The subjects needed to be male and be on the Penn State Varsity Cheerleading team. Additionally, each subject needed to be free of upper respiratory infection and histamine medication, as these could alter the results. There was ready access to the fourteen male cheerleaders on the team. All fourteen participants were asked to participate after explaining the experiment, and all signed the consent form to take part in this study.

Instruments

The participants were involved in two sessions running a maximum of ten minutes each. Because the recording session consisted only of a recording of the prolonged vowel /a/, the time needed was more than adequate. In addition to the human participants, the

materials used in this study were a computer with a sound card, a microphone to record the voices, and, a voice recording and analyzing computer program, known as Praat (Boersma & Weenink, 2013). In order to calculate the data via t-tests, Microsoft Excel was also used.

Procedure

For each recording, the room used for recording was emptied, leaving just the participant, the recorder, and the items necessary for the study. Therefore, any noise interference, such as other teammates or coaches, music, etc., was eliminated. The participant was seated upright in a chair in the room. A head-mounted microphone was positioned on the subjects before the recording was made such that the microphone was at the corner of the participant's mouth at a distance of half an inch. This positioning has been found in previous studies to be sufficient for the recordings that were to be made. The participant was instructed to take a deep breath and to produce the vowel /a/ (as in "father") at a comfortable pitch and loudness for as long as he could. The output of the microphone was connected to a laptop computer, which recorded the signal for later analysis. The identical procedures were followed both before and after the event.

Analysis

After completing the twenty-eight recordings, two recordings per fourteen subjects, the data were analyzed via Praat. There are various tools in Praat used to analyze the acoustical information from the audio recordings. For this particular study, six variables were analyzed: fundamental frequency, intensity, mean autocorrelation, harmonics-to-noise ratio, jitter, and shimmer. This study used these six variables because they pertain to different aspects of voice, and can help distinguish whether or not cheering caused a difference in the voices of the male cheerleaders pre vs. post event (Ferrand, 2012). For voice, *fundamental frequency* is defined by the rate of vibration of the vocal folds, or how fast the folds are opening and closing to produce sound. Perceptually, fundamental frequency corresponds to the pitch of sound (Ferrand,

2012). *Intensity* refers to the amount of energy in the signal resulting from sub-glottic air pressure and is a correlate of loudness (Ferrand, 2012). For example, a whisper will have a lower intensity level than a loud shout. Both fundamental frequency and intensity are the parameters of speech specifically controlled by the vocal folds. Mean autocorrelation relates to the strength of the voicing, or the periodicity, or stability in the voice over time. Essentially, it is Pearson product-moment correlations calculated between the recorded signal and itself, but at different time delays. (Prosek, Montgomery, Walden, & Hawkins, 1987). *Harmonics-to-noise ratio* indicates the amount of noise present in relation to the amount of energy. It is measuring the quality of voicing (Ferrand, 2012). For example, if the harmonics-to- noise ratios are both high before and after recording, there is normal voicing, meaning that the strength of the harmonics overpowers the noise. If the harmonics-to-noise ratios differ before and after, then a change has been made in the voice, meaning that the lower harmonics-to-noise ratio indicates an increase in noise rather than harmonics. *Jitter*, or period perturbation corresponds to the stability of time and periodicity of each cycle of vocal fold vibration. Lastly, *shimmer* pertains to the stability of the peak amplitude of the waveform, or the highest amplitude value (Ferrand, 2012, p. 150). Jitter and shimmer specifically measure the stability and periodicity of voicing. The harmonics-to-noise ratio, jitter, and shimmer, are three acoustical variables that "have been utilized as a basis of comparison between vocally healthy speakers and those with various voice disorders" (Ferrand, 2012, p 151).

In order to interpret the information found concerning these six variables, statistical t-tests were performed. The significance level for the t-tests was 0.05, which is a common statistical value used in research to specify a possible 5% error when performing an experiment. In this experiment, six t-tests were used to interpret the same data. A common law followed in statistics is called the Law of Large Numbers. This law states "that in repeated, independent trials with the same probability p of success in each trial, the chance that the

percentage of successes differs from the probability *p* by more than a fixed positive amount, *e* > 0, converges to zero as the number of trials *n* goes to infinity, for every positive *e*" (Stark, 1997, para.1). In other words, using multiple tests for the same data at the same significance level can result in finding significance by chance. To reduce the odds of finding significance through chance, the new significance level is found by dividing the significance level of one test by the number of tests used. Therefore, because there are six tests performed, the new level of significance is .008 (.05/6). This procedure therefore decreases the likelihood to find inaccurate or over-generalized evidence (Stark, 1997). After performing the t-test via Microsoft Excel, tests reveal statistical significance if the probability value is less than .008. If the probability value is greater than .008, there is no statistical significance.

Chapter 5

Findings

The first test examined fundamental frequency changes. For the majority of the male cheerleaders recorded before and after cheering, the fundamental frequency was higher after the cheerleading event than before. In regards to the voice, fundamental frequency refers to the vibratory rate of the vocal folds. The higher vocal fundamental frequency indicates that the vocal folds lengthened and the tension of the folds increased. The t-test for fundamental frequency revealed that there is statistical significance. The statistical results can be found in Table 1 and 2. The fact that fundamental frequency increased after the cheering event implies that the vocal folds were under more tension after cheering than before. Thus, the result of yelling at the game could have caused the increased tension present during cheering to be maintained afterward.

The next test attempted to determine if changes in intensity occurred. After analyzing the voices and calculating the results via t-tests, it was concluded that there was no statistical significance, and that the intensity did not change from before to after the cheerleading event. Perceptually, intensity corresponds to vocal loudness. Intensity is the ability to empower the vocal folds by forcing the vocal folds to vibrate, or open and close via sub-glottic air pressure (Ferrand, 2012). The intensity before and after the game should not change because the recordings of the male cheerleaders are only of the vowel sound /a/ at a normal conversational tone. These findings are displayed in Table 3.

The third test looked for differences in mean autocorrelation or the strength of the periodicity in voicing. For this test, there was no statistical significance, which indicates normal periodicity and stability of the participant's voices. Periodicity refers to the stability of the voice from cycle to cycle, or over time. Autocorrelation is bounded by +1 and -1. Rarely is

the autocorrelation significantly negative. This measure can indicate whether the voice is normal or not. For example, an abnormal voice could be breathy or hoarse. An autocorrelation close to 1 indicates a strong, stable, periodic voice, and an autocorrelation closer to 0, implies instability, or an unstable, irregular voice (Prosek, et. al, 1987). These results can be found on Table 4.

The fourth test compared the pre and post harmonics-to-noise ratios. The result of this computation, found in Table 5, was not statically significant, indicating that the ratio remained the same before and after cheering. The harmonics-to-noise ratio is "a measure of spectral noise that quantifies the ratio between harmonic (periodic) and inharmonic (aperiodic) components of the voice" (Ferrand, 2012, p. 150). The higher the harmonics-to-noise ratio, the more normal the voice, and the lower the harmonics ratio, the more breathy or hoarse the voice. Because the vocal folds are making complete glottal closure, air should not be wasted.

Jitter, or period perturbation was the next variable calculated. The results are documented in Table 6. Jitter represents small changes in periodicity from cycle to cycle, and relates to the stability of the time periods. For this test, there was not a significant change from the pre-test to the post-test, and thus was not statistically significant. If there is an increase in small changes in periodicity from cycle to cycle, the less normal the voice (Ferrand, 2012). Vocal folds are human tissue, and therefore, each cycle will not be exactly the same, but the normal difference is less than 1%.

Lastly, shimmer, or amplitude perturbation was analyzed. These findings are displayed in Table 7. Shimmer measures the stability of the peak amplitude of the waveform (Ferrand, 2012). The magnitude or loudness of the sound did not change from cycle to cycle pre vs. posttest for the participants, and thus was not statistically significant. Again, the vocal folds are human tissue, and therefore the common difference in amplitude is less than 15%. A common reason that this number is different is that some participants may put extra effort when being recorded to try to sound as normal as possible.

Table 1

Results of the Six T-Tests	**Fundamental Frequency: (Hz)**	Intensity: (dB)	Mean Autocorrelation:	Harmonics-to-Noise ratio: (dB)	Jitter: (%)	Shimmer: (%)
Probability value from T-test:	**0.000425063**	0.03428799	0.125730118	0.071273297	0.184681226	0.158074796
Alpha Level	**< 0.008 ****	> 0.008	> 0.008	> 0.008	> 0.008	> 0.008

Chapter 6

Discussion and Conclusion

The results show that there were significant differences in fundamental frequency before and after a cheering event. No significant differences were found for the other five measures: intensity, mean autocorrelation, harmonics-to-noise ratio, jitter, and shimmer. The results can be found by looking at the seven tables provided.

From the literature, it can be inferred that shouting can cause the vocal folds to swell. The recorded higher fundamental frequency indicates that the tension on the folds was higher post-cheering than pre-cheering, and was statistically significant. The greater force of cheering causes the vocal folds to collide more forcefully. Therefore, the swelling increases the mass of the folds. There is no acoustical evidence that supports that there is hoarseness or breathiness among these participants after cheering. Jensen (1964) found that 12% females displayed hoarseness. I have found that 0% of males displayed this sign of vocal fatigue. It can be inferred through evidence of fundamental frequency that because the male vocal mechanism is larger and more massive overall, the folds can withstand more force than females, thus verifying my hypothesis.

Weaknesses and limitations are inevitable. Future research suggestions would be to make records in a more highly controlled environment, such as a sound-treated room rather than a locker room. However, in order to use a sound-treated room, it would have taken too much time to walk from the Bryce Jordan Center to the Pollock Building on campus, where the closest sound treated room is located. Additionally, it would be beneficial to study the cheerleaders over a longer period of time rather than just one game. This is a possibility for future study.

A direction for future research includes using the exact same procedures except with female cheerleaders in order to directly relate the results to each other. Currently, only implications can be found from this study, but by duplicating the study using female cheerleaders, more concrete comparative results can be determined. Furthermore, this study can be used beyond the scope of cheerleading. Investigators can explore the differences between the male and female vocal structures in regards to singing, or other aspects of the voice.

Appendix A

Tables

These tables show the data retrieved from Praat before and after the cheerleading event for all fourteen male cheerleaders. In the lower left corner is the probability value calculated via a t-test representing whether the test proves statistical significance.

Table 2

Fundamental Frequency
Changes Pre v. Post Event

Fundamental Frequency:	Before	After
Male 1	100.49	100.731
Male 2	99.75	112.337
Male 3	96.278	95.48
Male 4	98.396	125.601
Male 5	85.356	103.854
Male 6	105.947	123.344
Male 7	110.467	112.957
Male 8	93.902	112.721
Male 9	110.743	114.442
Male 10	114.926	137.869
Male 11	120.352	140.68
Male 12	115.552	135.59
Male 13	102.254	101.193
Male 14	121.584	123.097

Probability Level: 0.000425063

Table 3

Intensity Changes Pre v. Post Event

Intensity:	Before	After
Male 1	69.08	70.8
Male 2	64.953	70.105
Male 3	69.03	72.166
Male 4	61.662	72.38
Male 5	70.08	75.05
Male 6	70.03	75.07
Male 7	68.17	67.37
Male 8	68.85	67.16
Male 9	72.68	71.96
Male 10	67.975	70.853
Male 11	65.961	70.924
Male 12	68.84	65.817
Male 13	66.072	65.992
Male 14	72.341	69.197
Probability Level: 0.03428799		

Table 4

Mean Autocorrelation Changes Pre v. Post Event

Mean Autocorrelation:	Before	After
Male 1	0.97941	0.990434
Male 2	0.963312	0.991567
Male 3	0.979059	0.981865
Male 4	0.916132	0.994496
Male 5	0.989691	0.991684
Male 6	0.996673	0.995844
Male 7	0.979426	0.976266
Male 8	0.970057	0.988877
Male 9	0.979923	0.991319
Male 10	0.981233	0.963369
Male 11	0.990551	0.988653
Male 12	0.977077	0.964979
Male 13	0.919318	0.916225
Male 14	0.997335	0.989981
Probability Level: 0.125730118		

Table 5

Harmonics-to-Noise Ratio Changes Pre v. Post Event

Harmonics-to-Noise Ratio:	Before	After
Male 1	17.573	20.891
Male 2	14.881	21.595
Male 3	17.326	19.047
Male 4	11.274	24.881
Male 5	20.776	25.439
Male 6	25.882	24.528
Male 7	18.738	17.412
Male 8	16.419	20.921
Male 9	19.32	24.335
Male 10	18.553	16.421
Male 11	21.271	20.774
Male 12	17.023	15.516
Male 13	11.716	11.432
Male 14	25.558	20.741

Probability Level: 0.071273297

Table 6

Jitter Changes Pre v. Post Event

Jitter	Before	After
Male 1	0.124	0.145
Male 2	0.191	0.125
Male 3	0.195	0.327
Male 4	0.34	0.139
Male 5	0.281	0.254
Male 6	0.226	0.212
Male 7	0.273	0.228
Male 8	0.261	0.149
Male 9	0.196	0.122
Male 10	0.205	0.265
Male 11	0.196	0.211
Male 12	0.205	0.194
Male 13	0.213	0.216
Male 14	0.068	0.108

Probability Level: 0.184681226

Table 7

Shimmer Changes Pre v. Post Event

Shimmer	Before	After
Male 1	4.38	3.336
Male 2	3.735	4.028
Male 3	3.75	6.508
Male 4	14.97	3.052
Male 5	4.768	2.803
Male 6	2.426	1.876
Male 7	3.591	3.403
Male 8	4.336	3.522
Male 9	4.628	2.805
Male 10	3.81	4.086
Male 11	3.415	3.019
Male 12	4.934	4.587
Male 13	12.105	13.274
Male 14	2.186	3.489
Probability Level: 0.158074796		

Appendix B

Recruiting Script

Hi _____. I am conducting research here at Penn State for my Honors Thesis, and I would like you to participate in a simple experiment where I record your voice. There will be two recording sessions before and after an event, which will take no longer than ten minutes each. You must be a male Penn State Varsity Cheerleader, who is not suffering from an upper respiratory infection or using more than 25 milligrams of histamine per day. If either of these latter cases, I will be unable to record you, but I do appreciate your talking with me. Would you like to participate?

If you have any questions or concerns, please contact Professor Robert A. Prosek at 814-863-2021

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ACADEMIC VITA

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EDUCATION:

The Pennsylvania State University, (2010-2014):
Major: Communication Sciences and Disorders (CSD), Schreyer Honors College (2012- present)

RESEARCH EXPERIENCE:

- I conducted research with Dr. Prosek, a prominent faculty member in the Penn State Communication Sciences and Disorders department (CSD) who focuses on voice. I have earned a position on the Penn State Varsity Cheerleading team, and I was interested as to whether cheerleading can cause damage to the voice. Currently there has not been research collected on male cheerleaders, only female cheerleaders. Therefore, I was innovative in recording and analyzing my male teammates before and after an event to see if there were vocal differences. My hypothesis was that because of the different vocal mechanism, male cheerleaders will not show statistically significant results that indicate vocal differences after cheering an event as compared to before. My hypothesis was proven to be true.
- Currently, I am working with Dr. Krista Wilkinson, as well as a few doctoral, master and undergrad students. The project's focus is on creating and using an interview tool to study early development of emotional competencies for children with complex communication needs.

OTHER EXPERIENCES:

Teaching Assistant:

- In the spring I will be a teaching assistant for CSD 300: Developmental Considerations in Assessment and Treatment of Language Disorders. I will be taking notes at every class meeting, helping to grade homework, as well as any other task that Dr. Carol Miller would like me to complete. (January 2014 to present)
- I was a teaching assistant for CSD 301: Acoustic Principles in Communication Sciences and Disorders for Dr. Robert Prosek. This is the first time Dr. Prosek has ever had a teaching assistant for this course. I was in charge of attending every class period, holding office hours, and grading the five homework assignments given throughout the semester. (August-December 2013)

Clinical Observer of Current CSD Graduate Student: CSD 296

- I observed the same patient for eleven sessions to not only see the progress of the client but to also become more familiar of the clinical procedures and processes. The client was working on articulation skills. Many of the sessions included drill-play using flashcards. For reinforcement and to keep the session more engaging, the client and clinician took turns playing different board games.

SLP Observer at St. Joseph's Medical Center: Reading, Pennsylvania

- I shadowed Marta Botch, a Speech Language Pathologist of St. Joseph Medical Center in Reading, PA. While shadowing, I observed her working with several diverse adult patients. This was an intriguing learning experience for me because it was the first time I observed in a hospital setting.

Introductory Field Experience for Teacher Preparation: Philadelphia Urban Seminar: CI295D

- I shadowed a first grade teacher in an urban, inner city Philadelphia Elementary School for two weeks. This experience was a great way to push myself out of my comfort zone, as well as experience and learn information and skills that will help me professionally in my future.

VOLUNTEER EXPERIENCES:

THON:

- THON is the largest student-run philanthropy in the world run by Penn State students with the mission to raise money and provide emotional support for kids and families battling pediatric cancer in a forty-six hour no sleeping, no sitting dance marathon. I have been a member of four different THON Committees, where I performed a multitude of duties to assist in helping the weekend run as smoothly and as successfully as possible. (Finance Committee Member 2011, Hospitality Committee Member 2012, Hospitality Committee Member 2013, Morale Committee Member 2014)

Cheerleading THON Chair:

- I am one of the THON Chairs for the Penn State Cheerleading team.
- I help to coordinate alternative fundraisers, THONvelopes, and Canning to raise money for our team benefitting THON.
- I help to communicate with our THON family, coordinate Make-A-Wish, prepare for Athlete Hour, and make sure that my team is knowledgeable on everything with THON that happens throughout the year.

Student Athlete Advisory Board Representative for Cheerleading

- I am the Student Athlete Advisory Board Representative for the Penn State Cheerleading Team. I attend the monthly meetings, act as the liaison between SAAB and the cheer team, as well as participate in several volunteer opportunities that the student athletes are a part of. This includes going to Elementary Schools to read to young children, sponsoring fundraising events for THON, and other activities that give back to the community.

Penn State Athletes Take Action: PSATA:

- I went to Mount Nittany Middle School in State College, PA, with a group of other PSU Student Athletes to talk to the students about bullying. The theme of the event was "Team Up Against Bullying". The athletes and the students played different games related to working together as a team. It was an overall great experience being able to give back to my community and to be a role model for future PSU students.

Penn State Special Olympics:

- I volunteered to support the Special Olympics at Penn State where I cheered on the Special Olympic Athletes during the Opening Ceremonies in June of 2013.

Life-Link Cheerleading Squad

- I worked with and helped special education students participate in cheerleading activities. The group performed a choreographed routine created by a few Penn State cheerleaders and myself in a competition in April 2011.

PROFESSIONAL EXPERIENCE:

Yocum Institute of the Arts: (Summer 2011, Summer 2012)

- Assisted two to four year olds for the Institute's Summer Preschool Arts Camps that involved visual arts, movement, and theatre. My main focus of the camp was movement and dance, but I was also involved in many of the other features of the camp.

Penn State University Varsity Cheerleading Clinics/Camps: (2010-2014)

- Worked individually with a high school team, educated girls on how to co-ed stunt, as well as taught them new cheers, dances, and techniques to help them improve their overall cheerleading performance and proficiency.

Babysitter: Kleinman Family: (Summer 2013)

- Watched an eleven-year old girl, Kendal, and a nine-year old boy, Clayton. I watched them mainly on Monday, Tuesday and Wednesdays, but occasionally other days when needed.

Honors and Awards:

Marshal of Graduation for the Dept. of CSD	2014
Evan Pugh Senior Award	2014
Schreyer Honors College	July 2012 to present
Penn State Varsity Cheerleader	2010 to present
Dean's List	Fall and Spring 2010-2013
Berks County's Outstanding Young Woman 1st Runner Up	2010
Berks County's Outstanding Young Woman Performing Arts Winner	2010
National Cheerleading Association Leadership Award	2009