

Student Checklist (1A)

This form is required for ALL projects.

1. a. Student/Team Leader: Victoria Lendino Grade: 12th
Email: lendinov@harrisoncsd.org Phone: (914) 714-5229
b. Team Member: _____ c. Team Member: _____
2. Title of Project:
The Effect of Gender on Anxiety and Competitive Drive
3. School: Harrison High School School Phone: (914) 835-3300
School Address: 255 Union Ave, Harrison NY 10528
4. Adult Sponsor: Randy Gunnell Phone/Email: gunnellr@harrisoncsd.org
5. Does this project need SRC/IRB/IACUC or other pre-approval? ☒ Yes ☐ No Tentative start date: 9/18/19
6. Is this a continuation/progression from a previous year? ☒ Yes ☐ No
If Yes:
a. Attach the previous year's ☒ Abstract and ☒ Research Plan/Project Summary
b. Explain how this project is new and different from previous years on
☒ Continuation/Research Progression Form (7)
7. This year's laboratory experiment/data collection:
9/18/19 11/14/19
Actual Start Date: (mm/dd/yy) End Date: (mm/dd/yy)
8. Where will you conduct your experimentation? (check all that apply)
☐ Research Institution ☒ School ☐ Field ☐ Home ☐ Other: _____
9. List name and address of all non-home and non-school work site(s):
Name: _____
Address: _____
Phone/ email: _____
10. Complete a Research Plan/Project Summary following the Research Plan/Project Summary instructions and attach to this form.
11. An abstract is required for all projects after experimentation.

Victoria Lendino

Research Plan/Project Summary

IRB Proposal for anxiety and competitive drive in high school students experiment

- a) **RATIONALE:** Include a brief synopsis of the background that supports your research problem and explain why this research is important and if applicable, explain any societal impact of your research.

The relationship between anxiety and gender in competition as well as anxiety and performance level has been heavily researched. There has also been reported differences in anxiety levels felt during competition among males and females. Kar (2013) examined the anxiety levels of male and female collegiate track athletes. The study found that across all events females experienced a higher average level of anxiety. Additionally, an experiment was conducted to compare the pre-competitive anxiety felt by males and females in both individual and team sports. This study found, overall, females experienced higher levels of anxiety. It can be concluded from these two studies that even when competing in the same type of competition, females on average feel a higher level of anxiety compared to their male counterparts. Gender, anxiety, and varying performance levels experienced during competition is not exclusive to athletic competition, but is prevalent throughout academic competition as well. Devine *et al.* (2012) found that females reported feeling higher levels of mathematical anxiety compared to males when presented with the same math questions. Furthermore, Cotton *et al.* (2013) investigated the difference in performance levels of males and females in a single round of mathematical competition compared to multiple rounds. These findings suggest, at least initially, competition in academics negatively impacts the performance of females while benefits the performance of males. Although the differences in anxiety levels as well as the differences in competitive drive among females and males has been heavily researched, there has yet to be an exploration into the connection between the two. The conclusions that girls experience more anxiety pre-competition and while competing, in addition to the fact that girls seem to experience a lower competitive drive while competing, suggests these two phenomena may be connected.

- b) **RESEARCH QUESTION(S), HYPOTHESIS(ES), ENGINEERING GOAL(S), EXPECTED OUTCOMES:** How is this based on the rationale described above?

Question: Does anxiety among female and male high school students differ in coed or homogeneous competition and does this anxiety lead to decreased performance levels?

Goal: Determine the relationship between anxiety, gender, and performance level and is

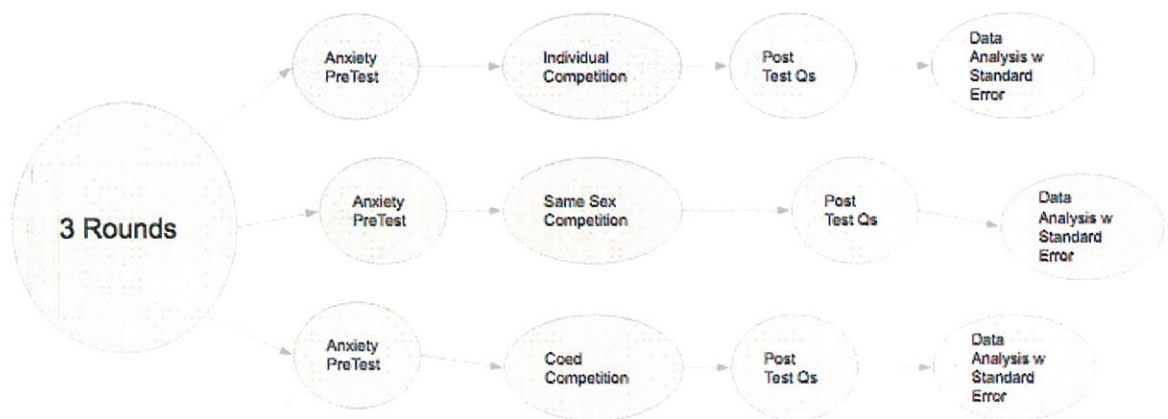
this differs in the different genders in individual, same sex, and coed academic competition.

Hypothesis: Girls will experience more anxiety and decreased performance compared to boys while competing, compared to individual competitions.

c) Describe the following in detail: • Procedures: Detail all procedures and experimental design including methods for data collection. Describe only your project. Do not include work done by mentor or others. • Risk and Safety: Identify any potential risks and safety precautions needed. • Data Analysis: Describe the procedures you will use to analyze the data/results.

Procedure: Mr. Michael Ciavarella helped me pick appropriate AP calculus questions

1. 14 volunteers from 11th grade AP Calculus classes will be recruited for academic competition
2. Prior to each math set, each subject will take an adapted form of the State Trait Anxiety Inventory (STAI) that will assess their anxiety prior to competition
3. Each subject will complete 3 on level calculus questions individually within 5 minutes with their number of correct questions recorded
4. After their individual round of competition, each subject will answer a few questions to gauge their anxiety during the competition (see attached)
5. Subjects of the same gender with similar individual results will be paired up and complete the adapted STAI again to determine their anxiety levels prior to same sex competition
6. The participants will then complete 3 similar questions within 5 minutes while seated next to each other
7. After this, each subject will answer additional questions to describe their anxiety during the competition and how it felt compared to the individual round (see attached)
7. Girls and boys with similar results will be paired up and complete the STAI again to measure their anxiety prior to coed competition
8. The coed pairs will then compete in 3 calculus questions with a five minute limit with their results recorded
9. After their coed competition, each subject will answer additional questions to describe their anxiety during the competition and how it felt compared to the individual round and the same sex round



Risk and safety: There is minimal risk associated with the proposed experiment

Data analysis: The questionnaire results will be analyzed and compared pre and post activity to see if anxiety levels correlated to performance, as performance level will be analyzed throughout the rounds as well. Additionally, the answers to the comments to specific questions will be analyzed.

BIBLIOGRAPHY: List major references (e.g. science journal articles, books, internet sites) from your literature review. If you plan to use vertebrate animals, one of these references must be an animal care reference.

De Lench, B. (n.d.). Sports dropout rate for girls six times rate for boys. In *MomsTeam*.

Retrieved December 20, 2018, from

<https://www.momsteam.com/successful-parenting/youth-sports-parenting-basics/parenting-girls/sports-dropout-rate-for-girls-six>

Devine, A., Fawcett, K., Szűcs, D. *et al.* Gender differences in mathematics anxiety and the relation to mathematics performance while controlling for test anxiety. *Behav Brain Funct* **8**, 33 (2012) doi:10.1186/1744-9081-8-33

Gneezy, U., & Rustichini, A. (2004, May). *Gender and competition at a young age*. Retrieved from <http://rady.ucsd.edu/faculty/directory/gneezy/pub/docs/gender.pdf>

Hammond, T., Gialloredo, C., Kubas, H., & Davis Hap, H. (2013, July). *The prevalence of failure-based depression among elite athletes*. Retrieved from Clin J Sport Med website: <https://www.ncbi.nlm.nih.gov/pubmed/23528842>

Hibbard, D. R., & Buhrmester, D. (2010). Competitiveness, gender, and adjustment among adolescents. *Sex Roles*. <https://doi.org/10.1007/s11199-010-9809-z>

Hussain, F., Zaman, A., & Idris, M. (2014, September). *Pre-competitive anxiety linked with gender difference in collegiate athletes of khyber pak* (Research Report No. ISSN:

2090-4274). Retrieved from

[https://www.textroad.com/pdf/JAEBS/J.%20Appl.%20Environ.%20Biol.%20Sci.,%204\(9S\)82-93,%202014.pdf](https://www.textroad.com/pdf/JAEBS/J.%20Appl.%20Environ.%20Biol.%20Sci.,%204(9S)82-93,%202014.pdf)

Kar, S. (2013). Measurement of competition level anxiety of college level athletes by using SCAT. *International Journal of Engineering Science and Innovative Technology*, 2(3), 367-375.

Retrieved from

<https://pdfs.semanticscholar.org/3960/8ee3982d1781683affdbb2d57728623525ed.pdf>

Krane, V., & Williams, J. M. (1992, July). *Cognitive anxiety, somatic anxiety, and confidence in track and field athletes: The impact of gender, competitive level and task characteristics*.

Retrieved from

https://drive.google.com/file/d/0B4cQZM_WCqL4dkprZ1N5X3YwS2NpYWR5bIBYUVVDM0R1TIBN/view

Mendick, H. (2006). *Masculinities in mathematics* (D. Epstein & M. Ghail, Eds.). Maidenhead, Berkshire, England: Open University Press.

Warner, J., Ellmann, N., & Boesch, D. (2018, November 20). The Women's Leadership Gap.

Retrieved November 11, 2019, from Center for American Progress website:

<https://www.americanprogress.org/issues/women/reports/2018/11/20/461273/womens-leadership-gap-2/>