



# Correlation of Executive Function Skills with Perceived Social Anxiety of Senior High School Students in Amparo High School

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## Abstract

This study examined the relationship between executive function (EF) skills and perceived social anxiety of senior high school students of Amparo High School. The study was conducted using a descriptive-correlational research design and 50 students from Grades 11 and 12, mostly 17 years old. Data was collected using the Executive Skills Questionnaire-Revised (ESQ-R) to measure executive function skills across domains including working memory, cognitive flexibility, emotional control, and inhibitory control, and the Social Phobia and Anxiety Inventory (SPAI) to assess perceived levels of social anxiety.

Results indicated that students' overall executive function skills fell in the "Sometimes" range (Total Mean = 2.05), indicating moderate and recurring challenges with self-regulation. The most problematic domain was emotional control, which had the highest item mean (2.50), especially in response to unplanned disruptions. Most items had social anxiety scores consistently at the "Infrequent" to "Sometimes" level. The highest anxiety responses were in performance-related situations such as public speaking and being the center of attention. Interpersonal anxiety was strongest in encounters with strangers and not with familiar persons.

A positive correlation was found between executive function problems and perceived social anxiety, indicating that students with more EF challenges also perceived themselves to have greater social anxiety.

The findings highlight the importance of integrated cognitive-emotional support programs in schools, with a particular emphasis on occupational therapy-based interventions that target emotional regulation and social participation.

**Keywords:** Executive Function; Social Anxiety; Senior High School; Occupational Therapy; Adolescents, Philippines

## Introduction

Adolescence is a critical developmental phase characterized by rapid cognitive, emotional, and social growth. Senior high school students face mounting academic pressures, complex social dynamics, and consequential life decisions. Central to navigating these demands are Executive Function (EF) skills — a set of higher-order cognitive processes including working memory, cognitive flexibility, and inhibitory control — which enable students to plan, focus attention, regulate behavior, and manage multiple tasks simultaneously [5].

Research consistently underscores EF's pivotal role in both academic performance and emotional well-being among adolescents. Students with stronger EF skills demonstrate greater academic resilience and emotional stability, while EF deficits are associated with heightened anxiety in school environments [6]. Social anxiety — characterized by excessive fear of negative evaluation in social contexts — is particularly prevalent during the senior high school years and can significantly impair self-esteem, classroom participation, and academic achievement.

Within the Philippine context, [3] found moderate to high social anxiety among senior high school students in Tagbilaran City, particularly among those with difficulties in emotional regulation. Despite this, empirical studies specifically examining the EF-social anxiety relationship among Filipino senior high school students in Metro Manila remain sparse, representing a meaningful gap in the literature.

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This study aims to address this gap by exploring the correlation between EF skills and perceived social anxiety among senior high school students at Amparo High School, and by providing evidence-based insights relevant to occupational therapy practice and educational planning. Understanding this relationship can inform early intervention strategies and holistic mental health support within the school setting, benefiting students, educators, counselors, and occupational therapists alike.

## Materials and Methods

### Research Design

This study employed a quantitative, descriptive-correlational research design. The descriptive component allowed for the systematic observation and documentation of EF skill levels and perceived social anxiety, while the correlational component was used to identify the relationship between these two variables. This design is appropriate for identifying patterns and trends without manipulating variables [1].

### Participants

Participants were 50 senior high school students (Grades 11 and 12) enrolled at Amparo High School. Purposive sampling was used to select participants based on willingness to participate. Inclusion criteria required enrollment in Grade 11 or Grade 12 and willingness to complete both self-report instruments. Exclusion criteria included students with prior diagnoses of neurodevelopmental or psychiatric disorders.

### Instruments

Two standardized self-report instruments were administered:

**Executive Skills Questionnaire-Revised (ESQ-R):** A validated instrument measuring 25 items across executive functioning domains including emotional control, task initiation, working memory, planning, organization, flexibility, and goal-directed persistence. Responses were scored on a four-point scale: 1 (Never/Rarely), 2 (Sometimes), 3 (Often), and 4 (Very Often).

**Social Phobia and Anxiety Inventory (SPAI):** A standardized assessment tool designed to evaluate the severity and frequency of social anxiety symptoms across cognitive and somatic dimensions. The instrument captures anxiety experienced in various social and performance contexts, using multiple response scales depending on item type.

Both instruments were reviewed for cultural and linguistic appropriateness prior to administration, with expert validation from psychologists and occupational therapists.

### Data Collection Procedure

Ethical clearance was obtained from the school administration prior to data collection. Informed consent was secured from all participants, who were assured of voluntary participation, confidentiality, and the right to withdraw without penalty. Both instruments were administered simultaneously through an online survey platform at a single point in time. Responses were stored securely and anonymized.

### Statistical Analysis

Descriptive statistics — including frequency distributions, mean scores, standard deviations, and percentage scores — were used to characterize the levels of EF skills and perceived social anxiety. A

Pearson Product-Moment Correlation Coefficient ( $r$ ) was calculated to determine the significance and direction of the relationship between ESQ-R and SPAI scores. Data were analyzed using SPSS and Microsoft Excel, and results were presented through tables, bar charts, and scatter plots.

## Results and Discussion

### Demographic Profile of Participants

The sample consisted of 50 senior high school students. The majority were 17 years old (36%,  $n=18$ ), followed by 18-year-olds (24%,  $n=12$ ) and 16-year-olds (18%,  $n=9$ ). Older participants aged 20–24 constituted a small minority (18% combined). Males comprised 54% of the sample ( $n=27$ ) and females 46% ( $n=23$ ). A notable grade-level disparity was observed, with Grade 12 students representing 66% ( $n=33$ ) and Grade 11 students 34% ( $n=17$ ) of the total sample.

The predominance of 17-year-old male Grade 12 students is developmentally significant, as this age coincides with ongoing maturation of the prefrontal cortex — the neural substrate of executive function — making EF challenges both expected and important to identify during this period.

### Level of Executive Function Skills (ESQ-R)

All 25 ESQ-R items yielded verbal interpretations of "Sometimes" (scale range: 1.75–2.50), with a Total Mean of 2.05 ( $SD = 0.15$ ). Standard deviations across items ranged from 0.26 to 0.59, indicating consistent and non-extreme response patterns across the group. Crucially, no student scored in the "Never or Rarely" range, indicating that EF difficulties were not isolated incidents but recurring patterns in daily functioning.

The highest-scoring item was "I get upset when things don't go as planned" (Mean = 2.50), placing it at the upper threshold of the "Sometimes" range and approaching "Often." This finding points to emotional control as the most vulnerable EF domain. Other notably high scores were observed for difficulty reaching long-term goals (Mean = 2.30), frustration with minor inconveniences (Mean = 2.28), and challenges with setting priorities under multiple demands (Mean = 2.26). In contrast, students rated themselves relatively lower on getting annoyed when tasks are too hard (Mean = 1.88) and keeping workspace organized (Mean = 1.92), suggesting that external organizational difficulties are less prominent than internal emotional and cognitive regulation deficits.

These results are consistent with established literature. Mullin et al. (2018) identified that adolescents who perceive themselves as having EF deficits — particularly in emotional regulation, task initiation, and cognitive control — are at elevated risk for internalizing difficulties including anxiety and depression. The pattern observed here suggests that the primary EF vulnerability in this population is internal rather than external in nature.

### Level of Perceived Social Anxiety (SPAI)

SPAI scores across applicable items generally ranged from mean values of 3 ("Infrequent") to 4 ("Sometimes"), indicating a moderate but consistently present level of social anxiety that, while not clinically significant in isolation, is frequent enough to materially affect social and academic engagement.

Performance-related items — including being the center of attention, making a speech before an audience, speaking in small informal meetings, and being in crowded or enclosed spaces —

consistently yielded a Mean of 4 ("Sometimes"), indicating that these are regular rather than rare anxiety experiences for students.

Items measuring the interpersonal context of anxiety (Items 9–25) used a distinct response scale (1 = People in General; 2 = Strangers; 3 = Opposite Sex; 4 = Authority Figures). Mean scores of 2 across virtually all interpersonal tasks — including eating in public, initiating conversations, stating opinions, and discussing personal feelings — consistently indicated that anxiety was triggered specifically by interactions with strangers rather than familiar persons. This finding reveals that students' social anxiety is situationally bounded: they are relatively functional within familiar social networks but experience pronounced discomfort in unfamiliar social contexts.

Regarding cognitive worry patterns, Item 26 (Mean = 2) revealed that students' predominant pre-social thought was "I will probably make a mistake and look foolish," while Item 30 (Mean = 3) showed their most common in-situation concern was "What kind of impression am I making?" These evaluative self-monitoring patterns align with the internalized social anxiety cognitions described by [3] and are consistent with the Cognitive Appraisal Theory framework [4].

### Correlation Between Executive Function Skills and Perceived Social Anxiety

Scatter plot analysis revealed a positive correlation between ESQ-R and SPAI scores. EF scores were concentrated between 1.8 and 2.5, while SPAI scores ranged from approximately 1.8 to 4.4. The upward trend in SPAI scores corresponding to increasing EF challenge scores suggests a positive directional relationship: students reporting more frequent EF difficulties also reported higher levels of perceived social anxiety.

Notably, and counterintuitively, students who appeared to demonstrate higher cognitive control also reported greater social anxiety. This finding is interpretable within the study's three theoretical frameworks. Executive Function Theory [9] posits that working memory, inhibition, and cognitive flexibility underlie social information processing and behavioral regulation; when these processes are taxed, adolescents are less equipped to meet complex social demands. Cognitive Appraisal Theory [4] explains that anxiety emerges not from events themselves but from the individual's cognitive appraisal of those events; students with higher metacognitive awareness may be more acutely sensitive to perceived social threats. Theory of Mind [12] further elucidates this pattern by explaining that students with heightened self-awareness may engage in over-mentalizing — drawing unwarranted negative inferences about others' perceptions even in neutral situations — amplifying social distress.

This positive correlation parallels findings by [11], whose longitudinal research demonstrated that within-person decreases in EF were associated with increases in anxiety symptom severity, and by [2], who described a reciprocal cycle in which anxiety impairs EF processes such as attention and working memory, further exacerbating anxious responding.

Based on the statistical findings, the null hypothesis is accepted: there is a correlation between executive function skills and perceived social anxiety among senior high school students at Amparo High School. The nature of this relationship, however, is positive rather than negative — indicating that greater awareness of EF challenges co-exists with heightened social anxiety — a nuance with important

clinical and educational implications.

This study contributes localized, empirical evidence confirming that the cognitive and emotional dimensions of Filipino adolescent development are deeply intertwined, and that holistic, occupation-based approaches — such as those offered through occupational therapy — are well-positioned to address both dimensions within the school setting.

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### References

- Aggarwal R, Ranganathan P. Study designs: Part 2 – Descriptive studies. *Perspect Clin Res*. 2019; 10(1): 34. [https://doi.org/10.4103/picr.picr\\_154\\_18](https://doi.org/10.4103/picr.picr_154_18)
- Barron R. How anxiety impacts executive function [Internet]. *Effective Students*; 2023 Sep 12 [cited 2025]. Available from: <https://effectivestudents.com/articles/how-anxiety-impacts-executive-function/>
- Biendino P, Aurestila U, Bongato GP, Lamzon G, Sarong J, Ricklefs M. Social interaction anxiety and emotion dysregulation among the senior high school students in Tagbilaran City. *ResearchGate*. 2024. Available from: <https://www.researchgate.net/publication/382878135>
- Campbell TS, Johnson JA, Zernicke KA. Cognitive appraisal. In: *Encyclopedia of Behavioral Medicine*. New York: Springer Nature; 2013. [https://doi.org/10.1007/978-1-4419-1005-9\\_1115](https://doi.org/10.1007/978-1-4419-1005-9_1115)
- Center on the Developing Child. A guide to executive function [Internet]. Harvard University; 2024 Nov 22 [cited 2025]. Available from: <https://developingchild.harvard.edu/resource-guides/guide-executive-function/>
- Hargraves V. Strategies for promoting executive function in secondary school [Internet]. *The Education Hub*; 2022 Mar 2 [cited 2025]. Available from: <https://theeducationhub.org.nz/strategies-for-promoting-executive-function-in-secondary-school/>
- Jystad I, Haugan T, Bjerkeset O, Sund ER, Vaag J. School functioning and educational aspirations in adolescents with social anxiety — The Young-HUNT3 Study, Norway. *Front Psychol*. 2021; 12. <https://doi.org/10.3389/fpsyg.2021.727529>
- Miers AC, Blöte AW, De Rooij M, Bokhorst CL, Westenberg PM. Trajectories of social anxiety during adolescence and relations with cognition, social competence, and temperament. *J Abnorm Child Psychol*. 2012. <https://doi.org/10.1007/s10802-012-9651-6>
- Miyake A, Friedman NP, Emerson MJ, Witzki AH, Howerter A, Wager TD. The unity and diversity of executive functions and their contributions to complex "frontal lobe" tasks: A latent variable analysis. *Cogn Psychol*. 2000; 41(1): 49–100.
- Mullin BC, Perks EL, Haraden DA, Snyder HR, Hankin BL. Subjective executive function weaknesses are linked to elevated internalizing symptoms among community adolescents. *Assessment*. 2018. <https://doi.org/10.1177/1043426918777777>

- org/10.1177/1073191118820133
11. Orm S, Wood J, Fossum IN, Andersen PN, Fjermestad K, Øie MG, et al. Within-person effects of executive functioning on anxiety and depressive symptoms in youth with neurodevelopmental disorders: A longitudinal study. *Adv Neurodevelop Disord*. 2024. <https://doi.org/10.1007/s41252-024-00421-1>
  12. Premack D, Woodruff G. Does the chimpanzee have a theory of mind? *Behav Brain Sci*. 1978; 1(4): 515–526. <https://doi.org/10.1017/s0140525x00076512>
  13. Rabner JC, Ney JS, Kendall PC. Cognitive functioning in youth with anxiety disorders: A systematic review. *Clin Child Fam Psychol Rev*. 2024; 27(2): 357–380. <https://doi.org/10.1007/s10567-024-00480-9>
  14. Watson R. Quantitative research [Internet]. ProQuest; 2015 Apr 1 [cited 2025]. Available from: <https://www.proquest.com/openview/058c84ecfd436cf965eacb1556000ab0/1>
  15. Zainal NH, Newman MG. Executive functioning constructs in anxiety, obsessive-compulsive, post-traumatic stress, and related disorders. *Curr Psychiatry Rep*. 2022; 24(12): 871–880. <https://doi.org/10.1007/s11920-022-01390-9>