



**INTERNET GAMING, ANALYTICAL COMPETENCE AND POSITIVE  
YOUTH DEVELOPMENT IN EARLY ADOLESCENTS**

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**By**

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**BAHRIA UNIVERSITY ISLAMABAD**

**(E-8 CAMPUS)**

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## **DECLARATION OF AUTHENTICATION**

We certify that the research work presented in this research project, to the best of my knowledge, is our own. All the sources used, and any help received in the preparation of this thesis have been acknowledged. We hereby declare that we have not submitted this material, either in whole or in part, for any other degree at this or any institution.

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## **DEDICATION**

*This thesis is wholeheartedly dedicated to myself, for my perseverance and hard work. To my parents and family, whose unwavering love and support has been my foundation. To my teachers, whose guidance and wisdom has shaped my journey. To my friends, for their constant encouragement and companionship.*

*M. Mushaf Sabeeh*

*This thesis is dedicated to myself, for my relentless perseverance and dedication. To my parents and family, whose steadfast love and support has been my rock. To my teachers, whose guidance and wisdom has been instrumental in shaping my journey. To my friends, for their unending encouragement and companionship.*

*Fatimah Azhar*

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## Table of Contents

DEDICATION .....	iv
ACKNOWLEDGEMENT .....	v
LIST OF TABLES .....	viii
LIST OF FIGURES .....	ix
LIST OF APPENDICES .....	x
LIST OF ABBREVIATION AND SYMBOLS .....	xi
ABSTRACT.....	xii
CHAPTER I.....	1
Introduction.....	1
Literature Review .....	9
Theoretical Framework .....	24
Conceptual Framework .....	26
Rationale.....	27
Objectives.....	28
Hypotheses .....	28
CHAPTER II.....	30
Method .....	30
Research Design.....	30
Sample.....	30

Inclusion Criteria.....	30
Exclusion Criteria.....	30
Operational Definitions.....	31
Measures.....	33
Procedure.....	36
Ethical Considerations.....	36
CHAPTER III .....	37
Results.....	37
Summary of Findings .....	52
CHAPTER IV .....	53
Discussion.....	53
Conclusion.....	56
Limitations and Suggestions .....	57
Implications.....	57
References.....	59
Appendix.....	72



## List of Tables

<b>Table 1</b> Descriptive statistics for demographic characteristics	38
<b>Table 2</b> Descriptive statistics and reliability analysis for internet gaming, analytical competence and positive youth development	42
<b>Table 3</b> Bivariate correlations for internet gaming, analytical competence and positive youth development	45
<b>Table 4</b> Bivariate correlations for demographics and positive youth development	47
<b>Table 5</b> Hierarchical multiple linear regression analysis	49
<b>Table 6</b> Independent sample t-test for differences of positive youth development among boys and girls	51
<b>Table 7</b> Independent sample t-test for differences of positive youth development among students of public and private sectors of school	51

## List of Figures

<b>Figure No</b>	<b>Figure Title</b>	<b>Page No.</b>
Figure 1	Conceptual Framework	26
Figure 2	Statistical Model	51

## **List of Appendices**

<b>Annexures</b>	<b>Title</b>	<b>Page No.</b>
<b>Appendix A</b>	Permission for data collection	73
<b>Appendix B</b>	Scales permission from authors	75
<b>Appendix C</b>	Information sheet	78
<b>Appendix D</b>	Informed consent	79
<b>Appendix E</b>	Demographic sheet	80
<b>Appendix F</b>	Scales	81
<b>Appendix G</b>	Plagiarism report	84

## **List of Abbreviation and Symbols**

- |             |                              |
|-------------|------------------------------|
| 1. IV       | Independent Variable         |
| 2. DV       | Dependent Variable           |
| 3. M        | Mean                         |
| 4. SD       | Standard Deviation           |
| 5. F        | Frequency                    |
| 6. k        | Number of items              |
| 7. $\alpha$ | Cronbach's Alpha Reliability |
| 8. p        | Significance Level           |
| 9. CI       | Confidence Interval          |
| 10. PSI     | Problem Solving Inventory    |
| 11. PYD     | Positive Youth Development   |
| 12. $\beta$ | Regression coefficient       |
| 13. SE      | Standard Error               |

## Abstract

The aim of current research was to examine the relationship between internet gaming, analytical competence, and positive youth development among early adolescents. It was hypothesized that there will be a positive relationship between internet gaming, analytical competence, and positive youth development among early adolescents and that internet gaming and analytical competence will positively predict positive youth development among early adolescents. A correlational research design with a purposive sample of 303 students including boys=181, and girls=122, with the age range of 10-14 years ( $M=12.4$ ,  $SD=1.33$ ) were recruited from different schools of Islamabad and Rawalpindi. The internet gaming disorder test IGDT (Hall et al., 2013), problem solving inventory PSI (Heppner & Peterson, 1982) and positive youth development inventory PYDI (Arnold et al., 2012) were used to measure the constructs along with the demographic information sheet and informed consent. The results of pearson product moment correlation showed significant positive correlation between internet gaming, analytical competence, and positive youth development. The results of hierarchal multiple linear regression found internet gaming and analytical competence to be a significant positive predictor of positive youth development. The results of independent sample t test showed non-significant differences of positive youth development among boys and girls of public and private sector of schools. This study highlights the importance of considering the dynamic relationship between internet gaming, analytical competence, and positive youth development and the role internet gaming plays in fostering analytical competence and positive youth development in early adolescents.

## CHAPTER I

### Introduction

Today's world is characteristic of rapid proliferation of modern technologies that has significantly revolutionized the lifestyles of every human being. One of the products of developing technology is internet gaming. According to Entertainment Software Association (2017), around 95% households with children under the age of 18 own some form of online gaming platform. With the increase in types and platforms of video games a large number of people have become occupied with this digital activity (Entertainment Software Association, 2017). COVID-19 has also played a major role in creating a shift when many regular activities were cancelled causing a surge in online gaming and social media usage with many children and adolescents spending up to 10 hours a week on computer or digital gadgets playing games and using social media (Nilsson et al., 2022). The gaming industry in Pakistan is no exception to this rapid growth. In 2022, the country possessed around 36.8 million gamers making it 16% of the population which is expected to rise to 50.9 million gamers that is 20.6% of the population by 2026 (Intenta digital,2022). According to the statistics, the activity is more popular pastime for the younger population with males taking the lead by forming 76.9% of gaming population while 23.1% of gaming population were females. The trend found more popularity as a young gamer Syed Sumail Hassan, a professional Dota 2 player won an International gaming tournament in 2015 (Intenta digital,2022).

Children, the most effected population in this regard, have shifted their ways of gaining entertainment and choice of leisure activities. One of the major consequence of this shift in children's lives is the replacement of outdoor games with virtual games. According to Khalid et al., (2019) in the present era, video games have gained immense popularity that has intensified

among youth worldwide making it a theme of major debate among scholars. Given this continual rise in game play with increased consumer spending, researchers have become interested in the impacts it has on the behaviors and well-being of people (Granic et al., 2014; Halbrot et al., 2019).

The modern video gaming is more complex, realistic, diverse and social (Granic et al., 2014), with their rich graphics and animations providing players with challenges and stimulating their cognitive skills as they overcome those challenges (Khalid et al., 2019). These challenges enable these young players to confidently make decisions and competently handle daily life situations. One of the intriguing feature of the contemporary video games is that they allow extensive networking opportunity for gamers all around the globe where they collaborate, compete and interact. This can enhance their abilities contributing to a positive and healthy development. Keeping this in view, this research is focused on understanding the positive impacts of internet gaming in the developmental and cognitive domain of early adolescents who do not possess unhealthy gaming habits. The emphasis is on the improvement of analytical competence and Positive Youth Development as a result of internet gaming among early adolescents.

### **Internet Gaming**

Internet gaming refers to playing electronically controlled screen based games (Funk et al., 2003) that can be played anywhere and anytime through the internet (Yılmaz et al., 2022). It is considered to be highly interactive form of digital entertainment. These games have many million themes and goals (Granic et al., 2014) making the classification and categorization of online games even more difficult.

However, there are different classifications that various researchers use according to their theme and goal of study. Khan and Muqtadir (2016) have identified three different types of internet games like social network games, first person shooter games, and massively multiplayer games. Similarly, Yılmaz et al. (2022) have identified some basic classifications such as role-playing, simulation, action, adventure, strategy and sport. In simulation games, realistic scenarios based on manufacturing and construction are present (Braun et al., 2016). Sports games include a fictional situation based on sports (Salvat, 2007). Action games involve reacting to a situation that may include killing the opponent in order to achieve the goal (Nelson & Strachan, 2009). Role-playing games usually involve imaginary situation and settings in which the player freely explores or apply suitable strategies to unravel the mysteries of the game (Hitchens & Drachen, 2008). Adventure games involve exploration of the situations based on combinations and puzzles. Strategy games consist of situations where one may have to manage an economy while seeking protection against rivals (Braun et al., 2016). However, there are other types of games that are not specific to one category. Some of these games provide interconnected experiences for example platforms such as Twitch and Discord offer both the experience of gaming as well as social interaction by allowing players to form teams and interact with each other as they collaborate to find solutions within the game.

These games can be played with others who may or may not be physically present in the gaming environment or alone providing a competitive and/or collaborative platform through different gadgets including consoles, computers, mobile phones, Nintendo, play-station etc. (Granic et al., 2014). The social nature of today's games distinguish them from their predecessors. Contrary to the belief that gaming makes players socially isolated, in today's world over 70% gamers play games with their friends either cooperatively or competitively (Granic et al., 2014).



Internet games have also been known to be effective tools for training cognitions especially self-regulatory functioning, visual and attentional skills (Green & Bavelier, 2006). Game-designers often provide very less instructions to solve the problems in the game that allow the players a broad range of possible solutions to select from based on their intuitions and past experiences. Children and youth learn problem-solving skills through trial and error and these open-ended problems provide a better platform for experimentation (Prensky, 2012), hence aiding in the development of analytical competence.

### **Analytical Competence**

Analytical competence refers to the ability of a person to systematically observe, conceptualize, logically reason, apply the right strategy through analytical thinking and make decisions to solve a problem or reach a goal (Rahman, 2019). It is important for young individuals to develop problem solving skills to successfully survive their daily life problems that can be personal, interpersonal, intrapersonal and/or related to community and society.

Different models explain process of problem-solving in terms of different stages. Wallace et al. (2012) presented a seven stage model for problem-solving that includes gathering and organizing the information; identifying the problem; generating possible solutions; deciding which solution is the best; implementing the solution; evaluating; and communicating. Although it was suggested that the division of problem-solving into stages can overly simplify the process and may ignore the complexity of real-life problem solving as well as the individual differences in coping with different problems. Heppner and Petersen (1982) presented three dimensions that were common across different stages and models. These were based on the perceptions of different individuals about real life problems and their solving capabilities. These three dimensions constitute the analytical competence of individuals. These dimensions are as follows:

### ***Problem-Solving Confidence***

Problem-solving confidence refers to the self-assuring capacity while being engaged in problem solving activities (Heppner & Petersen, 1982). It is the confidence that the person has the required ability to effectively cope with the problematic situations. Problem-solving confidence has a negative association with negative feelings such as anger and depression while a positive association with personal control and curiosity implying that successful problem-solvers prefer to systematically engage in behaviors that help in finding best possible solutions (Heppner & Baker, 1997). Problem solving and self-efficacy shares a positive correlation, as in order to overcome any conflicting situation an individual must possess self-confidence to take control of the situation and provide positive outcomes (Fitriani et al., 2020).

### ***Approach Avoidance Style***

The second dimension is approach-avoidance style, which refers to the behaviors of individuals towards the problematic situations. They either approach the problem or avoid it. The discussion on approach avoidance style goes a long way in psychology. Many researches have argued that people who are better at problem solving tend to approach their problems with optimistic perspective. It is known to be a characteristic of resilient adults who have overcome their childhood traumas as a result of application of their problem approach style (Heppner & Baker, 1997). It is associated with positive coping strategies and self-control.

### ***Personal Control***

Personal control refers to the ability of a person to control and effectively regulate one's emotions and behaviors as they are met with any problematic situation. People with better personal control are able to keep themselves in emotional and behavioral equilibrium which allows them to

efficiently explore possible solutions by utilizing their problem solving skills. It has been found to have a negative association with problem avoidant style behaviors as well as overly-reactive emotions (Heppner & Baker, 1997).

Acquisition of these skills allow young individuals to feel socially accepted among their peers, strengthen their mental health and quality of life and feel more autonomous in their lives (Yılmaz & Griffiths, 2023).

### **Positive Youth Development**

Positive youth development (PYD) refers to a strength based approach suggesting that young people possess the necessary resources that can be nurtured and cultivated in order to develop positive qualities (Kadir & Mohd, 2021). It asserts that adolescents are thriving young people and defies the deficit approach of other developmental models describing youth as broken or in danger of becoming broken or as problems to be managed.

Adolescence is the time period when complex physical, mental and social characteristics are changing in interrelated manner as an individual steps into the transitioning period of adulthood (Curran & Wexler, 2016). The stage starts in biology, as pubertal changes start to occur and ends in society, with socially and culturally constructed transitioning to adults (Lopez & Snyder, 2009). This period is recognized by its sensitivity to potential threats as well as opportunity for positive and healthy transformation (Curran & Wexler, 2016). Studies showed that development during this time period is not the same for all individuals and highlighted that adolescents have core values such as social justice and importance of education. This directed the scientist's attention towards positive psychology which lead to the perspective of positive youth development (Lopez & Snyder, 2009).

Lerner (2009) proposed that PYD is a process that promotes the five C's that further lead to development of the sixth C in adolescents as they struggle with changes within their bodies and shape behaviors as they come in contact with the societal and cultural expectations of their roles. These six components are as follows

### ***Competence***

Competence refers to the ability of an individual to deal with everyday stressors using the cognitive abilities in different domains of life. This includes social competence in which an individual possess required interpersonal skills for conflict resolution. Cognitive competence is the ability to effectively plan and utilize decision making skills in order to deal with day to day situations. Similarly, academic competence is reflected through grades and performance in school. Vocational competence refers to dealing with stressors related to working habits and choices of career (Molenaar et al., 2013).

### ***Confidence***

Confidence refers to the person's belief in their own decisions, self-worth and efficacy or simply one's self-regard (Molenaar et al., 2013). It is the ability of a person to form and accomplish their goals. It is related to finding meaning and purpose in life such that when young people are motivated enough to form and accomplish short term and long term goals, they actively build their confidence (Kadir & Mohd, 2021).

### ***Character***

Character refers to the standards of behavior that are socially accepted and promotes social functioning. Adolescence is the time period that is highly influenced by external environment (Kadir & Mohd, 2021). The society and culture constitute this external environment and has a huge

impact on a thriving young individual. Character reflects the sense of right and wrong, moral values and integrity that is inculcated through the societal and cultural norms, rules and role expectations and a sense of respect for these regulations (Molenaar et al., 2013).

### ***Connection***

Connection defines positive relationships an individual has with family members, peers and communities. In order to form these positive connections, it is important that adolescents experience supportive relationships as they transition towards adulthood (Kadir & Mohd, 2021). Although, a good and understanding communication and connection with parents or family members can lead to a positive development, this time period is characteristic of the shift to peer networking as young people struggle to find identity through group memberships. Forming good and healthy peer networks can greatly influence adolescents as it increases pro-social behaviors and decreases the adverse outcomes such as unhealthy habits (e.g substance abuse).

### ***Caring***

It refers to the person's empathy and sympathy towards other people and communities. Caring reflects the compassion an individual learns and portrays through understanding the pain of others (Shek et al., 2019). These are also learnt through their understanding of external environment as adolescents learn their own emotions. They will become more compassionate and caring if they experience support and understanding from their environment.

### ***Contribution***

All of the other 5 C's lead to the 6<sup>th</sup> C that is the extent to which all of the other factors lead the individual to contribute towards the society (Shek et al., 2019). As an individual learns to overcome their own crisis through cognitive abilities, confidence and develops a sense of

compassion and character, forming better relationships will allow them to contribute effectively to their own surroundings in different ways.

Gaming has the potential to amplify a person's mental health and well-being (Iacovides & Mekler, 2019) by positively influencing self-efficacy, competency, resilience and creativity (Mercier & Lubart, 2023). Gamers are often more optimistic as they play through different difficulty levels by trial and error. It reflects their confidence and a more approaching style to cope with the problematic situation while interacting with peers in games where they need to work together as a group to solve a problem. Thus, gaming can provide positive outcomes that can influence the development of an individual.

### **Literature Review**

In a study conducted by Clemmens (2024), the primary objective was to explore the multifaceted impacts of video games on children. Clemmens focused on a diverse sample of youth, encompassing various age groups and backgrounds to ensure comprehensive results. The findings of the study were remarkably positive, indicating that video games not only foster problem-solving and social skills among children but also encourage physical activity. These outcomes suggest that video games could be a valuable tool in supporting the holistic development of children. Conclusively, Clemmens' research sheds light on the potential of video games as beneficial rather than detrimental and underscores the necessity for continued research to further elucidate the advantages they offer to the youth.

A systematic review by Griffith & Yilmaz (2023) aimed to explore the empirical evidence regarding children's social problem-solving (SPS) skills in the context of playing both videogames and traditional games. The researchers systematically reviewed 35 studies, focusing on game

content, production purpose, and effectiveness. The sample population varied across the included studies, which were conducted globally. The review aimed to generalize data concerning the influence of game content and production purpose on children's social problem-solving abilities. The findings showed that both video games and traditional games positively influenced children's social problem-solving skills, videogames produced for educational purposes, serious games, and entertainment games were found to be effective in promoting children's SPS (Social Problem Solving) skills. Simulation games were the most preferred genre among the videogames studied. It was also noted that videogames did not show significant gender differences in SPS skills.

A study was conducted by Maurya (2023) to explore the intricate effects of online gaming on children's behavior in the Digital Gyan report. The study targeted a specific population of children engaged in online gaming, aiming to provide a nuanced understanding of how this activity influences their development. The findings were twofold: on one hand, gaming was associated with enhanced cognitive abilities, including problem-solving, decision-making, and spatial reasoning, as well as improved social skills fostered by virtual community interactions. On the other hand, the study highlighted potential risks, such as negative impacts on academic performance and the possibility of addiction due to excessive gaming. Maurya concluded that while online gaming has its merits in cognitive and social development, it is crucial to practice moderation to prevent adverse effects and ensure a balanced approach to online gaming for children.

A synthesis of research findings by Sarah (2023) to explore the potential benefits of video games in enhancing problem-solving skills. The study's objective was to understand how video games, particularly strategy games, stimulate cognitive processes and contribute to skill development. While the study did not specify a particular population, it broadly addressed gamers

who engage with complex challenges within video games. The findings indicated that video games indeed require players to utilize critical thinking, pattern recognition, and logical reasoning, thereby improving problem-solving skills. Strategy games stood out for their role in fostering strategic thinking and decision-making abilities. In conclusion, Sarah's research supports the idea that video games can be a valuable tool for cognitive development, particularly in the realm of problem-solving and decision-making skills.

A study conducted by Rava (2023) delved into the impact of indoor and outdoor games on the mental health of children in Ahmedabad. The research was driven by the objective to identify both the positive and negative effects that different gaming environments have on young minds. The sample consisted of 160 children. The study's findings revealed that engaging in games significantly contributes to mental well-being, nurturing qualities such as confidence, discipline, and tolerance, and cultivating a sense of enthusiasm among children. In conclusion, Rava's research underscores the importance of games in child development and mental health, advocating for their role in fostering a well-rounded and resilient youth.

A synthesis of various studies done by Nabil (2023) assessed the impact of video games on cognitive skills enhancement. The objective was to determine how specific types of video games, particularly those involving complex puzzles, strategic planning, and immersive storytelling, affect cognitive abilities like attention, spatial reasoning, and memory retention. While the synthesis did not focus on a singular population, it encompassed a broad range of gamers engaging with these types of games. The findings suggested that such games indeed stimulate the brain, leading to improvements in cognitive flexibility. Nabil concluded that engaging in certain video games could be beneficial for cognitive skill development, reinforcing the potential of video games as a tool for cognitive enhancement.



Yılmaz et al. (2022) conducted a cross cultural study to investigate the relationship between internet gaming and social problem-solving skills among children from British and Turkish backgrounds. The study meticulously assessed a sample of children from these two distinct cultures, aiming to discern the influence of gaming habits on their social competencies. The results were enlightening; children who engaged in video gaming for up to one hour per day demonstrated superior social problem-solving abilities compared to their counterparts who played for four or more hours. Furthermore, the study revealed that games designed with an educational or serious intent were linked to positive youth development indicators in both cultural groups. The study found no significant differences in the social problem-solving scores between the British and Turkish children, suggesting that the benefits of moderate gaming and educational games transcend cultural boundaries. The conclusion drawn from Yılmaz et al.'s research is that while internet gaming can be advantageous for developing social problem-solving skills, moderation is key, and the educational value of games plays a pivotal role in fostering positive development in children across different cultures.

A study conducted by Sauce et al. (2022) critically assessed the link between the screen habits of American children and the evolution of their cognitive abilities over time. The extensive research encompassed a significant sample of 9,855 American children aged 9-10, who were meticulously followed up after a span of two years to track and measure cognitive development. The study unearthed a striking correlation: children who dedicated an above-average amount of time to playing video games exhibited a more pronounced increase in intelligence than those who did not, surpassing the average growth rate. In contrast, the study found that other screen activities such as watching TV or engaging with social media did not yield a similar effect on cognitive advancement. The conclusion drawn from these findings posits that while certain screen activities

like video gaming can be cognitively enriching, others remain neutral, emphasizing the importance of discerning screen habits for fostering intellectual growth in children.

A longitudinal study by Pellas (2022) carried out in Singapore, spanning two years, with the aim of examining the effects of video gaming on children's mental health. The study involved a population of children who were observed over this period to determine the impact of gaming habits. The findings indicated that severe gaming addiction could lead to various mental health issues, such as depression and anxiety, as well as negatively affect academic performance. However, the study also found that reducing gaming addiction was associated with decreased levels of these mental health symptoms and an improvement in academic results. The conclusion of the study suggests that while excessive gaming can be detrimental, a moderate and balanced approach to gaming could potentially have beneficial effects on both mental health and academic achievement.

A study conducted by Goodwin (2022) provided an insightful examination into the positive effects of video gaming on brain development in children. The research was specifically designed to investigate the relationship between video gaming and cognitive functions such as working memory and impulse control. It involved a diverse group of 9-and 10-year-olds, with a significant representation of girls, which stood at 63%, reflecting the universal appeal of gaming across genders. The findings of the study were quite revealing, showing that children who engaged in video gaming outperformed their non-gaming peers on cognitive tasks. This supports the growing body of evidence that associates video gaming with improvements in various cognitive skills, including attention, working memory, creativity, problem-solving abilities, and even an increase in IQ. The study concludes that video games have the potential to be a powerful tool in promoting

cognitive development among children, thereby contributing positively to their overall brain growth.

A study conducted Gan et al. (2022) aimed to explore the relationship between positive youth development (PYD) and internet gaming disorder (IGD) among Chinese adolescents. The researchers used a sample of 1970 adolescents that were aged 11–18 years and found out that PYD attributes negatively predicted IGD. The study also discovered that depression mediated the relationship between PYD and IGD, and also gender moderated the relationship between depression and IGD, with boys with depressive symptoms more likely to indulge in IGD than the girls. These findings suggested that cultivating PYD attributes could be a beneficial approach to preventing or reducing depression and IGD among adolescents.

Another study carried out by Adipat et al. (2021) was a pioneering effort to integrate educational games into university curricula, aiming to foster lifelong and interdisciplinary learning among students. The study targeted university students, introducing them to various social skills and knowledge training through gaming. This approach was intended to bridge the gap between gaming and academic learning, emphasizing the role of collaborative learning in the acquisition of cognitive and social skills. The findings highlighted that educational games could effectively impart important principles and skills necessary for collaborative learning environments. In conclusion, the study by Adipat et al. established that educational games could be a valuable addition to university education, providing a dynamic and interactive platform for students to develop essential skills for their academic and professional futures.

According to a study by Kadir and Mohd (2021) delved into the core aspects of Positive Youth Development, particularly the five C's, and their influence on well-being, leading to a purposeful life filled with hope. The research encompassed a sample of 400 Malaysian

undergraduate students from 15 different universities, providing a broad perspective on youth development. The study's findings highlighted a significant relationship between confidence and connection with a sense of purpose and hope. These elements were found to be motivational forces that drive individuals to set and achieve life goals and foster strong interpersonal connections. Additionally, the study revealed that hope could instigate a sense of personal control, empowering individuals to persevere through crises. Overcoming such challenges was observed to further bolster one's confidence and sense of connection. In conclusion, Kadir and Mohd's research underscores the interconnectedness of the five C's of Positive Youth Development with personal control, an aspect of analytical competence, demonstrating how these factors collectively contribute to the resilience and growth of young individuals.

Another study by Shoshani et al. (2021), investigated the relationship between attachment styles and empathy in relation to pro-social and interpersonal video game play among Israeli children and adolescents. The research encompassed a sample of 1,391 participants aged 9-15 years, aiming to assess how these factors influenced social interactions and well-being. The study's findings revealed that children and adolescents who engaged in pro-social and interpersonal gaming experienced better social interactions and enhanced overall well-being. Moreover, it was observed that those with secure attachment styles exhibited greater empathy during gameplay. The study concluded that internet gaming could significantly contribute to the development of better peer connections and pro-social behaviors, thereby aiding in the cultivation of caring and empathetic moral values in young individuals.

A study by Choi et al. (2020) emphasized the role of commercial video games in enhancing the cognitive abilities of players. The literature was reviewed, and commercial video games were classified into five categories including traditional games (puzzle, cards, and board video games),

simulation games (sports, driving, building up cities), strategy games, action games and fantasy games. Six cognitive functions were identified that share a positive relation with commercial video gaming. It included attention skills, visuo-spatial skills, and enhancing declarative memory. Maintenance of presented visual stimuli, navigation skills and problem-solving skills also had a positive association with commercial video games. It was also seen that reasoning and increased working memory of players showed improvement of divided attention. Action video games were associated with better selective attention. Video gaming expertise and individual differences due to age acted as modulating factors. This suggests that internet gaming can be an important source of increasing analytical competence.

Robson et al. (2020) in their meta-analysis review of 150 comprehensive literature investigated the role of self-regulation in the healthy development of young children. The study aimed to understand the correlation between self-regulation, social competency, and academic achievement, as well as its inverse relationship with negative outcomes like depression, obesity, aggression, and criminal behavior. Although the study did not focus on a specific population, it broadly addressed the developmental stages of young children. The findings highlighted that self-regulation, which involves the control of emotions and behaviors, is crucial for healthy development and is positively linked with social and academic success. Conversely, a lack of self-regulation is associated with various adverse conditions. The study concluded that fostering personal control through self-regulation is essential for positive adolescent development, emphasizing its significance as a foundational element in the upbringing of children.

Similarly, a study by Fitriani et al. (2020) set out to examine the effects of problem-based learning on students' self-efficacy. The research targeted a group of students who were introduced to problem-solving activities as part of their learning process. The findings indicated a clear

association between problem-based learning and an increase in problem-solving skills, which in turn, were positively correlated with heightened self-efficacy. Students reported feeling more confident in their ability to handle and overcome challenging situations. The study concluded that incorporating problem-solving activities into educational methods can significantly boost students' confidence and equip them with the necessary skills to tackle real-world problems effectively.

An edited version of the book by Lee et al. (2020) provides a comprehensive description and discussion on the theory and practice of digital positive youth development games. It focused on the design, implementation, and initial evaluation of games aimed at promoting youth development and preventing common adolescent problems. The book suggested that specially designed games are effective measures to promote youth development and prevent some common adolescent problems from declining in contemporary urban societies.

A survey study based on the impact of video games on behaviors of the players by Quwaider et al. (2019) synthesized various research findings to assess the impact of video games on player behavior. The objective was to understand how different types of games affect cognitive and social skills. The study drew upon a wide array of previous studies, thus not focusing on a specific population but rather on the general gaming community. The findings were diverse and positive, indicating that action, strategic, and role-playing games enhance analytical competence, visuo-spatial processing, and problem-solving capabilities. Additionally, strategic and puzzle games were linked to increased intelligence, mood management, and self-esteem, while cooperative and pro-social games were found to improve leadership skills and promote helping behaviors. The study concluded that video games contribute to cognitive development, character formation, and social connection, with pro-social themed games particularly effective in fostering

contributing and caring behaviors among players. This body of evidence suggests that video games can be a powerful medium for positive personal and social development.

Similarly, a qualitative analysis of online survey by Iacovides and Mekler (2019) aimed to understand the role of gaming as a coping mechanism. The sample included 95 participants. The survey targeted a diverse group of individuals to gauge the emotional and psychological benefits of gaming. The findings revealed that gaming served as a significant means of coping for many, providing relief from emotional distress without being overwhelming. Participants reported that gaming facilitated self-reflection and meaning making, as well as situation analysis within the game context. Moreover, the study found that gaming could lead to personal growth by offering activities that enhance confidence. It was also noted that the social connections made through gaming platforms were crucial in providing support during everyday life challenges. The study concluded that self-regulation and reflection, fostered through gaming, are vital for overcoming obstacles and are instrumental in the development of confidence and character building.

A study by Stone et al. (2018) focused on the significant role of online gaming in the lives of children with autism spectrum disorder. The study involved a small, targeted sample of three boys diagnosed with the disorder, along with their teachers, to observe the effects of online multiplayer games like Minecraft. The findings were positive, showing that these games had a beneficial impact on the children's social skills and confidence levels. The children were able to form connections with others on the online platform and engage in effective interactions with fellow players. They also displayed increased confidence during conversations about the games and were able to establish eye contact with researchers during interviews. Additionally, the games facilitated their ability to understand and replicate social interaction cues. This study suggests that

online gaming can be a valuable tool for children with autism to enhance their social skills and self-assurance.

Adachi and Willoughby (2017) provided a significant exploration of the connections between self-determination theory and positive youth development. The study's objective was to understand how fulfilling the psychological needs of autonomy, competence, and relatedness, as outlined in self-determination theory, could lead to beneficial outcomes such as improved well-being, optimal functioning, and enhanced learning. While the study did not focus on a specific population, it analyzed a broad range of research to draw its conclusions. The findings indicated that playing games provided individuals with a sense of autonomy through decision-making within the gaming environment, along with instant feedback that reinforced their choices. This autonomy, coupled with the mastery of game mechanics, led to increased competence and intrinsic motivation, contributing to overall well-being. Additionally, strategic games were found to bolster cognitive skills. The study concluded that video games could be a practical application of self-determination theory, promoting positive development in youth by satisfying key psychological needs.

Another study conducted by Posso (2016) examined the correlation between frequent online gaming and academic performance. It provided a comprehensive analysis of data from over 12,000 Australian high school students who participated in the 2012 Program for International Student Assessment (PISA). The population in question comprised a large sample of students, providing a robust dataset for analysis. The study's findings were significant, revealing that students who engaged in online gaming almost daily scored 15 points above the average in mathematics and reading, and 17 points above average in science. These results suggest a strong association between regular video game usage and enhanced intellectual functioning, as well as



overall school competence. The study concluded that there is a potential link between playing video games and improved academic outcomes, highlighting the importance of considering the role of gaming in educational contexts.

A study by Jones et al. (2014) set out to explore the role of video games in enhancing mental well-being among adolescents. Utilizing Huppert's proposition and Seligman's PERMA theory, the researchers aimed to pinpoint the attributes of games that contribute to positive emotions, functioning, and social interaction. The study focused on middle-school students and compared the mental health of moderate gamers with non-gamers and those who played excessively. The findings revealed that students who played video games in moderation reported better mental health outcomes than their peers who did not game or who gamed excessively. The research concluded that a balanced approach to video game play is beneficial for the mental health of adolescents, reinforcing the notion that video gaming, when done in moderation, can be a component of a healthy lifestyle for young individuals.

Another study conducted by Yoo (2024) meticulously examined the complex relationship between online gaming and emotional intelligence among Pakistani youth. The research aimed to identify longitudinal patterns of gaming time over five years, ranging from high-decreasing to low-increasing gaming time, and to understand their association with various psychosocial factors. The study involved a diverse group of Pakistani adolescents and scrutinized factors such as gender, self-control, loneliness, academic stress, parental behaviors, and friend support. The findings indicated that while impulsivity was a significant factor in Internet Gaming Disorder (IGD), emotional intelligence played a mediating role, influencing overall well-being. The study underscored the necessity of recognizing these gaming patterns to craft effective interventions for excessive gaming. Importantly, it concluded that moderate gaming could enhance cognitive

abilities and interpersonal relationships, suggesting that gaming, when balanced, has the potential to positively impact adolescent development.

A study conducted by Chachar and Shaikh (2023) was an in-depth investigation into the gaming landscape in Pakistan and its effects on gamers' mental health. The objective of the study was to assess both the beneficial and adverse aspects of gaming. The research encompassed a broad spectrum of gamers within Pakistan, analyzing how gaming influences cognitive and social skills, inspiration, validation, and a sense of purpose, as well as mental agility, self-discipline, and executive functions. The findings highlighted the positive impact of gaming on these areas, while also addressing the controversial topic of whether violence in video games translates to violent behavior in real life, suggesting that psychological evaluations should be considered on a case-by-case basis. In conclusion, the study by Chachar and Shaikh emphasized the complexity of gaming's influence on mental health and the importance of individual assessments when examining the potential effects of gaming-related incidents.

A pivotal study on the Pakistani youth was conducted by Khalid and Mukhtar (2022) provided a critical analysis of the impact of online gaming on the emotional intelligence and impulsivity among Pakistani youth. The study's objective was to explore the prevalence of Internet Gaming Disorder (IGD) and its relationship with emotional intelligence and impulsivity. It involved a sample of 387 Pakistani youths aged 15–24 years who were active online gamers. The participants completed several psychometric scales, including the Barratt Impulsiveness Scale (BIS), WHO-5 Wellbeing Scale, Wong, and Law Emotional Intelligence Scale (WLEIS), and Internet Gaming Disorder Scale–Short-Form (IGDS9-SF). The research revealed that a significant proportion, 58.9%, exhibited high levels of IGD. Path analysis indicated that impulsivity was a partial mediator between emotional intelligence and IGD, which negatively affected well-being.

Moreover, a strong correlation was found between impulsivity and IGD. The study concluded that enhancing emotional intelligence could potentially reduce the adverse effects of impulsivity related to gaming, suggesting that targeted gaming interventions could be beneficial in promoting controlled gaming and mitigating the negative impacts associated with excessive gaming behaviors.

Similarly, another study conducted by Rehman et al. (2022) critically examined the impact of digital technology on the literacy levels of Pakistani youth aged 15-24 years. Conducted across five universities, the study involved a sample of 110 students and aimed to evaluate how digital technology affects literacy, its potential to enhance academic learning, and the challenges of excessive digital exposure. The findings revealed that digital tools and applications have a significant positive effect on perceptive skills, confidence, and the development of communication and research abilities. However, the study also noted that certain negative consequences of digital technology use require careful consideration to fully realize its benefits. In conclusion, the study by Rehman et al. highlighted the dual nature of digital technology's influence on literacy, underscoring the need for a balanced approach to harness its educational advantages while mitigating potential drawbacks.

In a qualitative study by Khalid et al. (2019) aimed to investigate the influence of gaming habits on the academic learning of adolescents. Conducted through interviews with a group of 36 informants aged 13-19 from elite private schools, the study sought to understand how gaming affects cognitive and subject-based learning. The findings indicated that gaming had a positive impact on enhancing cognitive skills, with students showing increased confidence and a keenness to explore and learn. Additionally, the study observed that online gaming contributed to the development of social skills and provided a platform for students to compete and collaborate with

others, fostering a sense of competence and connection. In conclusion, Khalid et al.'s research highlighted the beneficial effects of internet gaming on cognitive skill enhancement and the cultivation of confidence, competence, and social connectivity among young learners.

A qualitative study conducted by Batool et al. (2019) was centered on the educational advantages of gaming and its role in academic problem-solving. The study's objective was to assess how gaming influences cognitive abilities and academic performance among youth. It focused on a selected group of students from elite economic class private schools, providing a context for understanding gaming's impact in a specific socioeconomic setting. The findings underscored that gaming fosters quick thinking, goal-oriented behavior, and resilience in facing challenges. Additionally, it was noted that gaming enhances social communication, problem-solving, and information literacy skills. The study concluded that video games serve as a significant educational tool, offering numerous benefits that can aid in the educational development of young individuals, especially those from privileged educational backgrounds.

A comparative cross-sectional study conducted by Hisam et al. (2018) at the Army Medical College, National University of Medical Sciences, Rawalpindi was a comparative cross-sectional analysis that aimed to evaluate the impact of video gaming on teenagers' cognitive abilities, with a particular focus on analogy, processing speed, deductive reasoning, and mathematical intelligence. The sample included 171 students from two schools in Rawalpindi. The study compared the cognitive skills of gamers with those of non-gamers. The findings revealed that teenagers who engaged in video gaming demonstrated enhanced cognitive abilities in the aforementioned areas. The study concluded that video gaming could positively affect cognitive development in children, with gamers showing a broader range of cognitive skills, particularly in

analogy, processing speed, deductive reasoning, and mathematical intelligence, thus contributing to the evidence that video gaming can be beneficial for cognitive growth in the youth.

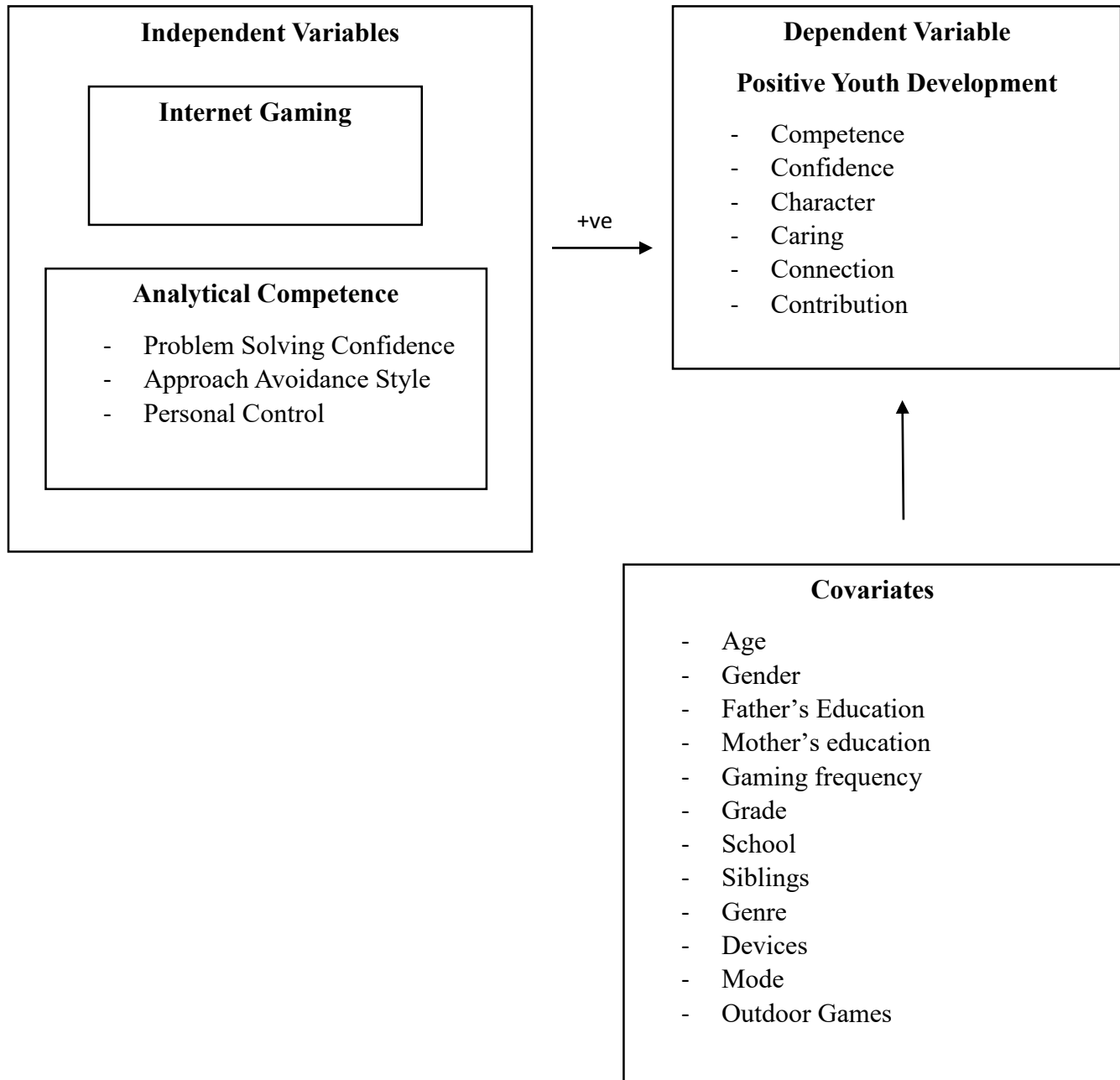
The literature highlights the numerous ways in which internet gaming can be beneficial for psychological development of individuals. Major focus of many studies was reasoning, emotional intelligence, cognitive abilities, attentional skills, learning and academic performance. This means that gamers often have enhanced problem-solving capabilities which helps them become confident in approach the problem and self-regulating their emotions. This leads to development of competitiveness, and confidence in their other activities. The vast networking platforms provide evidence for increase in connectivity with peers from around the world. The gaming genres have been seen to inculcate compassion in players with their pro-social themes and cooperative playing. This helps the individuals in creating a high value character and contribute to their surrounding effectively.

### **Theoretical Framework**

Relational developmental theory proposed by Lerner et al. (2014) is the leading framework in the developmental science. The core of this theory lies in the fact that the whole functions as a result of interdependence of its parts (Ettedal et al., 2017). It emphasizes that human development cannot be explained on the basis of either only individualistic characteristics or only in context of resources in the surrounding. In fact individual's development is based on the relationship between individual's strengths and developmental assets (context). The positive outcome that is achieved due to their positive relation is termed as adaptive developmental regulation (Lerner et al., 2014). It is also important to understand that contexts are complex and do not exist in isolation and an individual cannot always act in a way for it to be beneficial at all levels of multiple contexts.

In accordance with this theory, internet gaming is a resource present in the surrounding of adolescents that acts as a developmental asset as it positively aligns with their individualistic strength that is analytical competence. The adaptive developmental regulation that occurs as a result of this positive relation is the positive youth development allowing adolescents to develop proficiency in six categories of confidence, competence, caring, connection, character and contribution. Since context does not occur in isolation, other factors such as age, school, gender, genre of gaming etc. are also likely to effect the positive youth development.

## Conceptual Framework



## **Rationale**

The enhancement of technology and increased popularity of gaming has attracted many young individuals, especially early adolescents. There have been significant changes in preferences of children opting to play games on the internet rather than playing outdoor games (Khalid et al., 2019). Since its origin internet gaming has always been viewed in a negative connotation, focusing on the cons of the activity only (Kuss, 2013). This highlights the scarcity of the research on its positive impact, but in recent years, due to an increased interest and spending on this activity has garnered the interest of the researchers to find out the potential impact and benefits it has on behavior on early adolescents. To fully understand its impact, we need to develop a vaster approach investigating both sides of internet gaming. As in comparison to the past, the games developed today have become more complex, strategic, and modern targeting the beneficial aspects in social, cognitive, and motivational domains. Studies showed that internet gaming has proved to enhance visual spatial skills. Moreover, it also enhances the problem-solving ability of the gamers (Granic et al., 2014; Jackson et al., 2012; Uttal et al., 2013). Hence, gaming done in a controlled manner could help develop several cognitive skills including analytical competence and many abilities such as confidence and competence that are major aspects of Positive Youth Development.

In our Pakistani culture, playing outdoor games have always been considered as a positive activity meanwhile gaming is seen in a negative light. However, the phenomena that many children playing outdoors have experienced verbal, mental, physical, and at times even sexual abuse is ignored. The literature revealed that in Pakistan on average more than 10 children aged 6-15, who prefer to play outdoor games without adult supervision, were sexually abused daily during the first half of 2021 (Sahil, 2021). Another review showed that sexual abuse increased in Pakistan by a



staggering 33 percent in 2022. The significant part was that these children were mostly abused in open spaces like streets, fields, and outdoor areas (Tribune, 2023). Hence, amidst all these factors the idea of children spending their leisure time in a safe environment, under the supervision of their parents or guardian, is the most favorable option. Internet gaming provides this safe source of not only entertainment but learning as well (Islam et al.2020).

Thus, the present study will provide us with conclusive evidence regarding all the issues addressed above and will help in spreading awareness about the positive role of internet gaming in fostering analytical competence and positive youth development. Moreover, it will help in changing the perception of gaming as a negative habit.

### **Objectives**

1. To investigate the positive relationship between internet gaming, analytical competence (problem-solving confidence, approach-avoidance style and personal control) and positive youth development (confidence, competence, caring, character, connection and contribution) among early adolescents.
2. To investigate the predictive roles of internet gaming and analytical competence on positive youth development.
3. To study the impact of demographic variables (age, gender, grade, school... etc.) on positive youth development.

### **Hypotheses**

1. There will be a positive relationship between internet gaming, analytical competence (problem-solving confidence, approach-avoidance style and personal control) and positive

youth development (confidence, competence, caring, character, connection and contribution) among early adolescents.

2. Internet gaming and analytical competence will positively predict positive youth development.
3. Demographic variables (age, gender, grade, school... etc.) will have an impact on positive youth development.

## CHAPTER II

### Method

The study aimed to investigate the relationship between internet gaming, analytical competence, and positive youth development.

### Research Design

The research used cross-sectional correlational research design.

### Sample

The sample of 303 adolescent participants was calculated using  $G^*$  power (Faul et al., 2009) (204) in which boys=181 and girls=122 with age range of 10-14 years ( $M=12.4$ ,  $SD=1.33$ ) were recruited using nonprobability purposive sampling technique from different public and private schools of Islamabad and Rawalpindi.

### Inclusion Criteria

1. Adolescents who have access to internet and a device to play games.
2. Adolescents who play at least one hour in a day.
3. Adolescents who play games for 5 days in a week.
4. Adolescents who have been playing for at least 6 months.
5. Adolescents who understand English language were included in the study.

### Exclusion Criteria

1. Adolescents who were not studying in mainstream school.
2. Adolescents who played for 40 hours or more per week were not selected for the study.
3. Adolescents with psychological or any learning disability were not selected for the study.

## **Operational Definitions**

### ***Internet Gaming***

Internet gaming refers to playing games online through electronic media such as console, tablet, smartphones or computer etc. These games can be played individually, collaboratively or competitively over the internet platform. High scores represent higher involvement in gaming while lower scores represent lower online gaming (Hall et al., 2013).

### ***Analytical Competence***

Analytical competence refers to ability to confidently approach a problem in order to find the best possible solution while regulating their emotions and behaviors. High scores represent sufficient self-perceived problem-solving abilities (Heppner & Peterson, 1982). It comprises of three components that are as follows.

### ***Problem Solving Confidence***

Problem-solving confidence is the trust in the ability to effectively cope with problems. High scores on PBC represent higher level of perceived confidence to tackle problematic situations (Heppner & Peterson, 1982).

### ***Approach Avoidance Style***

It is the general tendency to either avoid or approach the problem. High scores represent an individual's ability to approach the problem while low scores represent a more avoidant style to cope with problematic situations (Heppner & Peterson, 1982).

### ***Personal Control***

Personal control refers to the capability of an individual to control emotions and behaviors during conflicting or problematic situations. High scores on personal control suggest that a person has more positive perception of handling their emotions and behaviors effectively (Heppner & Peterson, 1982).

### **Positive Youth Development**

Positive Youth Development refers to the view that young individuals possess necessary resources within them that must be nurtured accordingly to gain positive outcomes and make them the strength of an adolescent as they transition into adults. These are based on competence, confidence, caring capabilities, connection with peers and surroundings, the character an individual forms and the ability to contribute to the society in positive way (Lerner, 2015). High scores on positive youth development inventory means healthy and positive outcomes of adolescents' development.

### ***Competence***

The ability to competitively act in different settings including work, home or any other social setting is considered as competence which measures self-perception of how well an individual can tackle everyday problems (Lerner, 2009). High scores represent higher levels of competence.

### ***Connection***

Connection is the ability to form better relations with family members and peers as well as the ability to work collaboratively in different settings (Lerner, 2009). High scores represent higher connectivity of individual with family and peers as compared to those who score low.

### ***Character***

Character is the understanding of what is right and wrong, and the ability to take decisions accordingly showing the moral grounds of individual. High scores on these items refer to strength of character and better moral grounds (Arnold et al., 2012).

### ***Caring***

Caring refers to the compassionate component of self and sense of social justice. High scores represent a higher empathetic and sympathetic level of an individual (Arnold et al., 2012).

### ***Confidence***

Confidence is belief in one's own self and an understanding of the ability to cope with problems being faced. High scores on this factor means that the person has high self-esteem and self-efficacy that helps them to cope with the problems (Arnold et al., 2012).

### ***Contribution***

As a person shows strength in all other five C's, they effectively contribute to not only their personal self, but also people around them and ultimately the society and community they live in. high scores on all other 5 C's mean that the person will have higher tendency to contribute which is reflected as high scores on this factor (Arnold et al., 2012).

### **Measures**

The following measure including demographic information sheet and informed consent were used:

1. Internet Gaming Disorder Test (IGDT-10) (Hall et al.,2013)
2. Problem Solving Inventory (PSI) (Heppner & Peterson, 1982)

3. Positive Youth Development Inventory (PYDI) (Arnold et al., 2012)
4. Demographic information sheet and informed consent

### ***Internet Gaming Disorder Test (IGDT-10)***

The internet gaming disorder test was developed by Dr. Orman Hall and a team of researchers at the University of Southern California's Institute for Creative Technologies. It comprises of 10 items. It is basically a brief screening instrument used to evaluate and assess the internet gaming disorder according to the criteria proposed in Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5), with the use of precise, clear, and accurate items with in the last 12 months, sample item (item 4) “Have you ever unsuccessfully tried to reduce the time spent on gaming”. A 3-point scale (0=Never, 1=Sometimes, 2=Often) is used to rate the items. According to the evidence obtained Cronbach’s alpha calculation for IGDT shows an internal reliability  $\alpha=.62-.69$

### ***Problem Solving Inventory (PSI)***

The problem-solving inventory was established by Heppner and Petersen (1982). It is a self-report inventory that was developed with the purpose to find out that how well individuals carry out their decision-making process specifically their problem-solving related decisions, accessing their problem-solving capabilities. It is a 35-item scale with three subscales i.e. problem-solving confidence, approach avoidance style, and personal control. Problem solving confidence has 10 items (items 5, 10, 11, 12, 19, 23, 24, 27, 33, 34), sample item, “I am usually able to think of creative and effective alternatives to my problems”. Approach avoidance style has 16 items (items 1, 2, 4, 6, 7, 8, 13, 15, 16, 17, 18, 20, 21, 28, 30, 31), sample item, “When a solution to a problem has failed, I do not examine why it didn’t work. Personal control has 5 items (items 3, 14, 25, 26, 32), sample item, “When my first efforts to solve a problem fail, I become uneasy about

my ability to handle the situation”. The items are scored on a 6-point scale (1= Strongly Agree, 2=Moderately Agree, 3= Slightly Agree, 4=Slightly Disagree, 5= Moderately Disagree, 6=Strongly Disagree). Cronbach’s alpha calculation showed internal consistency for Problem Solving Inventory,  $\alpha = .72$  to  $.90$

***Positive Youth Development Inventory (PYDI):***

This scale was developed by Arnold et al., (2012). This version by Arnold et al. was designed in a way that measures change in PYD programs. The items are composed in such a way that they follow the five Cs model of youth development measuring the concepts of competence, confidence, character, connection and caring and they lead to another 6 C called contribution. It is a 55-item scale that consists of 6 sub scales. Competence has 14 items (items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14), sample item, “I am a good student”. Character has 11 items (items 15, 16, 17, 18, 19, 20, 21, 22, 23), sample item, “It is important for me to do the right thing”. Connection has 8 items (items 24, 25, 26, 27, 28, 28, 30, 31), sample item, “I have a wide circle of friends”. Caring has 8 items (items 32, 33, 34, 35, 36, 37, 38, 39), sample item, “When there is a need I offer assistance whenever I can”. Confidence has 9 items (items 40, 41, 42, 43, 44, 45, 46, 47, 48), sample item, “I feel good about my scholastic ability”. Contribution has 7 items (items 49, 50, 51, 52, 53, 54, 55), sample item, “I take an active role in my community”. The items are scored on a 4-point scale (1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree). The Cronbach alpha calculation shows internal consistency  $\alpha = .92$

**Demographic Information sheet**

The demographic information sheet was used to gather data on age, gender, grade, type of school, playing duration and time each day and week, mode of playing and type of games played etc. of the child.



## **Procedure**

The permission for the scales were approved by their respective authors through email. A formal permission was obtained for data collection from different schools through an institutional letter. After the approval, various public and private schools were visited to collect the data. The participants were informed about the research procedure and were provided with informed consent. They were briefed about the research topics and objectives in detail and were given the right of withdrawal from the study at any time. Moreover, they were also assured regarding the confidentiality of data, and its use. The data was collected firsthand from the participants using questionnaires and pens/pencils and they were briefed regarding the approximate time which was 15-20 minutes that would take to complete the questionnaire. Then the participants were asked to answer honestly and carefully. All 303 participants returned the questionnaire upon completion, resulting in 100% response rate. Finally, the data analyses were performed to obtain the results of the research.

## **Ethical Considerations**

Research was conducted under strict ethical consideration guidelines.

- Permission was taken from the respective institutes before data collection.
- Permission from the authors of scales was taken before using them in the research.
- Informed consent was taken from the participants.
- Participants were assured that data will be kept confidential and will only be used for research purpose.
- Results of the study were accurately reported.

## CHAPTER III

### Results

The data was analyzed in four key steps. In step I descriptive statistics were calculated for demographic characteristics while descriptive statistics and reliability analysis were also calculated for internet gaming, analytical competence, and positive youth development. In step II pearson product moment correlation was carried out to examine the relationship between internet gaming, analytical competence (problem solving confidence, approach avoidance style, personal control) and positive youth development (competence, connection, character, caring, confidence, and contribution). Moreover, a pearson product moment correlation analysis was carried out with demographic variables (age, parents' education, playing time etc.) and positive youth development. In step III hierarchal multiple linear regression analysis was carried out to investigate the predictive role of internet gaming and analytical competence on positive youth development. Lastly, in step IV independent sample t test was carried out to see the differences of positive youth development among boys and girls and public and private sector of schools.

## Descriptive Statistics

The descriptive statistics of demographic characteristics (age, fathers education, mothers education, gaming frequency, gender, grade, type of school, siblings, genre, device, mode and outdoor games) of the participants are presented, also the descriptive statistics and reliability analysis of internet gaming, analytical competence (problem solving confidence, approach avoidance style and personal control) and positive youth development (competence, connection, caring, character, confidence and contribution) are presented.

**Table 1**

*Descriptive Statistics of the Demographic Characteristics of the Sample (N=303)*

Variables	<i>f</i>	%	<i>M</i>	<i>SD</i>
<b>Age</b>			12.4	1.33
<b>Father Education</b>			15.48	2.37
<b>Mother Education</b>			15.12	2.64
<b>Gaming Frequency in Hours</b>			2.38	1.5
<b>Playing duration in days</b>			4.56	2.23
<b>Playing duration in Years</b>			4.85	2.17
<b>Gender</b>				
Boy	181	59.7		
Girl	122	40.3		
<b>Grade</b>				
4	34	11.2		
5	50	16.5		

Variables	<i>f</i>	(%)	<i>M</i>	<i>SD</i>
6	34	11.2		
7	87	28.7		
8	98	32.3		
<b>School</b>				
Private	176	58.1		
Public	127	41.9		
<b>Siblings</b>				
1	61	20.1		
2	105	34.5		
3	374	24.4		
4	38	12.5		
5	13	4.3		
6	9	3		
7	1	.3		
8	1	.3		
9	1	.3		
<b>Game Genre</b>				
Action	139	45.9		
Puzzles	75	24.8		
Adventure	138	45.5		
Battle Royale	160	52.8		
Role Playing	62	20.5		

Variables	<i>f</i>	(%)	<i>M</i>	<i>SD</i>
Survival	142	46.9		
Sports and Racing	171	56.4		
Card and Board	55	18.2		
<b>Devices</b>				
Smartphone	211	69.6		
Tablet	87	28.7		
Console	87	28.7		
Laptop	106	35		
Desktop	60	19.8		
<b>Mode of playing</b>				
Single Player	276	91.1		
Multi Player	249	82.2		
<b>Outdoor Games</b>				
Yes	265	87.5		
No	38	12.5		

Note: *f*= frequency of demographic variables, %= percentage, *M*= mean and *SD*= standard deviation

Table I showed that the average age of the participants was found to be 12.4 years with standard deviation of 1.33. Average years of father's education was found to be 15.48 years with *SD*=2.37 while average years of mother's education was found to be 15.12 years with *SD*=2.64. The average gaming duration of participants was 2.38 hours on average of 4.56 days a week with *SD*=1.5 and 2.23 respectively. The average gaming experience of participants was 4.85 years with *SD*=2.17.

In a total sample of 303 participants, 181 individuals (59.7 %) were boys and 122 individuals (40.3 %) were girls. The data was collected from students of different grades with 34 participants (11.2 %) from grade 4, 50 participants (16.5%) from grade 5, 34 participants (11.2%) from grade 6, 87 participants (28.7 %) from grade 7 and 98 participants (32.3%) from grade 8. The sample was collected from both Public and Private schools of Islamabad and Rawalpindi with 176 participants (58.1%) from private schools and 127 participants (41.9%) from public schools. 139 participants (45.9%) preferred playing action games. Meanwhile 75 participants (24.8%) preferred puzzle games. Other than that, 138 participants (45.5%) chose adventure games, and 160 participants (52.8%) chose battle royale. 62 participants (20.5%) preferred role-playing games. While 142 participants (46.9%) prefer survival games. Moreover, 171 participants (56.4%) selected sports and racing games and 55 participants (18.2%) selected card and board games.

When participants were asked about the devices they use to play these games, 211 participants (69.6%) reported the use of smartphones, use of tablets and consoles was reported by 87 participants (28.7%). While 106 participants(35%) reported use of laptops and 60 participants (19.8%) chose desktop as their gaming source. 276 participants (91.1%) gamers preferred Single Player mode while 249 participants (82.2%). Out of the total 303 participants, 265 (87.5%) reported that they play outdoor games as well while 38 (12.5%) reported that they do not play any outdoor games.

**Table 2**

*Descriptive Statistics and Reliability Analysis of Internet Gaming, Analytical Competence (Problem Solving Confidence, Approach Avoidance Style, and Personal Control) and Positive Youth Development (Competence, Character, Connection, Caring, Confidence and Contribution) (N=303)*

Variables	Range					
	<i>k</i>	<i>M</i>	<i>SD</i>	<i>Actual</i>	<i>Potential</i>	$\alpha$
<b>Internet Gaming</b>	10	7.5	3.41	0-16	0-20	.61
<b>Analytical Competence</b>	35	105.6	16.46	48-141	35-210	.80
Problem Solving Confidence	11	29.07	8.43	11-55	11-66	.73
Approach Avoidance Style	16	47.83	9.84	21-76	16-96	.64
Personal Control	5	17.9	5.33	6-30	5-30	.62
<b>Positive Youth Development</b>	55	11.15	2.21	56-193	55-220	.91
Competence	14	26.41	5.97	1-3.57	1-4	.75
Character	9	16.21	4.15	1-4	1-4	.71
Connection	8	15.41	4.1	1-4	1-4	.68
Caring	8	14.77	4.16	1-3.88	1-4	.76
Confidence	9	16.33	3.23	1-2.78	1-4	.51
Contribution	7	13.1	3.85	1-3.71	1-4	.74

Note: *k*=number of items, *M*= mean, *SD*= standard deviation and  $\alpha$ = Cronbach alpha

The table shows the descriptive statistics and reliability analysis of the study variables including their sub scales. Mean, standard deviation and number of items in internet gaming,

analytical competence and positive youth development including their subscales were presented in the table.

Furthermore, the reliability analysis showed that cronbach alphas reliability for internet gaming was .61. Additionally, the reliability analysis showed that the cronbach's alphas reliabilities for analytical competence along with its subscales were .80, .73, .64 and .62.

Lastly, the reliability analysis showed that cronbach's alpha reliabilities for positive youth development along with its subscales were .91, .75, .71, .68, .76, .51 and .74.



### **Pearson Product Moment Correlation**

Pearson product moment correlation analysis was conducted to find the relationship between internet gaming, analytical competence (problem-solving confidence, approach-avoidance style and personal control) and positive youth development (competence, confidence, character, caring, connection and contribution). It was hypothesized that internet gaming, analytical competence and positive youth development will have a positive relationship. Moreover, pearson product moment correlation was conducted again to investigate the relationship between demographic variables and positive youth development. It was hypothesized that demographic variables will have a relationship with positive youth development.

**Table 3**

*Bivariate correlation between Internet Gaming, Analytical Competence(Problem Solving Confidence, Approach Avoidance Style and Personal Control) and Positive Youth Development(Competence, Connection, Caring, Confidence, Contribution and character)(N=303)*

Variables	2	3	4	5	6	7	8	9	10	11	12
1. <b>Internet Gaming</b>	.24***	.20***	.16***	.23***	.18***	.13*	.17***	.12*	.19***	.14*	.10*
2. <b>Analytical Competence</b>	-	.83***	.87***	.55***	.37***	.38***	.37***	.19***	.19***	.34***	.21***
3. Problem Solving Confidence		-	.57***	.24***	.38***	.38***	.38***	.21***	.18***	.34***	.24***
4. Approach Avoidance Style			-	.28***	.27***	.27***	.29***	.13*	.15***	.28***	.13*
5. Personal Control				-	.17***	.21***	.14***	0.07	0.08	.13*	.11*
6. <b>Positive Youth Development</b>					-	.78***	.78***	.78***	.77***	.75***	.78***
7. Competence						-	.49***	.52***	.44***	.46***	.50***
8. Character							-	.53***	.63***	.51***	.52***
9. Connection								-	.50***	.58***	.55***
10. Caring									-	.53***	.57***
11. Confidence										-	.58***
12. Contribution											-

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 3 showed the internet gaming was found to be significantly positively correlated with analytical competence and Positive youth development. There was a significant positive correlation between internet gaming, problem solving confidence, approach-avoidance style and personal control. Internet gaming shared a positive relationship with competence, confidence, character, connection, caring and contribution. Analytical competence was found to be significantly positively correlated with positive youth development as well as with competence, confidence, character, connection, caring and contribution. Problem solving confidence and approach avoidance style were found to be significantly positively correlated with positive youth development as well as with competence, confidence, character, connection, caring and contribution. Personal control was found to be significantly positively correlated with positive youth development, competence, character, confidence and contribution while there was no significant relation of personal control with connection and caring.

**Table 4**

*Bivariate Correlation between Demographic Variables (Age, Siblings, Father Education, Mother Education, Game Time in Hours, Days of Week, Duration in Years) and Positive Youth Development (N=303).*

Variables	2	3	4	5	6	7	8	9	10
1. Gender	-.12*	.15**	.08	.19***	.06	-.28***	-.22***	-.09	.001
2. School sector	-	-.41***	.02	.02	.10	.07	.10	-.03	.05
3. Age		-	-.003	.08	-.03	-.05	-.12*	.22***	.07
4. Siblings			-	-.05	-.11*	-.11*	-.08	-.17**	.18***
5. Father's Education				-	.42***	.04	-.03	.02	-.17**
6. Mother's Education					-	.14*	.008	.17**	-.08
7. Game Time in Hours						-	.43***	.21***	.02
8. Playing Duration in Days							-	.21	.02
9. Playing Duration In Years								-	-.045
10. Positive Youth Development									-

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Results of pearson product moment correlation showed that number of siblings was found to be significantly positively correlated with positive youth development while fathers' education(in years) was found to be significantly negatively correlated with positive youth

development. Gender, sector of school, age, mothers' education (in years), playing duration in days and playing duration in years were found to be non-significant with positive youth development.

### Hierarchical Multiple Linear Regression

Hierarchical multiple linear regression analysis was carried out to assess the predictive roles of internet gaming and analytical competence on positive youth development. It was hypothesized that internet gaming and analytical competence will be positive predictors of positive youth development.

**Table 5**

*Hierarchical Multiple Linear Regression Analysis predicting the outcomes for Positive Youth Development by Internet Gaming and Analytical Competence (N=303)*

Variable	B	95% CI for B		SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
		LL	UL				
Step 1						.059	.059*
Constant	95.18	62.36	128.0	16.67			
Father's Education	-1.56	-2.63	-.50	.54	-.18**		
Age	3.22	.13	6.32	1.57	.21*		
Step 2						.193	.134***
Constant	71.10	39.51	102.6	16.04			
Father's Education	-1.48	-2.47	-.49	.50	-.17**		
Age	1.59	-1.31	4.50	.14	.10		
Internet Gaming	.59	.10	1.30	.35	.10*		
Analytical Competence	.35	.23	.47	.06	.33***		

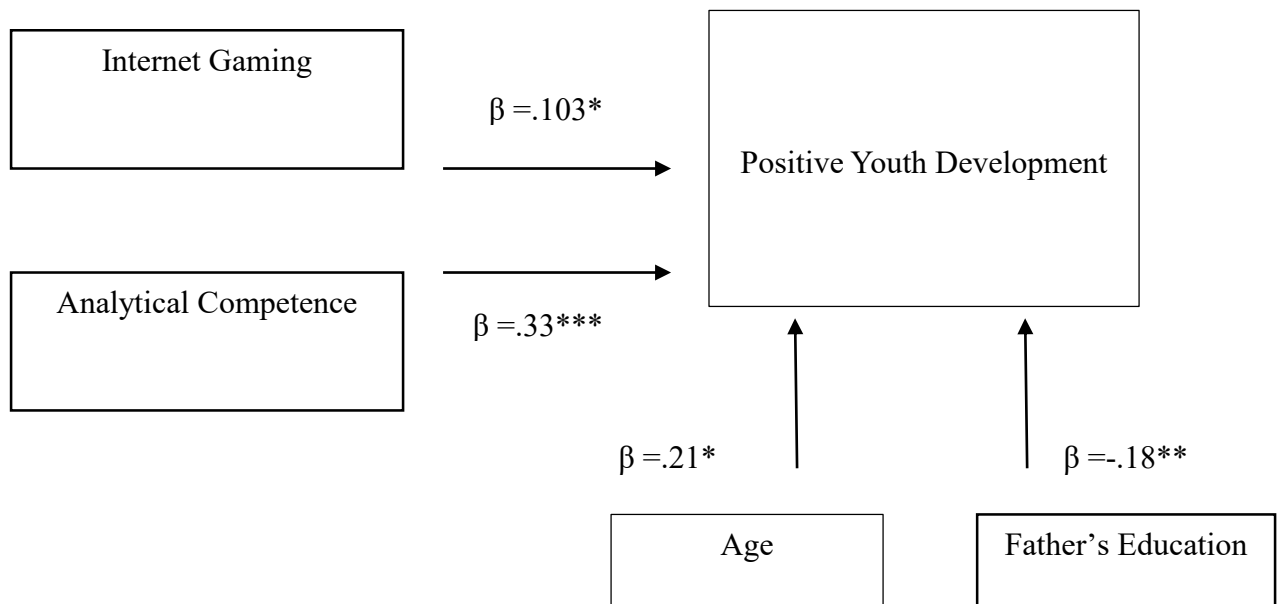
Note. CI = Confidence Interval, LL = Lower Limit, UL = Upper Limit

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Hierarchical multiple linear regression model indicated that in step 1, demographic variables were entered. It was found that fathers' education and age explained 5.9% of the variances in positive youth development with  $F(10, 287) = 1.8, p < .05$ . The findings revealed that age significantly positively predicted positive youth development while fathers' education in years significantly negatively predicted positive youth development. In step 2, study variables that were internet gaming and analytical competence were entered. The results revealed that internet gaming and analytical competence explained 13.4% unique variances in positive youth development with  $F(12, 285) = 5.68, p < .001$ . These results depicted that internet gaming and analytical competence significantly positively predict positive youth development.

The assumptions of independence of residuals was found to be met (Durbin Watson value = 1.98) and there was no multi-collinearity (Tolerance value for each variable  $> .2$ ).

### Statistical Model



### Independent Sample t-test

Independent sample t-test were carried out to assess differences of positive youth development among boys and girls as well as among students in different public and private schools.

**Table 6**

*Independent Sample t-test Comparing Positive Youth Development Across Gender (N=303).*

Variables	Boys (n=181)		Girls (n=122)		t(301)	p	Cohen's d
	M	SD	M	SD			
Positive Youth Development	102.30	19.13	102.33	20.98	-.014	.98	-.002

Note: M=Mean, SD=Standard deviation, p=significance level

The assumption of homogeneity of variances was found to be assumed as Levene's test value  $F=.1, >.05$ . There were no significant differences found in terms of positive youth development among boys and girls with small effect size.

**Table 7**

*Independent Sample t-test Comparing Positive Youth Development Across Students from Different Public and Private Sectors of Schools (N=303)*

Variables	Public (n=127)		Private (n=176)		t(218.62)	p	Cohen's d
	M	SD	M	SD			
Positive Youth Development	103.55	23.26	101.42	17.01	-.87	.38	-.002

Note: M=Mean, SD=Standard deviation, p=significance level



The assumption of homogeneity of variances was found to be not assumed as  $F=8.83, <.05$ .

There were no significant differences found in terms of positive youth development among students studying in different public and private sector of schools with small effect size.

### **Summary of Findings**

- Pearson product moment correlation analysis showed a positive correlation between internet gaming, analytical competence (problem solving confidence, approach-avoidance style and personal control) and positive youth development (confidence, competence, character, caring, connection and contribution). It was found that all sub-scales shared a positive significant correlation except personal control. Personal control was found to have non-significant relation with connection and caring factors of positive youth development.
- Hierarchical multiple linear regression analysis showed that internet gaming and analytical competence were significant positive predictors of positive youth development.
- Independent sample t-tests showed that there were no significant differences in terms of positive youth development among boys and girls and students from different public and private sectors of schools.

**CHAPTER IV****Discussion**

The current research unfolds the relationship between internet gaming, analytical competence, and positive youth development among young adolescents. This discussion incorporates the findings related to the following hypothesis: the relationship between internet gaming, analytical competence and positive youth development, the potential predictive power of internet gaming and analytical competence on positive youth development and studying the impact of demographic variables (age, gender, grade, school...) on positive youth development. The discussion is presented considering the previous research, theoretical background and cultural context that may have an impact on the findings.

First of all, it was hypothesized that there is likely to be relationship between internet gaming, analytical competence (problem solving confidence, approach avoidance style, and personal control) and positive youth development (competence, connection, caring, confidence, contribution, and character) among early adolescents. The findings of the present research showed that internet gaming was significantly positively correlated with analytical competence and positive youth development. These findings were consistent with a study conducted by Yoo (2024) which found out that gaming has an association with development of problem solving and strategic thinking skills which are the key components of analytical competence. Furthermore, these findings are in line with another study conducted by Adachi and Willoughby (2013) which indicated that role play, and strategic games foster problem solving skills and contributes to positive youth outcomes such as confidence, competence and connection which are important aspects of positive youth development.

Internet gaming was considered to be a waste of time and only related to its negative consequences, but our results are concurrent to report (Pew Internet & American Life Project, 2008) which suggested that 44% youngsters play games which help them understand or discover a problem in the society while 52% play such games which informs them about a moral or an ethical issue (Lenhart et al., 2008). Positive Youth Development is a structural framework that focuses on promoting a healthy social, physical, and emotional competency in young individuals. Similarly, our findings are consistent with another study conducted by Gan et al. (2022) which indicated that PYD components can reduce the risks that are often associated with internet gaming disorder, showing that a balanced approach to gaming, without developing unhealthy habits, together with strong PYD characteristics, can help develop analytical competence without the negative impacts of gaming.

The second hypothesis stated that internet gaming and analytical competence (problem solving confidence, approach-avoidance style, and personal control) will positively predict positive youth development. The findings of the study showed that internet gaming and analytical competence were significant positive predictors of positive youth development. These findings are in line with the study by Gan et al. (2022), which showed that positive youth development is related to healthy internet gaming. In fact, fostering of PYD characteristics meant that internet gaming that leads to disorder can be reduced hence maintaining more healthy habit of online entertainment through gaming. Many games promote pro-social and helping behaviors in players (Gentile et al., 2009). Initially, research had only given evidence for promotion of pro-social behaviors through games with the relevant pro-social content but later, some research provided evidence for other genres of games as well. According to Ewoldsen et al. (2012), games that are considered to have violent content can also promote pro-social and helpful behavior depending upon whether they are

played cooperatively or competitively. It was suggested that games that require cooperative playing influences the pro-social and cooperative behavior outside of the game play. Analytical competence has been found to promote attributes of positive youth development as it aids in constructing knowledge and create an understanding of the surroundings. Adolescents with higher level of analytical competence were found to have better self-regulation abilities, lower levels of depression, better educational performance, and overall better wellbeing (Sun & Hui, 2012). One of the benefits of playing video games is the stimulation of intense positive emotional outcomes (McGonigal, 2011). Such positive outcomes can lead to better coping abilities in the face of failure, goal pursuit and feelings of connectivity (Granic et al., 2014) as well as enhancement of self-efficacy and confidence (Meluso et al., 2012). This suggests that internet gaming can allow players to be more confident in their decision making and approach problematic situations while self-regulating emotions which can lead to enhanced confidence, competence and connection skills that are major attributes of positive youth development.

Lastly, it was hypothesized that demographic variables will have an impact on positive youth development. In the current study, findings showed that age and years of father's education have an impact on positive youth development. The findings depicted that higher education of father significantly negatively predicted positive youth development. This can be explained in the socio-cultural context, as gaming is stereotyped to be a negative and harmful habit many parents do not prefer that their children spend time playing games. According to a study by Nielsen et al. (2020), higher education of parents is related to positive family dynamics and positive parenting styles which leads to more controlled and lower level of internet gaming among children. Another study by Islam et al. (2020) presented that higher self-regulation and monitoring by parents over their children's gaming habits reduced the harmful effects of problematic gaming on educational

performance and promoted healthy gaming habits. Moreover, age was found to be positive predictor of positive youth development. This can be explained in the context that adolescence is the age when a child is thriving the most, as the age continues to increase more factors such as cognitive skills, peer formation, identity formation etc. become better with more experiences which is related to more positive development (Lerner & Benson, 2003).

In addition, the differences in terms of positive youth development among boys and girls in different public and private sectors of schools was also analyzed. The results showed that there were no significant differences of positive youth development among boys and girls and no significant differences of positive youth development of students among different private and public schools. These can be explained in terms of a study by Griffith and Yilmaz (2023) which showed that there were no differences of problem-solving skills among gender and different sectors. As analytical competence is a positive predictor of positive youth development, it explains no difference of positive youth development among gender. Similarly, another study by Larsen et al. (2022) showed that there were no significant differences of better academic performances in different public and private sectors of schools when socioeconomic status was controlled.

## **Conclusion**

There were significant relationships found between internet gaming, analytical competence (Problem Solving Confidence, Approach Avoidance Style, and Personal Control) and Positive Youth Development (Confidence, Competence, Character, Caring, Contribution and Connection). There were significant relationships between number of siblings, years of father's education and game time in hours with positive youth development. Moreover, internet gaming and analytical competence were found to be significantly positive predictors of positive youth development. Hence, in the labyrinth of pixels and possibilities, a curious dance unfolds. Internet gaming, with

its virtual realms and adrenaline-fueled quests, shares the stage with analytical competence—the unsung hero. Together, they orchestrate positive youth development, pulling the strings of confidence, competence, character, caring, contribution, and connection. Picture this: your joystick isn't just guiding your avatar; it's shaping your future.

### **Limitations and Suggestions**

This study consists of certain limitations and suggestions that should be considered.

- The data for the research was collected post-winter break, a period when children tend to engage more in gaming during vacations. This seasonal variation introduces a potential bias. For instance, increased game time during holidays might impact the observed relationship between internet gaming and positive youth development.
- The scarcity of children exclusively playing internet games limited our ability to directly compare this group with those who participate in both internet and outdoor games. Consequently, we couldn't discern nuanced differences between these subgroups.
- Parental attitudes and their involvement in adolescents' lives play an important role in defining adolescent's gaming behavior. Collection of information regarding the rules established by the parents, the supervision they observe and the communication they practice regarding gaming. This would provide valuable insights for the research.

### **Implications**

This research study can serve the following implications:

- It gives a positive view of online video gaming which can help change the impression of emphasis on only harmful and negative effects of gaming.
- This study can allow parents and teachers to add healthy video gaming practices in daily routines of young adolescents.
- Harnessing internet gaming as a therapeutic tool, in the form of digital play therapy could hold promise for addressing disorders like autism spectrum disorder. By integrating game-based activities, clinicians can unlock new avenues for cognitive growth and social development.

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## Appendix

## Appendix A



**Bahria University**  
Discovering Knowledge

07-Dec-2023

**TO WHOM IT MAY CONCERN****REQUEST FOR DATA COLLECTION**

It is stated that **Mr. Mushaf Sabeeh** Enrollment No. 01-171202-052 is a student of BS Psychology (7<sup>th</sup> Semester) Bahria University Islamabad Campus conducting research on **"Internet gaming, analytical competence and positive youth development in early adolescents"** under supervision of undersigned. It is requested that kindly allow him to collect the data from your esteemed institution.

Regards,

**Dr. M. Faran**  
Assistant Professor  
Bahria School of Professional Psychology  
Bahria University  
E-8 Islamabad



**Bahria University**  
Discovering Knowledge

07-Dec-2023

## TO WHOM IT MAY CONCERN

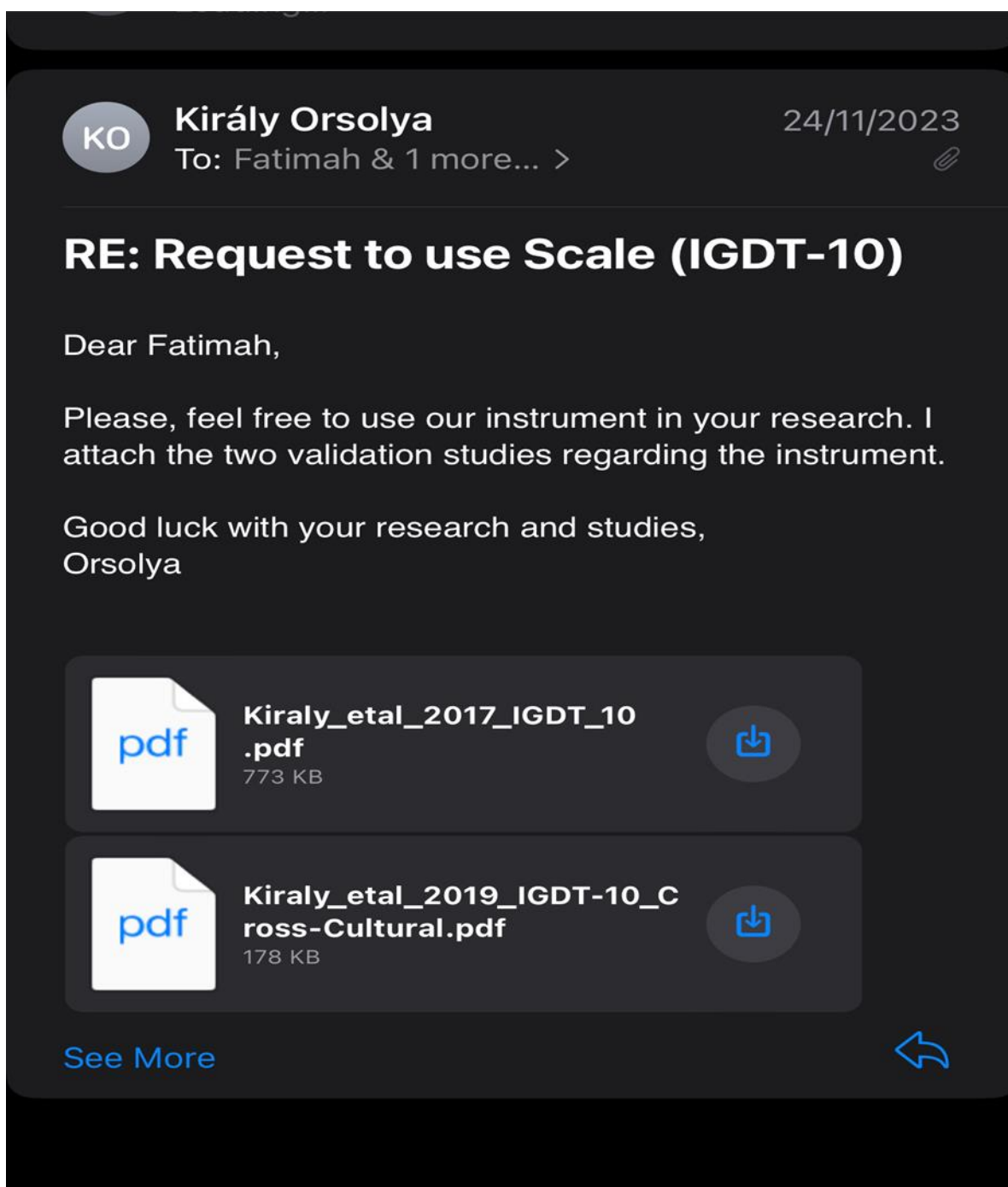
### REQUEST FOR DATA COLLECTION

It is stated that **Ms. Fatimah Azhar** Enrollment No. 01-171202-025 is a student of BS Psychology (7<sup>th</sup> Semester) Bahria University Islamabad Campus conducting research on "Internet gaming, analytical competence and positive youth development in early adolescents" under supervision of undersigned. It is requested that kindly allow her to collect the data from your esteemed institution.

Regards,

**Dr. M. Faran**  
Assistant Professor  
Bahria School of Professional Psychology  
Bahria University  
E-8 Islamabad

## Appendix B





Mary Elizabeth Arnold

27/11/2023

To: Fatimah Azhar >



## RE: Request to use Scale (PYDI)

Dear Fatimah,

It is fine to use the PYDI for your research. However, please note that we no longer provide any support for the use of this scale, nor can we provide any additional information about the scale.

Best,  
Mary Arnold

### Mary E. Arnold, PhD

Director, Youth Development Research and Practice

[655](#) 15<sup>th</sup> St. NW, Suite 220

Washington, DC 20005

(541) 908-4953 | [4-H.org](#)

(Working remote from Oregon)



### Mary E. Arnold, PhD

Professor and 4-H Youth Development Specialist

School of Human Development and Family Sciences

105 Ballard Hall

Corvallis, OR 97331

(541) 737-1315 (V)



<https://blogs.oregonstate.edu/youththriving/>





**Puncky Heppner**

To: Fatimah Azhar >

24/11/2023



## Re: Request to use Scale (PSI)

Fatima,

Yes, you can use the PSI in your research. I will attach several files, and hope they are helpful to you in your research endeavors. Let me know if you have any questions. Best, Puncky

Puncky Paul Heppner, Ph.D.

Distinguished Curators' Professor Emeritus

Past President of Counseling Psychology of the APA

**WARNING:** This message has originated from an External Source. This may be a phishing expedition that can result in unauthorized access to our IT System. Please use proper judgment and caution when opening attachments, clicking links, or responding to this email.

## Appendix C

### Detailed Information Sheet

We, Fatimah Azhar and Muhammad Mushaf Sabeeh are students of BS in the School of Professional Psychology, Bahria University, Islamabad. We are conducting research on “**Internet Gaming, Analytical Competence and Positive Youth Development in Early Adolescents**” under the supervision of Dr. Muhammad Faran. You are invited to take part in this research study but before you decide to participate or not, it is important for you to understand why the research is being conducted and what it will involve. Please take time to read the following information carefully.

#### **Purpose of the study**

The purpose of the study is to investigate positive impacts of internet gaming in the development of adolescents with a specific focus on their analytical competence.

#### **What you will be asked to do**

A set of questionnaires will be given to you to fill out. Approximately 15 to 20 minutes will be required to complete the questionnaires. The questionnaires include questions related to patterns of internet gaming, problem-solving skills, and positive youth development.

#### **What will happen to your responses on the questionnaires?**

A code number instead of your name will be used on the questionnaires and only this code number will be linked to your answers which will be stored in a computer file. Only researchers and the university professor who is supervising our study will have access to these computer files. In reporting the results of this study, all the answers from all participants will be combined and it will not be possible to identify any particular individual's responses. Thus, the anonymity and confidentiality of data will be maintained.

#### **Your Rights**

Your participation is voluntary and you have right to withdraw from participation at any time without giving the reason. Nothing bad will happen to you as a result.

#### **Your decision**

It is up to you to decide whether or not to take part if you decide to take part you will be given this information sheet to keep and be asked to sign consent form. If you have any query regarding study or participation you may ask. You may contact us through email.

#### **Supervisor**

Dr. Muhammad Faran

mfaran.buic@bahria.edu.pk

#### **Students**

fatimahazharmanzoor@gmail.com

mushafsabeeh2001@gmail.com

Thank you for taking time to read the information sheet.

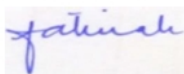
## Appendix D

### Informed Consent Form

I Mr. /Ms. \_\_\_\_\_

State that I voluntarily agree to participate in the BS Psychology research entitled “**Internet Gaming, Analytical Competence and Positive Youth Development in Early Adolescents**” conducted by Fatimah Azhar and Muhammad Mushaf Sabeeh, under the supervision of Dr. Muhammad Faran, School of Professional Psychology, Bahria University Islamabad Campus. The researchers have explained the purpose and procedure of the research to me. They have informed me that I may withdraw from participation at any time without prejudice and penalty. Furthermore, they have assured me that any information that I give will be used for research purpose only and will be kept confidential and anonymous.

Signature of Researcher  
Fatimah Azhar



M. Mushaf Sabeeh



Signature of Participant

\_\_\_\_\_

## Appendix E

### Demographic Information Sheet

1. Age: \_\_\_\_\_ (in years)
2. Gender:
  - Male
  - Female
  - Other
3. Grade:
  - 4<sup>th</sup>
  - 5<sup>th</sup>
  - 6<sup>th</sup>
  - 7<sup>th</sup>
4. School:
  - Private
  - Public
5. No. of Siblings: \_\_\_\_\_
6. Father's Education: \_\_\_\_\_
7. Mother's Education: \_\_\_\_\_
8. Father's Occupation: \_\_\_\_\_
9. Mother's Occupation: \_\_\_\_\_
10. Time spent on internet gaming per day: \_\_\_\_\_ (in Hours)
11. On how many days in a week do you play internet games \_\_\_\_\_
12. Since how long you have been playing Internet games for \_\_\_\_\_
13. Most Played Genre: (Multiple Responses can be selected)
  - Action
  - Puzzles
  - Adventure
  - Battle Royale
  - Role-Playing
  - Survival
  - Sports and Racing
  - Card and Board
14. Enlist your 3 favorite games:
  1. \_\_\_\_\_
  2. \_\_\_\_\_
  3. \_\_\_\_\_
15. Device used for playing. (Multiple Responses can be selected)
  - Smartphone
  - Tablet
  - Console
  - Laptop
  - Desktop
16. Mode of playing:
  - Single player
  - Multiplayer
  - Both
17. Do you play any outdoor games
  - Yes
  - No
  - If yes, specify \_\_\_\_\_

## Appendix F

### IGDT-10

Please read the statements below regarding internet gaming. Please, indicate on the scale from 0 to 2 (Never, Sometimes, Often) to what extent, and how often, these statements applied to you over the **PAST 12 MONTHS**. Where 0= Never, 1= Sometimes, 2= Often.

1. When you were not playing, how often have you fantasized about gaming, thought of previous gaming sessions, and/or anticipated the next game?	0	1	2
2. How often have you felt restless, irritable, anxious and/or sad when you were unable to play or played less than usual?	0	1	2
3. Have you ever felt the need to play more often or played for longer periods to feel that you have played enough?	0	1	2
4. Have you ever unsuccessfully tried to reduce the time spent on gaming?	0	1	2
5. Have you ever played games rather than meet your friends or participate in hobbies and pastimes that you used to enjoy before?	0	1	2
6. Have you played a lot despite negative consequences (for instance losing sleep, not being able to do well in school or work, having arguments with your family or friends, and/or neglecting important duties)?	0	1	2
7. Have you tried to keep your family, friends or other important people from knowing how much you were gaming or have you lied to them regarding your gaming?	0	1	2
8. Have you played to relieve a negative mood (for instance helplessness, guilt, or anxiety)?	0	1	2
9. Have you risked or lost a significant relationship because of gaming?	0	1	2
10. Have you ever jeopardized your school or work performance because of gaming?	0	1	2

## PYDI

Please rate your agreement by encircling the right number: 1=Strongly Disagree; 2=Disagree; 3=Agree; 4=Strongly Agree

1. I am a good student.	1	2	3	4
2. I take part in activities at my school.	1	2	3	4
3. I like to learn about new things.	1	2	3	4
4. I am a creative person.	1	2	3	4
5. I make good decisions.	1	2	3	4
6. I make friends easily.	1	2	3	4
7. I feel comfortable in social situations.	1	2	3	4
8. I can handle problems that come up in my life.	1	2	3	4
9. I can manage my emotions.	1	2	3	4
10. I can handle being disappointed.	1	2	3	4
11. I am aware of other people's needs in social situations.	1	2	3	4
12. I have goals for my life.	1	2	3	4
13. I know what I want to do for a career.	1	2	3	4
14. I am interested in learning about careers I could have.	1	2	3	4
15. It is important for me to do the right thing.	1	2	3	4
16. I try to do the right thing, even when I know that no one will know if I do or not.	1	2	3	4
17. I think it is important for me to be a role model for others.	1	2	3	4
18. It is important for me to do my best.	1	2	3	4
19. It is important that others can count on me.	1	2	3	4
20. If I promise to do something I can be counted on to do it.	1	2	3	4
21. I am able to behave appropriately in most settings.	1	2	3	4
22. I am able to stand up to peer pressure when I feel something is not right to do.	1	2	3	4
23. I have people in my life whom I look up to and admire.	1	2	3	4
24. I have a wide circle of friends.	1	2	3	4
25. I think it is important to be involved with other people.	1	2	3	4
26. My friends care about me.	1	2	3	4
27. I feel connected to my teachers.	1	2	3	4
28. Having friends is important to me.	1	2	3	4
29. I feel connected to others in my community.	1	2	3	4

30. I have adults in my life who are interested in me.	1	2	3	4
31. I feel connected to my parents.	1	2	3	4
32. When there is a need I offer assistance whenever I can.	1	2	3	4
33. It is easy for me to consider the feelings of others.	1	2	3	4
34. I care about how my decisions affect other people.	1	2	3	4
35. I try to encourage others when they are not as good at something as me.	1	2	3	4
36. Other people's feelings matter to me.	1	2	3	4
37. I can be counted on to help if someone needs me.	1	2	3	4
38. I care about the feelings of my friends.	1	2	3	4
39. When one of my friends is hurting, I hurt too.	1	2	3	4
40. I feel good about my scholastic ability.	1	2	3	4
41. I feel I am a good athlete.	1	2	3	4
42. I am satisfied with how I look.	1	2	3	4
43. I feel accepted by my friends.	1	2	3	4
44. In general, I think I am a worthy person.	1	2	3	4
45. I know how to behave well in different settings.	1	2	3	4
46. I can figure out right from wrong.	1	2	3	4
47. I have close friendships.	1	2	3	4
48. I can do things that make a difference.	1	2	3	4
49. I take an active role in my community.	1	2	3	4
50. I am someone who gives to benefit others.	1	2	3	4
51. I like to work with others to solve problems.	1	2	3	4
52. I have things I can offer to others.	1	2	3	4
53. I believe I can make a difference in the world.	1	2	3	4
54. I care about contributing to make the world a better place for everyone.	1	2	3	4
55. It is important for me to try and make a difference in the world.	1	2	3	4

Thank you for participating in our study.

## PSI

Read each statement and indicate the extent to which you agree or disagree with that statement, using the scale provided. Mark your responses by circling the number to the right of each statement.

1= Strongly Agree, 2= Moderately Agree, 3= Slightly Agree, 4= Slightly Disagree, 5= Moderately Disagree, 6= Strongly Disagree

1. When a solution to a problem has failed, I do not examine why it didn't work.	1	2	3	4	5	6
2. When I am confronted with a complex problem, I don't take the time to develop a strategy for collecting information that will help define the nature of the problem.	1	2	3	4	5	6
3. When my first efforts to solve a problem fail, I become uneasy about my ability to handle the situation.	1	2	3	4	5	6
4. After I solve a problem, I do not analyze what went right and what went wrong.	1	2	3	4	5	6
5. I am usually able to think of creative and effective alternatives to my problems.	1	2	3	4	5	6
6. After following a course of action to solve a problem, I compare the actual outcome with the one I had anticipated.	1	2	3	4	5	6
7. When I have a problem, I think of as many possible ways to handle it as I can until I can't come up with any more ideas.	1	2	3	4	5	6

8. When confronted with a problem, I consistently examine my feelings to find out what is going on in a problem situation.	1	2	3	4	5	6
9. When confused about a problem, I don't clarify vague ideas or feelings by thinking of them in concrete terms.	1	2	3	4	5	6
10. I have the ability to solve most problems even though initially no solution is immediately apparent.	1	2	3	4	5	6
11. Many of the problems I face are too complex for me to solve.	1	2	3	4	5	6
12. When solving a problem, I make decisions that I am happy with later.	1	2	3	4	5	6
13. When confronted with a problem, I tend to do the first thing that I can think of to solve it.	1	2	3	4	5	6
14. Sometimes I do not stop and take time to deal with my problems, but just kind of muddle ahead.	1	2	3	4	5	6
15. When considering solutions to a problem, I do not take the time to assess the potential success of each alternative.	1	2	3	4	5	6
16. When confronted with a problem, I stop and think about it before deciding on a next step.	1	2	3	4	5	6
17. I generally act on the first idea that comes to mind in solving a problem.	1	2	3	4	5	6
18. When making a decision, I compare alternatives and weigh the consequences of one against the other.	1	2	3	4	5	6
19. When I make plans to solve a problem, I am almost certain that I can make them work.	1	2	3	4	5	6
20. I try to predict the result of a particular course of action.	1	2	3	4	5	6
21. When I try to think of possible solutions to a problem, I do not come up with very many alternatives.	1	2	3	4	5	6
22. When trying to solve a problem, one strategy I often use is to think of past problems that have been similar	1	2	3	4	5	6
23. Given enough time and effort, I believe I can solve most problems that confront me.	1	2	3	4	5	6
24. When faced with a novel situation, I have confidence that I can handle problems that may arise.	1	2	3	4	5	6
25. Even though I work on a problem, sometimes I feel like I'm groping or wandering and not getting down to the real issue.	1	2	3	4	5	6
26. I make snap judgments and later regret them.	1	2	3	4	5	6
27. I trust my ability to solve new and difficult problems.	1	2	3	4	5	6
28. I use a systematic method to compare alternatives and make decisions.	1	2	3	4	5	6
29. When thinking of ways to handle a problem, I seldom combine ideas from various alternatives to arrive at a workable solution.	1	2	3	4	5	6
30. When faced with a problem, I seldom assess the external forces that may be contributing to the problem.	1	2	3	4	5	6
31. When confronted with a problem, I usually first survey the situation to determine the relevant information.	1	2	3	4	5	6
32. There are times when I become so emotionally charged that I can no longer see the alternatives for solving a particular problem.	1	2	3	4	5	6
33. After making a decision, the actual outcome is usually similar to what I had anticipated.	1	2	3	4	5	6
34. When confronted with a problem, I am unsure of whether I can handle the situation.	1	2	3	4	5	6
35. When I become aware of a problem, one of the first things I do is try to find out exactly what the problem is.	1	2	3	4	5	6

## Appendix G

## BS Students

## ORIGINALITY REPORT

15%

SIMILARITY INDEX

11%

INTERNET SOURCES

10%

PUBLICATIONS

5%

STUDENT PAPERS

## PRIMARY SOURCES

1	<a href="http://www.researchgate.net">www.researchgate.net</a> Internet Source	1%
2	Submitted to Higher Education Commission Pakistan Student Paper	1%
3	<a href="http://conference.nip.edu.pk">conference.nip.edu.pk</a> Internet Source	1%
4	"Handbook of Positive Youth Development", Springer Science and Business Media LLC, 2021 Publication	1%
5	<a href="http://cambio.missouri.edu">cambio.missouri.edu</a> Internet Source	1%
6	Eyüp Yılmaz, Mark D. Griffiths. "Children's social problem-solving skills in playing videogames and traditional games: A systematic review", Education and Information Technologies, 2023 Publication	1%
7	Submitted to Hall County School District Student Paper	