



Faculty of Cognitive Sciences and Human Development

**INVESTIGATING THE IMPACT OF BINGE-WATCHING ON
EXECUTIVE FUNCTIONING AMONG UNDERGRADUATE
STUDENTS**

Nurul Hasnatie Binti Roslan

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**INVESTIGATING THE IMPACT OF BINGE-WATCHING ON EXECUTIVE
FUNCTIONING AMONG UNDERGRADUATE STUDENTS**

NURUL HASNIATIE BINTI ROSLAN

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(Puan Ross Azura Binti Zahit)

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ABSTRACT

This study aimed to investigate the impact of binge-watching on executive functioning among undergraduate students in Malaysia. This research study explores specifically the gender differences, relationships, and predictors of binge-watching and executive functioning among 112 undergraduate students in Malaysia. The data was analyzed using SPSS version 26.0, encompassing demographic information, gender differences, correlation analyses, and predictor evaluation. The statistical analysis of independent t-test, Pearson correlation, and multiple regression has been used. the findings reveal no significant gender differences between binge-watching and executive functioning. However, a significant positive correlation between binge-watching and executive functioning among undergraduate students, suggesting that excessive binge-watching can negatively impact executive functioning skills such as plan management, time management, organization, emotional regulation, and behavioural regulation. Also, the study identifies time management and emotional regulation as significant predictors of binge-watching addiction. Good time management and emotional regulation predict lower levels of binge-watching addiction, indicating that students who manage their time well and regulate their emotions effectively are less likely to engage in problematic binge-watching behaviour. The study reveals a significant relationship between binge-watching and executive functioning, suggesting the need for targeted interventions to enhance cognitive health in students.

Keywords: binge-watching, executive functioning, time management, emotional regulation

ABSTRAK

Kajian ini bertujuan untuk menyiasat kesan '*binge-watching*' terhadap fungsi eksekutif dalam kalangan pelajar sarjana muda di Malaysia. Kajian ini secara khususnya meneroka perbezaan jantina, hubungan, dan peramal '*binge-watching*' dan fungsi eksekutif dalam kalangan 112 pelajar sarjana muda di Malaysia. Data dianalisis menggunakan SPSS versi 26.0, di mana ia meliputi maklumat demografi, perbandingan jantina, analisis perkaitan, dan penilaian peramal. Antara analisis statistik yang digunapakai adalah '*independent t-test*', '*Pearson correlation*', dan '*multiple regression*'. Hasil kajian menunjukkan tiada perbandingan jantina yang signifikan antara pembolehubah '*binge-watching*' dan fungsi eksekutif. Walau bagaimanapun, terdapat perkaitan positif yang signifikan antara '*binge-watching*' dan fungsi eksekutif dalam kalangan pelajar sarjana muda, menjelaskan bahawa '*binge-watching*' yang berlebihan boleh memberi kesan yang negatif terhadap kemahiran fungsi eksekutif seperti pengurusan rancangan, pengurusan masa, organisasi, pengaturan emosi, dan pengaturan tingkah laku. Selain itu, kajian ini mengenal pasti pengurusan masa dan pengaturan emosi sebagai peramal signifikan untuk ketagihan '*binge-watching*'. Pengurusan masa dan pengaturan emosi yang baik meramalkan tahap ketagihan '*binge-watching*' yang lebih rendah, menunjukkan bahawa pelajar yang menguruskan masa mereka dengan baik dan mengatur emosi mereka dengan berkesan, kurang cenderung untuk terlibat dalam tingkah laku '*binge-watching*' yang bermasalah. Kajian ini mendedahkan perkaitan yang signifikan antara '*binge-watching*' dan fungsi eksekutif, menunjukkan keperluan untuk intervensi khusus bagi meningkatkan kesihatan kognitif dalam kalangan pelajar.

Kata kunci: *binge-watching*, fungsi eksekutif, pengaturan emosi, pengurusan masa

CHAPTER ONE

INTRODUCTION

1.0 Introduction

The topic of this study is to investigate the impact of binge-watching on executive functioning among undergraduate students. This chapter will discuss the background of study, problem statement, objectives of the research, research questions, research hypotheses, conceptual frameworks, the significance of the study, the definitions of term used in this study, and last the limitations of the study.

1.1 Background of study

Modernization of technologies nowadays has brought such an important impact on the generation nowadays that electronic gadgets have become one of the survival kits one should have. Everyone spends most of their time with their gadgets and it also has become one of the ways for them to release their stress or to escape from reality for a moment. Dramas and video streaming are the most common platforms used by the younger generations in spending their leisure time. The streaming era has revolutionized television viewing, leading to binge-watching. Researchers studied screen time, weight, diet, sleep quality, stress, physical activity, and binge-watching habits. They found that the heaviest screen users spend 17.5 hours per day, with the least healthful diets and poorest health outcomes compared to moderate or light screen users (Barhum, 2023).

Even though binge-watching behaviour leaves the viewer sleepless at night with dark circles around their eyes, they still cannot help themselves or control themselves due to their anticipation of the upcoming episodes of the series that they are watching. The reason why people tend to be engaged in binge-watching behaviour is that it makes them feel good. Doing something that brings us happiness may lead the brain to produce chemicals, dopamine, that induce pleasure, excitement, and happiness which are similar to addictive substances. The brain craves more dopamine, producing it as long as binge-watching is ongoing (Coppola, 2019). Research indicates that people develop parasocial relationships with media characters, creating one-way bonds. People like newscasters and talk-show hosts, who we watch daily, feel like

friends of ours. This can also be seen in the popular Netflix series "House of Cards." While some may view media as frivolous, it provides valuable de-stressing opportunities. Engaging with media can help us escape our real world, feel rejuvenated, and prepare for our real lives (Medina, 2017).

However, according to Fancourt (2019), new study from the United Kingdom suggests that consuming over three hours of television each day may lead to cognitive impairment in memory and language later in life. This phenomenon is related to the rapid changes in visual, auditory, and motor processes that occur during passive information processing. People are not interacting with the content in the same manner that they would when playing a video game or doing research online. Television viewing has progressed from being restricted to living rooms to being available via laptops, tablets, even everyday phones (Mastroianni, 2019). In 2013, researchers at Tohoku University in Japan found that children aged five to 18 who watched TV for four hours daily had their brains enlarged, affecting emotional responses, arousal, aggression, and vision. The frontopolar cortex, a region known for language-based reasoning, also thickened. Verbal IQ scores fell proportionally to TV viewing hours, regardless of the child's age or family income (Fields, 2015).

In terms of executive functioning, it refers to mental processes and skills required for tasks, decision-making, and prioritization which typically develop during childhood and adolescence. Reduced executive functioning can impact socialization, information intake, and work performance. It also refers to a set of cognitive skills that aid in behaviour that is goal-oriented and adaptive reactions to changing situations, with the major components being cognitive inhibitory control, working memory, and attentional focusing/flexibility (Bustamante et al., 2023). The first six years of life are critical for the development of executive functions (EFs), and research has indicated that excessive screen time can be detrimental to EF development. Studies have found that, EF impairments at this period can result in atypical development, autism, attention-deficit/hyperactivity disorder, and internalising symptoms. However, some researches have demonstrated that screen-based media can improve EF abilities and delay pleasure in 2- to 3-year-old toddlers. Even after testing, it has been discovered that children's cognitive development benefits from active screen time (Bustamante et al., 2023).

1.2 Problem statement

According to a study done by Seifert (2019), the study discovered no significant gender difference in the number of times of watching video streaming content, but significant variability among individuals. Females streamed on 73.4%, whereas males streamed on 70.6% of the 15 measurement days. The minimum and maximum frequency of video-on-demand viewing varied between males and females. The study discovered that, while males and females watch content of video streaming equally, their duration of viewing varies. Males and females were equally inclined to watch content, although females viewed more episodes for longer lengths of time. The frequency, number of episodes, and streaming duration all showed significant individual differences. Other than that, a recent investigation conducted by Thomas and Navami (2023), revealed that both genders exhibit equivalent levels of engagement with video streaming content, yet females tend to consume more episodes and extend their viewing sessions for longer durations. Binge-watching is a prevalent behavior among millennials, particularly college and university students, who often lack self-regulation and self-management. This behavior can be seen as procrastination, especially during the Covid-19 pandemic. Most empirical studies on binge-watching among college students are limited to Western countries and Netflix, particularly during the pandemic (Jie Chan et al., 2022) and only a few studies have been done among college students specifically in Malaysia.

Advancements of technologies nowadays have led to the emergence of binge-watching behavior and according to Starosta & Izydorczyk (2020), the systematic review of studies on binge-watching, conducted between 2014 and 2019, primarily focused on the USA (n=16,55%), with Netflix's introduction in 2013. The majority of studies were conducted in the USA, with 32% conducted in European countries like Belgium, the Netherlands, Poland, Portugal, the UK, Germany, Hungary, South Korea, Tunisia, and the UAE. This is unsurprising given that binge-watching was popularized by an American firm via streaming services like Netflix, Disney+, and so on. Research on binge-watching behavior and psychological conditions is crucial, as these streaming platforms are now available globally, highlighting the need for global studies (Starosta & Izydorczyk, 2020). Researchers found that excessive TV viewing and low physical activity leads to impaired executive function, diminished working memories, and decreased processing speed compared to their peers, even adjusting for education (Luscombe, 2015). Addiction to electronic gadgets will affect one's mental development and cognitive functioning.

Plus, there are a limited number of studies have been done in Malaysia about the behaviour of binge-watching, especially among university students, and its relatedness to cognitive function, in terms of executive functioning specifically. Hence, it shown a worthy topic to be discovered.

Starosta et al. (2021) has done research on investigating the impulsivity and difficulties in emotional regulation as a crucial predictor for binge-watching addiction behaviour among the participants. A study involving 645 Polish young adults found that problematic binge-watching behaviours were significantly predicted by factors such as lack of premeditation, impulse control difficulties, escapist motivations, loneliness, optimal use of free time, and seeking information and entertainment. The studies that have been done highlighting primarily on the Western population, which leave a significant gap in understanding these dynamics in Malaysian context. This study is worth to be discovered in terms of Malaysian context due to the geographical and cultural differences with other population across the world.

1.3 Research objectives

1.3.1 General objectives

- To study the impact of binge-watching on executive functioning among undergraduate students.

1.3.2 Specific objectives

- To determine the gender differences between binge-watching and executive functioning among undergraduate students.
- To determine the relationship between binge-watching and executive functioning among undergraduate students.
- To determine the predictor for binge-watching addiction behaviour among undergraduate students between emotional regulation, behavioral regulation, organization, plan management, and time management.

1.4 Research questions

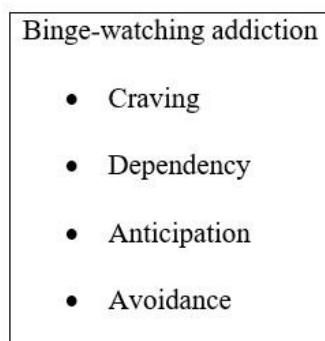
- Is there a difference in gender between binge-watching and executive functioning among undergraduate students?
- Is there a relationship between binge-watching and executive functioning among undergraduate students?
- What are the significant predictors for binge-watching addiction behavior among undergraduate students between emotional regulation, behavioral regulation, organization, plan management, and time management?

1.5 Research hypotheses

- There is a significant gender difference between binge-watching and executive functioning among undergraduate students.
- There is a significant relationship between binge-watching and executive functioning among undergraduate students.
- Emotional regulation, behavioral regulation, organization, plan management, or time management are the significant predictors for binge-watching addiction behavior among undergraduate students.

1.6 Conceptual frameworks

Independent Variables



Dependent Variables

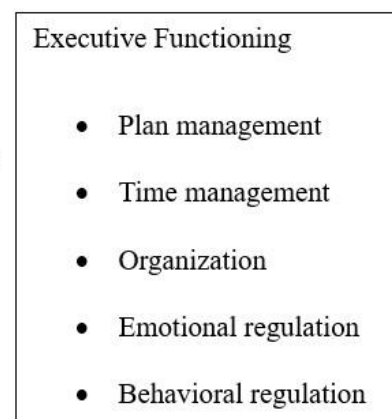


Figure 1 Conceptual Framework

1.7 Significance of the study

This study can add to the existing research and provide knowledge about the relationship between binge-watching and executive functioning, among the students. It can help to provide insights on binge-watching behaviour in Malaysian context. Thus, this study also helps the students to understand the patterns, and the potential consequences of binge-watching in a cultural context that may differ from Western countries. Other than that, this research also may provide further information regarding the significant predictors that helps to explain binge-watching behaviour among the undergraduate students in Malaysia. Hence, help to address the intervention to improve emotional well-being and self-control among undergraduate students.

1.8 Definition of terms

1.8.1 Binge-watching

Conceptual definition:

Binge-watching is the act of watching or streaming a large number of television episodes all at once or in a single sitting.

Operational definition:

It is considered as binge-watching when episodes of shows being streamed or watched with continuous content in a row, rather than by the amount of time spent watching or the number of episodes viewed (Chang & Peng, 2022). Binge-watching behaviour addiction can be measured through a self-administered assessment known as binge-watching addiction questionnaire (BWAQ).

1.8.2 Executive functioning

Conceptual definition:

Executive functioning refers to the high-level cognitive processes that enable new behaviours and optimize one's approach to unexpected situations. It is a set of cognitive skills required for behavior management, self-control, and getting things done. The frontal lobe of the brain is in charge of these abilities (Gilbert & Burgess, 2008).

Operational definition:

Executive functioning involves cognitive processes like goal formulation, planning, organization, and self-monitoring. The Executive Skills Questionnaire Revised (ESQ-R) is one of the assessments that is used to evaluate these processes using subscales like initiation, flexibility, and metacognition. Higher scores indicate better executive functioning abilities.

1.9 Limitations of study

This research will require the participants to answer a self-administered questionnaire to assess the level of binge-watching addiction and the executive skills functioning. They should answer all the questions based on their preferences honestly and fully. However, there might be some factors that may contribute to the results of the research study to be unreliable and invalid. Response bias is a common type of research bias where individuals do not answer questions truthfully due to various reasons, such as conforming to social norms, appearing favorably, aligning with research objectives, or completing survey questions quickly. This can distort study results and threaten the validity of the research, making it a significant concern in research studies (Nikolopoulou, 2022). Apart from that, this research study provides limited in-depth information. Self-administered surveys frequently have a structured style with predefined response alternatives, which limits the amount of information that can be acquired.

1.10 Summary

The overall of this chapter discuss about the main aspects of research which include background of study, problem statement, research objectives, research questions, research hypotheses, conceptual frameworks, significance of the study, definition of terms use in this study, and the limitations of the study. The objective was mainly to investigate the impact of binge-watching on cognitive function, specifically executive functioning among the undergraduate students.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter represents the past literature on the prevalence of binge-watching, the effects of binge-watching behaviour, the theory related to binge-watching behaviour, and executive functioning. The review of the literature from the previous study will be further discussed.

2.1 The Prevalence of Binge-Watching

Over the years, the modernization of technologies has affected the daily routine of the younger and older generations. Younger generations increasingly utilize dramas and video streaming platforms for leisure time, with the streaming era revolutionizing television viewing and promoting binge-watching. Binge-watching behaviour can be seen as the result of consuming too much of video streaming in a single sitting among its viewers. According to survey done by Watson (2023), Gen Z and Millennials are the most avid binge-viewers in the US. Subscription Video on Demand (SVoD) services also provide instant access to binge-worthy content, with 60% of U.S. adults aged 18 to 45 preferring all episodes of a season to be released simultaneously. This feature has become an expectation among consumers, making binge-watching a top priority for video streaming services. Plus, commercial surveys done in a research study by Deloitte (2016) show that 70% of viewers in the United States engage in binge-watching sessions consisting of five episodes, while 80% of millennials engage in binge-watching sessions with six episodes in a row. According to Starosta et al. (2020), 62% of the American populace acknowledges habitual binge-watching behaviors, with individuals aged 18 to 39 having a higher predisposition for binge-watching than the older people. The study made by Shim and Kim (2018) identified the fundamental key predictors of self-disclosed binge-watching habits within their samples, particularly emphasizing individuals exhibiting elevated cognitive demands and sensation seeking including factors such as fandom, enjoyment, and efficiency.

According to study done by Navami and Thomas (2023), they revealed that gender differences play a role in narrative engagement, with women showing higher mean rank in

experiencing narrative engagement compared to men. Furthermore, the study identified that engagement experience is associated with the gender of binge-watchers. Besides, a study has been done by Moore (2015) to examine gender differences in television show genre preferences and among five colleges within Clemson University in which the findings revealed that males exhibit a greater preference for fantasy genres compared to females. Furthermore, the study found no significant correlation between female participants and their tendency to binge-watch television shows.

2.2 The Effects of Binge-Watching Behaviour

Binge-watching is a popular activity that causes sleeplessness and anxiety due to anticipation of upcoming episodes. The viewers spent most of their time binge-watching their favourite shows online and little did they know that such behaviour would lead them to several consequences that may affect a certain aspect of their life. Binge-watching behaviour may benefit its viewers as well as negatively impact them. A study by Roy and Mathias (2022), concluded that binge-watching is becoming a 'new normal' for most youth, but it did not significantly impact academic performance. However, sleep deprivation from binge-watching could lead to health issues. Other than that, Granow et al. (2018) also claimed that prolonged binge-watching of series can lead to goal conflicts, as individuals prioritize short-term gratification over long-term goals. This risk is particularly pronounced in the context of video-on-demand, where providers facilitate continued viewing. This can trigger negative evaluations and feelings of guilt, negatively impacting media enjoyment and well-being indicators like recovery experience and vitality.

Apart from that, according to Alimoradi (2022), sleep disturbances, prolonged sedentary behaviors, the development of behavioral addictions, and various forms of psychological distress such as anxiety, loneliness, stress, and sadness have been identified as potential health risks linked with binge-watching. The binge-watching behaviour Binge-viewing shows has detrimental effects on sleep, with 90% of US men and women experiencing sleep loss and staying awake all night. Hence, such behaviour may have a long-term effect on people's health in the future. Dhanuka & Bohra (2019) study on Mumbai found that 90 students, despite binge watching web-series, struggled to self-regulate, leading to negative mental and physical health effects like insomnia and work productivity issues. Binge-watching behaviour impacted people across the world in various aspects. Furthermore, the findings of a study

conducted by Steins-Loeber et al. (2020) suggested that impulsivity and depressive symptoms should be viewed as two distinct paths contributing to potentially problematic binge-watching. Higher impulsivity scores were connected with both lack of control over binge-watching and neglect of duties, which is similar to other behavioural patterns such as substance use disorder or gambling disorder.

2.3 Theory Related to Binge-watching Behavior

Even though people tend to be tired due to lack of sleep from streaming too many videos online, they would do it all over again as it makes them happy. It brings happiness by releasing dopamine, a chemical that induces pleasure and excitement (Coppola, 2019). People develop parasocial relationships with media characters, creating one-way bonds. While some view media as frivolous, it provides valuable de-stressing opportunities, allowing us to escape our real world and prepare for our lives (Medina, 2017). Several previous studies regarding binge-watching behaviour have come up with different theories that can help to understand the reasons why people binge-watch. One of the reasons why people tend to engage in binge-watching behaviour is due to the idea of escapism. Escapism is a mental escape technique used to avoid discomfort and deal with difficult experiences. According to a study done by Olivine (2023), escapism theory can be beneficial for managing stress, balancing emotions, and coping with difficult challenges despite being considered undesirable.

According to a study done by Gabbiadini et al. (2021), a collection of data of 490 participants demonstrated a positive association between the feelings of loneliness and the inclination toward binge-watching. Furthermore, tendencies towards escapism, experiencing withdrawal symptoms, and exhibiting dysfunctional self-regulation were strongly linked with a sense of affiliation with television series characters, which in turn, positively correlated with binge-watching behaviors. Pontes and Griffiths (2017) highlight the complex concept of problematic Internet-related technology usage, which includes escapism, dysfunctional emotional coping, and withdrawal symptoms. They suggest binge-watching as a coping mechanism for loneliness, as it temporarily alleviates negative emotions associated with loneliness. This suggests escapism as the primary psychological feature. In a study by Castro et al. (2019), survey results of 13 participants that undergoes 40 viewing sessions found out that relaxation, boredom relief, and escapism are among the top motivations for engagement to binge-watching behaviour among the participants.

2.4 Executive Functioning

Executive function involves mental processes for concentrating, pondering, and avoiding temptations, ensuring attention and avoiding ill-advised automatic responses (Diamond, 2013). Executive functioning involves cognitive processes like inhibition, planning, strategy development, persistence, and flexibility, linked to the prefrontal cortex and subcortical loops, crucial for goal-directed behavior (Brocki & Bohlin, 2004). Executive functioning skills would help students to strive harder for their academic performances and receive better results. According to Baars et al. (2015), students with better EF scores tend to have more study credits. Brain development, particularly in the mid-20s, also influences EF performance. Students with lower attention control, planning, and self-monitoring skills struggle with study planning and progress monitoring. Individual differences in EF development can impact educational outcomes. The study suggests that targeted interventions to improve EF deficits should be implemented in higher education to enhance academic achievement, learning attitude, and motivation. Aside from that, Peterson et al. (2006) investigated the link between college students' study strategies, self-regulatory processes, executive functioning, and academic achievement. The study discovered a positive correlation between executive functioning and students' academic performance, showing that executive functioning is an important aspect in academic achievement.

2.5 Effect of Media Consumption on Executive Functioning

Executive Function (EF) is crucial for goal-directed behavior, such as weight loss, abstaining from substance consumption, engaging in physical exercise, and adhering to medical protocols. Shortcomings in EF can lead to compromised self-regulation, manifesting as challenges in managing substance use, consequently impeding executive functioning (Williams & Thayer, 2009). As much as executive functioning plays a significant role in ensuring an individual proper mental processes, there may be several factors that could affect one's executive functioning which will then affect the patterns of their routine throughout their daily lives. According to research done by Hoang et al. (2016), excessive television consumption between adolescence to mid-adulthood was associated with poor cognitive performance in middle age, notably in processing speed and executive function. Individuals with a lengthy history of heavy television consumption were shown to have low cognitive performance on tests assessing processing speed and executive function. As a result, the study reveals that

excessive television consumption may have a deleterious impact on executive functioning, particularly in middle age. Nichols (2022) also found that exposure to background TV (BTV) negatively impacts children's executive function (EF), particularly during academic enrichment or socializing. This effect is more pronounced in children from families with higher risk factors. Excessive media use, including TV, can also negatively affect children's EF, including attention, working memory, and self-regulation. Reducing media exposure can promote healthier EF development, and parents can help by setting screen time limits and engaging in EF-promoting activities.

Apart from that, Zhang et al. (2023) found that addiction to social media exerts a detrimental impact on executive functioning, while simultaneously exacerbating emotional disturbances and compromising quality of sleep. Structural equation modelling reveals direct effects and indirect effects via emotional disturbance and sleep quality. Higher levels of social media addiction (SMA) were correlated with heightened emotional disturbances, impaired executive functioning, and diminished sleep quality. The findings underscore the notion that SMA not only influences mental well-being but also impairs cognitive processes. The study also revealed a negative correlation between SMA and executive functioning, among young adults with elevated SMA levels tend to exhibit diminished cognitive abilities. Plus, the study found indirect influences of SMA on executive functioning, with one pathway involving emotional disturbance and the other encompassing both aspects (Zhang et al., 2023).

2.6 Theory Related to Executive Functioning

Piaget's Theory of cognitive development, focusing on the construction of knowledge, origin of knowledge, equilibrium in development, stages of development, and autoregulation and construction. It emphasizes that objective knowledge is not acquired through external information but is constructed through interactions between the subject and objects. The development of intelligence is closely tied to how the subject progressively learns to know objects and achieve objectivity (Piaget, 1976). Jean Piaget developed cognitive development theory in the 1930s, delineating four distinct stages of learning in children: sensorimotor (from birth to 2 years), preoperational (from ages 2 to 7), concrete operational (from ages 7 to 11), and formal operational (from ages 12 and beyond). Within these stages, children engage in active learning, progressively incorporating, constructing, and modifying concepts (Cherry, 2023). Cognitive Development Theory, proposed by Jean Piaget, focuses on the stages of

intellectual growth in individuals, highlighting how cognitive abilities evolve over time. Executive functioning, on the other hand, refers to higher-order cognitive processes responsible for self-regulation, goal setting, decision-making, and problem-solving. Piaget's theory emphasizes the development of cognitive structures as individuals progress through stages (sensorimotor, preoperational, concrete operational, and formal operational).

Executive functions involve mental processes like planning, organization, and strategy development. Equilibration, a concept in Piaget's theory, involves maintaining a balance between assimilation and accommodation for cognitive development. Executive functioning serves as a specific lens to examine higher cognitive processes critical for adaptive behavior in various contexts (Malik & Marwaha, 2023). Study done by Best and Miller (2010) reveals significant development in executive function components after age 5, including inhibition, working memory, and shifting. The study suggests that the degree of unity or diversity of executive function varies from age to age, aligning with cognitive development theories emphasizing the dynamic nature of cognitive processes during childhood and adolescence. Further research is needed to construct a comprehensive developmental framework.

2.7 Previous Findings

According to a study done by Ilyas and Qureshi (2020) in Lahore, Pakistan, it is found that there is a significant negative relationship between binge-watching and executive functioning. Binge-watching negatively impacts executive functioning (EF) and academic confidence, particularly among university students. This habit is linked to difficulties in decision-making and poor time management. Furthermore, the study found that heavy media users are more susceptible to interference while completing educational activities, and binge-watching serves as a distraction with negative consequences for students' performance. The I-PACE model explains the development and maintenance of problematic online streaming use, considering predisposing variables, affective and cognitive responses, and EF, inhibitory control, and the decision to binge watch. According to these data, binge-watching may have a negative impact on cognitive functioning and executive skills in university students. The predictive effect of binge watching needs to address future concerns in non-chemical addictive behaviors.

Other than that, another study also has been done by Sirowa (2022) in which the findings contradict the previous findings of Ilyas and Qureshi (2020). The study found a positive correlation between binge-watching and four executive skills: plan management, time management, emotional regulation, and behavioral regulation, with a high correlation for plan management, contradicting previous research. However, no correlation was found for organizational skills. This result diverged from earlier studies, which had reported a negative relationship between binge-watching motivation and executive skill functioning. The results from another research by Rubenking et al. (2018) were congruent with Sirowa (2022). They discovered that binge-watching improves emotional regulation, and our research confirmed this ($r=.680$; moderately favourable connection). The study unveiled that binge-watching tends to be more prevalent among younger individuals, with age exhibiting a negative correlation with binge-watching frequency. Moreover, the research highlighted that emotional regulation through viewing is more strongly linked with binge-watching compared to appointment viewing. Self-control and self-efficacy are not significantly related to binge-watching or appointment viewing, but strongly associated with them. Habit and anticipation/suspense are positively related to binge-watching frequency, with habit playing the largest role.

2.8 Summary

This chapter discusses the prevalence, impact, and theories underlying binge-watching behaviour, as well as executive functioning. Binge-watching has grown in popularity, particularly among younger generations, thanks to technological developments and streaming service availability. According to studies, binge-watching has a negative influence on sleep, mental health, and long-term objectives, but has no substantial effect on academic achievement. Gender disparities in participation and genre preferences have also been identified. Various hypotheses, such as escapism, explain why people binge-watch, citing stress management and emotional coping. Furthermore, excessive media intake, including binge-watching, is linked to poor cognitive performance and executive function difficulties.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter describes research design, population and sample, instruments that will be used in the research study, pilot study, reliability and validity of pilot study, data collection procedure, data analysis procedure of the research study, and ended with summary. Methodology is the most important aspect in obtaining reliable data and information in order to meet research objectives.

3.1 Research Design

In this research, the researcher uses correlational research design to measure the relationships between the variables. The independent variable for this study will be binge-watching behaviour, meanwhile, the dependent variable of this study will be the executive functioning among the undergraduate students. According to Bhandari (2021), a correlational research design seeks understanding of correlation between variables without being controlled or manipulated by the researcher. The strength and direction of the association between two or more variables are depicted through correlation analysis. Plus, quantitative research methods will be used by the researcher by using questionnaires in surveys to collect data from the participants and the information from the collected data will be further analysed by using Statistical Package for Social Sciences (SPSS).

3.2 Population and Sample

A population is a complete set of individuals, whereas a sample represents a smaller subset of that larger population. Samples are utilized in statistical testing when the size of the population is too extensive to feasibly include all potential members or observations (Banerjee & Chaudhury, 2010). Meanwhile, sample size is crucial for project success, reducing error probability, adhering to ethical standards, defining study logistics, and improving success rates when evaluated by funding agencies (Martinez-Mesa et al., 2014). A bigger sample size tends to be more representative of the population, consequently yielding more precise results (Andrade, 2020). The target participants of this study will be the undergraduate students from

Malaysia's public universities and according to MoHE-2022 (2023), the total number of undergraduate students from Malaysia's public universities are 377,103. Hence, the sample size of the population according to Krejcie and Morgan (1970) will be 384. Other than that, convenience sampling will be used in which the participants are selected according to their availability and willingness to take part in the research study. Convenience sampling categorized as a non-probability sampling method, is a practical, cost-effective, and convenient method used in clinical research to select individuals based on their availability and accessibility (Elfil & Negida, 2017).

3.3 Instrument

In this research, there are two sets of questions will be used to collect information which are Binge-Watching Addiction Questionnaire (BWAQ) to determine participant's level of addictive behaviour and Executive Skills Questionnaire – Revised (ESQ-R) which will be used to evaluate the executive functioning of an individual. Both of the questions will be attached in a google form before being distributed to the participants to answer the questionnaires.

3.3.1 Binge-Watching Addiction Questionnaire (BWAQ) (Forte et al., 2021)

Forte et al. (2021), invented the Binge-Watching Addiction Questionnaire to assess individual's level of addiction towards binge-watching behaviour throughout their everyday lives. They have made a study that aims to validate the Binge-Watching Addiction Questionnaire (BWAQ), a self-report questionnaire, by assessing binge-watching behaviour and determining if it resembles addictive behaviour. Apart from that, the study was also conducted to determine and identify some fundamental features that contribute to binge-watching action, and according to statistical analyses by Forte et al. (2021), four-factor model of the BWAQ have been validated and confirmed in two independent samples, demonstrating its psychometric properties and potential to differentiate between maladaptive watching and leisure activities (I.e., "Anticipation", "Avoidance", "Craving", and "Dependency"). They are the key factors in addictive disorders and these measures can help identify "novel" behavioral addiction.

The items in BWAQ were based on the existing scale on Internet Addiction, with 24-item in terms of 5-point Likert scale. According to a study done by Forte et al. (2021), the Cronbach's alpha examined internal consistency Composite Reliability (CR), and Average Variance Extracted (AVE) of the identified factors of BWAQ were calculated. To improve the Cronbach's alpha value, several items have been removed from the 24 items of the questionnaires, resulting in 20-item questionnaires. The proposed model met feasibility and convergent validity criteria, with CR values above the 0.75 threshold and AVE values above the 0.50 threshold, indicating good construct reliability and convergent validity. The final version of the BWAQ assessment was published in both English and Italian. The BWAQ consists of 20 items in which the participants are required to answer all of the questions based on their own preferences. Forte et al. (2021) also analyzed the distribution of binge-watching behaviour scores among respondents, calculating the mean and standard deviation for global scores and four subscales. A cut-off point was used to characterize moderate or problematic behaviour, with values greater than one and two standard deviations being deemed moderately and problematically, respectively.

Table 3.3.1 (a): 5-point Likert Scale

0	1	2	3	4
Never	Rarely	Sometimes	Often	Always
<i>Tidak Pernah</i>	<i>Jarang</i>	<i>Kadang-kadang</i>	<i>Kerap</i>	<i>Sangat Kerap</i>

Table 3.3.1 (b): Cut-off values of the BWAQ global score and subscales.

Global score	Craving	Dependency	Anticipation	Avoidance
Moderate: ≥51 and <69	Moderate: ≥27 and <37	Moderate: ≥12 and <15	Moderate: ≥ 9 and <12	Moderate: ≥7 and <10
Problematic: ≥69	Problematic: ≥37	Problematic: ≥15	Problematic: ≥12	Problematic: ≥10

3.3.2 Executive Skills Questionnaire –Revised (ESQ-R) (Strait et al., 2019)

Strait et al. (2019) developed a self-administered questionnaire, Executive Skills Questionnaire – Revised (ESQ-R) to evaluate an individual's executive functioning skills. The ESQ-R, initially designed for academic contexts, can be applied to working adults as well. Employees need skills like plan management, material organization, emotional and behavioral regulation, and time management to handle new tasks. These skills require a combination of pre-existing knowledge and new skills. Plan management involves generating and managing a task, time management involves time estimation and allocation, material organization involves staying aware of information, and emotional regulation involves controlling emotions and repercussions (Nasir et al., 2021).

Strait et al. (2019) studied on his participants' overall scores utilizing a 25-item ESQ-R version in terms of 4-point Likert scale to evaluate reliability and correlations with other measures. The internal consistency estimates were excellent, with a test-retest reliability correlation of .70 at Time 1 and Time 2. There was no significant impact of delay interval was noted on Time 2 ESQ-R scores or absolute difference between Time 1 and 2 ESQ-R scores. Relationships between ESQ-R total scores and other Executive Functioning (EF) measures, psychological symptom measures, student academic engagement, and college GPA were statistically significant at the $p < .001$ level, except for ESQ-R scores and GPA. Notably, ESQ-R scores exhibited significant correlations with age, while only student academic engagement demonstrated a significant correlation with GPA. The 25-item version has promising psychometric evidence, with excellent internal consistency ($\alpha = .91$) which indicates that the ESQ-R assessment is reliable to be used. The ESQ-R's construct validity is promising, with a negative correlation between the ESQ-R and Executive Function Index (EFI) scores, suggesting that individuals with higher EFI scores tend to report less dysfunction in ESQ-R, indicating a stronger relationship between the two variables.

Table 3.3.2 (a): ESQ-R 4-point Likert Scale

0	1	2	3
Never or Rarely <i>Tidak pernah atau Jarang</i>	Sometimes <i>Kadang-kadang</i>	Often <i>Kerap</i>	Very Often <i>Sangat Kerap</i>

3.4 Ethics of Research

Ethical guidelines are established to protect participant volunteers and preserve the integrity of the research. National Institutes of Health (2016) emphasizes that individuals should choose to participate in research based on their understanding of the study's risks and benefits. Misconduct can compromise research integrity, erode public trust, and waste resources. The effectiveness of research ethics education depends on understanding the causes of misconduct (Resnik, 2020). Respect for individuals is crucial from the initial inquiry to the end of their participation in a study. This includes respecting their privacy, right to withdraw without penalty, being informed of new information, monitoring their welfare, and sharing the findings of the research. Before doing research, the researcher must obtain a permit or a letter of agreement from the faculty. This is to demonstrate that the research that will be undertaken is valid and approved. This also applies to the respondents, as the researcher requires their approval before disseminating and answering the questionnaire. For this research study, an ethics application has been submitted for approval.

3.5 Data Collection Analysis

The researcher will use questionnaires to gather information from the participants by distributing the google form. The google form will be distributed to the participants via any social media site such as WhatsApp, Telegram, Instagram, TikTok, and Facebook. The participants are going to answer the questionnaires in google form based on their preferences. The data will be collected through the responses of the respondents from the google form.

In the google form, the researcher will provide some answers to each question asked and some of the questions require the participants to answer them based on their own preferences (Likert scale). The participant will spend less than 10 minutes to answer all of the

questions in the google form. The responses made by the participants will be collected as data and the data will be further analyzed by using SPSS so that it will be easier for the researcher to produce findings.

3.6 Data Analysis Procedures

3.6.1 Descriptive Data Analysis

Descriptive analysis is a significant phase in statistical data analysis, describing data points constructively to identify patterns and identify typos, outliers, and similarities among variables, preparing for further statistical analyses. In this research study, descriptive statistics were used for demographic questions such as gender, age, races, year of study, and programme. This data usually was presented in the form of table and pie chart. The descriptive analysis will help to summarize the data.

3.6.2 Inferential Data Analysis

The data collected through the responses of the respondents from the google form will be further interpreted and analyzed using SPSS version 26.0 by the researcher. The researcher will be using Independent T-test, Pearson Correlation, and Multiple Regression to analyze the collected data.

Table 3.6.2 Inferential Data Analysis

Hypothesis	Data Analysis	Justification
There is a significant gender difference between binge-watching and executive functioning among undergraduate students.	Independent T-test	The hypothesis compares the means of two groups, males and females, on executive functioning, using the independent t-test to determine if there's a significant difference in scores.
There is a significant relationship between binge-	Pearson Correlation	The study investigates the linear relationship between

watching and executive functioning among the undergraduate students

binge-watching and executive functioning among undergraduate students using Pearson correlation coefficient to determine if there is a significant correlation or not.

Emotional regulation, behavioural regulation, organization, plan management, or time management are the significant predictors for binge-watching addiction behaviour among undergraduate students.

Multiple Regression

To identify which factors significantly can be used to predict binge-watching behaviour among undergraduate students while controlling for other variables.

3.7 Summary

In conclusion, this chapter explains the methodology used in this research for the purpose of data collection and analyses. This chapter also discussed the research design, population and sample that will be used, the instruments, ethics of application, and the collection of data analysis. The reliability and validity of the instruments used in this research study are also discussed in this chapter, which are the BWAQ and the ESQ-R. The data collected through the participants will be analysed by using the SPSS version 26.0. This chapter plays such a fundamental role in ensuring that the research study is being done in an appropriate way.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.0 Introduction

This chapter discusses on the findings of the data collection and data analysis for each of the gathered data. This study managed to collect 112 total of undergraduate student that are currently study around Malaysia. This chapter also includes the demographic information of the respondents and the inferential statistics for the data that was collected in this study. The data collected was analysed using Statistical Package for Social Sciences (SPSS) version 26.0.

4.1 Demographic Information

Table 4.1 Demographic Information

	Demographic Information	Respondents (<i>n</i> =112)	
		Frequency	Percent
Gender	Male	24	21.4
	Female	88	78.6
Race	Malay	46	41.1
	Chinese	12	10.7
	Indian	3	2.7
	Bumiputera Sarawak	37	33.0
	Bumiputera Sabah	14	12.5
Age	19 – 22 years old	74	66.1
	23 – 26 years old	31	27.7
	27 – 30 years old	2	1.8
	31 years old and above	5	4.5
University	Universiti Malaya - UM	2	1.8
	Universiti Sains Malaysia - USM	2	1.8
	Universiti Kebangsaan Malaysia - UKM	3	2.7
	Universiti Putra Malaysia - UPM	2	2.8
	Universiti Teknologi MARA - UiTM	8	7.1
	Universiti Malaysia Sabah - UMS	10	8.9
	Universiti Malaysia Sarawak – UNIMAS	59	52.7
	Universiti Pendidikan Sultan Idris - UPSI	1	0.9
	Universiti Tun Hussein Onn Malaysia – UTHM	1	0.9
	Universiti Teknikal Malaysia Melaka – UteM	5	4.5
	Universiti Malaysia Pahang - UMP	1	0.9
	Universiti Malaysia Kelantan - UMK	1	0.9
	Others	17	15.2

Year of Study	Year 1	6	5.4
	Year 2	14	12.5
	Year 3	82	73.2
	Year 4	7	6.3
	Year 5	3	2.7
CGPA	4.00 – 3.50	60	53.6
	3.49 – 3.00	42	37.5
	2.99 – 2.50	9	8.0
	2.49 and below	1	0.9
Socioeconomic Status	B40	64	57.1
	M40	36	32.1
	T20	12	10.7

In this research study, a total of 112 undergraduate students have participated in. there are 24 and 88 totals of male and female students respectively that take part in this research study with males which contributed to 21.4% of participation and female with 78.6% of participation. The highest number of participants was Malay students with a total of 46 participants, followed by Bumiputera Sarawak with a total of 37 students. Bumiputera Sarawak includes Iban, Bidayuh, Kenyah, Kayan, Melanau etc. Meanwhile for Bumiputera Sabah, it includes races such as Dusun, Kadayan, Murut etc. Participants aged between 19 to 22 years old are the highest contributor to the research study with a total of 74 students followed by participants that aged between 23 to 26 years old with a total of 31 students. However, there are only a few participants aged between 27 to 30 years old and 31 years old and above that take part in the research study with a total of two and five students respectively. Based on the table, there are a total of 82 students that are currently on their third year of study with a percentage of 73.2%, followed by second year students with a number of participations of 14 students (12.5%), fourth year students with a total of 7 participants (6.3%), year 1 and lastly year 5 students with a total of six and three participants respectively.

4.2 Inferential Statistics

4.2.1 To determine gender differences between binge-watching and executive functioning among undergraduate students

H1: There is a significant gender difference between binge-watching and executive functioning among undergraduate students.

Table 4.2.1 (a): Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Binge-watching Addiction Questionnaire (BWAQ)	Male	24	35.0417	17.13496	3.49766
	Female	88	38.1023	14.00578	1.49302

Table 4.2.1 (b): Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
BWAQ	Equal variances assumed	.454	.502	-.903	110	.368
	Equal variances not assumed			-.805	31.866	.427

Based on the table, the p-value of Levene's test for equality of variances is 0.502. Since the p-value = $0.502 > 0.05$, the alternate hypothesis, H1, is rejected. Therefore, for independent t-test, the p-value is $0.368 > 0.05$. There is enough evidence to reject alternate hypothesis and accept null hypothesis. **There is no significant difference between the gender and binge-watching behaviour.**

Table 4.2.1 (c): Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Executive Skills Questionnaire – Revised (ESQ-R)	Male	24	37.2500	15.70447	3.20566
	Female	88	35.4091	13.39466	1.42788

Table 4.2.1 (d): Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
ESQ-R	Equal variances assumed	1.791	.184	.575	110	.567
	Equal variances not assumed			.525	32.692	.603

For Levene's test for equality of variances, $p\text{-value} = 0.184 > 0.05$. There is enough evidence to fail to reject null hypothesis, H_0 .

Therefore, for independent t-test, the $p\text{-value}$ is $0.567 > 0.05$. There is enough evidence to reject alternate hypothesis and accept the null hypothesis. **There is no significant difference between gender and executive functioning.**

Table 4.2.1 (e): Summary for *binge-watching* and *executive functioning* among Genders

Aspects	Hypothesis	Result
Binge-watching	H1: There is a significant difference between genders and binge-watching	H1 is rejected. H_0 is accepted. There is no significant difference in
Executive Functioning	H1: There is a significant difference between genders and executive functioning	genders between binge-watching and executive functioning.

4.2.2 To determine the relationship between binge-watching and executive functioning among undergraduate students

H1: There is a significant relationship between binge-watching and executive functioning among undergraduate students.

Table 4.2.2: Correlation between *binge-watching* and *executive functioning*.

Correlations		BWAQ	ESQ-R
BWAQ	Pearson Correlation	1	.440**
	Sig. (2-tailed)		.000
	N	112	112
ESQ-R	Pearson Correlation	.440**	1
	Sig. (2-tailed)	.000	
	N	112	112

**Correlation is significant at the 0.01 level (2-tailed)

The data showed that there is a positive correlation between the result of binge-watching addiction questionnaire (BWAQ) and executive skills questionnaire-revised (ESQ-R), which was statistically significant ($r = 0.440$, $n = 112$, $p < 0.001$). Since p-value is less than 0.05, there is enough evidence to accept the alternate hypothesis. **Therefore, there is a significant relationship between binge-watching and executive functioning among undergraduate students.** Positive correlation explained the direction of the relationship between BWAQ and ESQ-R, meaning that the variables tend to increase together. Greater scores of BWAQ are associated with greater scores of ESQ-R. Greater scores of BWAQ and ESQ-R indicates the higher level of problematic addiction and poorer executive functioning among the students.

This correlation indicates that individuals that engage in binge-watching behaviour negatively impact their executive functioning. This may include the difficulties in plan management, time management, organization, emotional regulation, and behavioural regulation. However, this can also mean that individual with poor executive functioning is more likely to engage in problematic binge-watching behaviour.

4.2.3 To determine the predictor for binge-watching addiction behaviour among undergraduate students between emotional regulation, behavioural regulation, organization, plan management, and time management.

H1: Emotional regulation, behavioural regulation, organization, plan management, or time management are the significant predictors for binge-watching addiction behaviour among undergraduate students.

**Table 4.2.3 (a): Significant predictor for *binge-watching* behaviour
(Variables Entered/Removed^a)**

Model	Variables Entered	Variables Removed	Method
1	Time_Management		Stepwise (Criteria:Probability- of-F-to-enter ≤.050, Probability- of-F-to- remove≥.100).
2	Emotional_Regulation		Stepwise (Criteria: Probability-of-F-to- enter ≤.050, Probability-of-F-to- remove ≥.100).

a. Dependent Variable: BWAQ

Table 4.2.3 (b): Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.449 ^a	.202	.195	13.19423
2	.494 ^b	.244	.230	12.90090

a. Predictors: (Constant), Time_Management

b. Predictors: (Constant), Time_Management,
Emotional_Regulation

Table 4.2.3 (c): ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4846.040	1	4846.040	27.837	.000 ^b
	Residual	19149.639	110	174.088		
	Total	23995.679	111			
2	Regression	5854.449	2	2927.225	17.588	.000 ^c
	Residual	18141.229	109	166.433		

Total	23995.679	111
a. Dependent Variable: BWAQ		
b. Predictors: (Constant), Time_Management		
c. Predictors: (Constant), Time_Management, Emotional_Regulation		

Table 4.2.3 (d): Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	23.040	3.002		7.676	.000
	Time_Management	2.529	.479	.449	5.276	.000
2	(Constant)	19.758	3.224		6.129	.000
	Time_Management	1.722	.572	.306	3.012	.003
	Emotional_Regulation	1.826	.742	.250	2.461	.015

a.

b. Dependent Variable: BWAQ

Table 4.2.3 (e): Excluded Variables^a

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	Emotional_Regulation	.250 ^b	2.461	.015	.229	.672
	Behavioural_Regulation	-.040 ^b	-.380	.705	-.036	.647
	Plan_Management	.107 ^b	.752	.454	.072	.361
	Organization	.081 ^b	.713	.477	.068	.568
2	Behavioural_Regulation	-.091 ^c	-.858	.393	-.082	.625
	Plan_Management	-.102 ^c	-.624	.534	-.060	.260
	Organization	.048 ^c	.432	.667	.042	.559

a. Dependent Variable: BWAQ

b. Predictors in the Model: (Constant), Time_Management

c. Predictors in the Model: (Constant), Time_Management, Emotional_Regulation

The variables entered/removed table shown two factors that significantly contribute to binge-watching addiction behaviour which are time management and emotional regulation. Based on the model summary table, the R Square for both variables are 0.244 which also means that 24.4% of the binge-watching addiction behaviour can be explained by the independent variables, time management and emotional regulation. The p-value shown in the ANOVA table is 0.000 which is less than 0.05, which means that the models can be used and are related to the binge-watching addiction behaviour. Meanwhile, the coefficients table showed that p-value

is less than 0.05 which indicates the presence of significance of the variables. **Therefore, “Time Management” and “Emotional Regulation” are the significant variables to predict binge-watching addiction behaviour among undergraduate students.**

Among all of the independent variables (plan management, time management, emotional regulation, behavioural regulation, organization), time management and emotional regulation showed a significant predictor for binge-watching addiction behaviour. Time management and emotional regulation explain 24.4% changes in binge-watching addiction behaviour. The regression model predicted approximately 24.4% of variances on BWAQ scores, $R^2=0.244$, $F(2,109)=17.588$, $p=0.000$ [obtained from ANOVA table]. **This finding indicates that those who have good time management and emotional regulation, are less likely to be involved in binge-watching addiction behaviour.** Good time management and emotional regulation predict lower binge-watching addiction among the students.

4.2.4 Summary of the results

Table 4.2.4: Summary of the results

Objectives	Hypothesis	Results
1. To determine the gender difference between binge-watching and executive functioning among undergraduate students	H1: There is a significant gender difference between binge-watching and executive functioning among undergraduate students.	There is no significant difference in genders between binge-watching and executive functioning.
2. To determine the relationship between binge-watching and executive functioning among undergraduate students	H1: There is a significant relationship between binge-watching and executive functioning among undergraduate students.	There is a significant relationship between binge-watching and executive functioning among undergraduate students.
3. To determine the predictor for binge-watching addiction behaviour among undergraduate students between emotional regulation, behavioural regulation, organization, plan management, and time management.	H1: Emotional regulation, behavioural regulation, organization, plan management, or time management are the significant predictors for binge-watching addiction behaviour among undergraduate students.	Time management and emotional regulation are the significant variables to predict binge-watching addiction behaviour among undergraduate students.

4.3 Discussion

4.3.1 To determine the gender difference between binge-watching and executive functioning among undergraduate students.

Based on the results, it is found that there is no significant gender difference between binge-watching and executive functioning among undergraduate students. The results suggest that males and females have similar binge-watching habits, spending equivalent amounts of time on this activity, potentially leading to similar effects on executive functioning, resulting in no significant difference in gender between binge-watching and executive functioning. The findings of this research study aligned with the results of study done by Qayyoun and Malik (2023), which found that there is also no significant difference in binge-watching patterns between females and males. Females were more likely to be influenced by Fear of Missing Out (FOMO) and social interaction, while males showed a higher concern for excitement (Qayyoun & Malik, 2023). This means that male and females tend to engage in binge-watching behaviour equally.

According to study done Seifert (2019), he found no significant gender difference in the frequency of watching video streaming content. However, he found a significant difference between gender in the number of episodes watched and the number of minutes watched. The study indicates that females watched more episodes and watched significantly longer than males. These findings highlight that while the frequency of watching may be similar across genders, the quantity of content consumed differs, with females engaging in more extensive binge-watching behaviour. The study suggests that psychological traits, particularly the need for cognition, may explain females' increased binge-watching of complex content, as per a study by Shim and Kim (2018), though further research is needed to understand the relationship between gender and viewing behaviour.

4.3.2 To determine the relationship between binge-watching and executive functioning among undergraduate students.

Other than that, the research study also found that there is a positive significant correlation between binge-watching and executive functioning among undergraduate students which indicates that problematic binge-watching behaviour may lead to problematic executive functioning. Individual with a problematic binge-watching behaviour tend to have a poor executive functioning performance which includes plan management, time management,

organizational skills, emotional regulation, and behavioural regulation. Binge-watching was consistently regarded as a platform for relaxation, entertainment, and coping mechanism. According to study done by Fancourt and Steptoe (2019), over consumption of television (binge-watching) can result in cognitive impairments in memory and language later in life due to the rapid changes in visual, auditory, and motor processes that occur during passive information processing.

The findings of this study were congruent with a previous study conducted by Sirowa (2022), which discovered a strong link between binge-watching and executive functioning in young people aged 18 to 25. Several factors influence the relationship between binge watching and executive functioning. Firstly, time management issues may occur when individuals fail to balance binge-watching with other responsibilities, prompting them to utilise binge-watching as a coping method. Furthermore, planning issues may lead to problems with impulse control, increasing the risk of succumbing to binge-watching cravings. Furthermore, the need for immediate gratification associated with binge-watching may satisfy an individual's demand for instant reward while also allowing them to escape from daily obligations and responsibilities.

Ilyas and Qureshi's (2020) study supports this finding, indicating that binge-watching has a deleterious influence on executive functioning. This is related to a variety of variables, including cognitive overload, decreased cognitive engagement, altered sleep patterns, sedentary behaviour, immediate gratification, and decreased attentional control. Prolonged viewing can create cognitive overload, which strains cognitive resources and impairs memory, focus, and decision-making. It typically comprises passive content consumption, which reduces cognitive engagement and mental stimulation. Watching before bedtime has an impact on sleep, resulting in lower cognitive performance the next day. Sedentary behaviour associated with binge-watching did not have the same brain-boosting benefits as physical activity. The preference for immediate gain over long-term cognitive health, paired with poor attentional control, further affects executive functions. Additionally, the systematic review of binge-watching as an addictive behaviour done by Ilyas et al. (2023) reveals a negative relationship between binge-watching and executive functioning, with excessive binge-watching leading to cognitive deficits and a decline in executive control and processing in midlife. This affects decision-making, working memory, emotional control, attention, planning, and organization, highlighting the detrimental effects of binge-watching.

Executive functioning, encompassing abilities such as maintaining attentional focus and following instructions, is essential for self-regulation. Individuals with poor self-regulation may utilise binge-watching to avoid crucial chores and cause conflict with initial aims. They may struggle to stay focused, resulting in prolonged binge-watching sessions. After binge-watching, individuals may feel regret and have bad thoughts about time management. Those with stronger self-regulation, on the other hand, may use binge-watching as a reward in order to strike a balance between productivity and leisure (Merrill Jr. & Rubenking, 2019). Self-regulation determines how people incorporate binge-watching into their lives.

4.3.3 To determine the predictor for binge-watching addiction behaviour among undergraduate students between emotional regulation, behavioural regulation, organization, plan management, and time management.

The findings of the current research study found that time management and emotional regulation are the significant predictor for binge-watching addiction behaviour. Time management is the strategic planning and control of time spent on specific activities, enhancing efficiency and productivity in both academic and professional settings (Kosikova et al., 2019). Meanwhile, emotional regulation generally refers to the processes by which individuals influence their emotions, how they experience them, and how they express them. It involves the ability to manage and respond to emotional experiences in a healthy way (Ilyas et al., 2023). Based on the results of the current study, good time management and emotional regulation predict lower binge-watching addiction behaviour in which it suggests that individuals with good time management and emotional regulation are less likely to be involved in binge-watching addiction behaviour.

This finding can be supported by study done by Ilyas et al. (2023) which indicates that the feeling of loneliness and dysregulated emotions are significant contributors to lead individuals to engage in binge-watching behaviours. The study done by Starosta et. al (2021) highlighted that limited access to emotional regulation strategies and difficulties in impulse control significantly predict the number of binge-watched episodes. Studies suggest that people binge-watch TV shows due to impulse control issues and certain structural characteristics of streaming platforms, aiming to maintain a positive affect or escape negative emotions. Individuals often binge-watch to cope with emotions they do not understand or know how to

manage. The study done by Rubenking et al. (2018) also discovered that many individuals binge-watch to relax and decompress, typically after work or homework. During viewing, they experience diverse emotions, ranging from being on edge or overly alert to feeling calm and relaxed, influenced by the varied content genres and viewing contexts. This proven how emotional regulation can be considered as one of the factors that influence binge-watching behaviour among its viewers, especially the students.

Apart from that, a study done by Flayelle et al. (2019) supported this finding in which the study identifies four binge-watching clusters: avid, recreational, unregulated, and regulated binge-watchers. The avid binge-watchers reported high engagement and emotional fulfillment, while recreational TV series viewers showed lower levels of binge-watching and emotional involvement. Regulatory binge-watchers showed moderate engagement and willingness to adjust behaviors, avoiding emotional distress or impulsivity. Among all of the clusters, the unregulated binge-watchers reported the highest levels of emotional enhancement and coping or escapism motivations, high impulsivity (excluding sensation seeking), and emotional reactivity that eventually resulted in the problematic TV series consumption. Additionally, the unregulated binge-watchers had significantly higher scores on loss of control and reported more negative affect, problematic internet use, and alcohol-related issues compared to other clusters that includes avid binge-watchers, recreational TV series viewers, and regulated binge-watchers. Therefore, it aligned with the pattern of poor emotional regulation leading to binge-watching addiction and it supports the finding of emotional regulation plays a critical role in binge-watching behaviour compared to behavioural regulation.

In this study, it is found that individual with good time management is less likely to engage in binge-watching addiction behaviour. This finding can be explained through several studies regarding how time management may lead to binge-watching addiction behaviour. According to study done by Kosikova et al. (2019), poor time management often leads to procrastination among students, causing confusion, overwhelm, anxiety, and avoidance behaviors due to delayed work start-ups. The study suggests that without a clear plan, students may prioritize less critical tasks and neglect more significant ones, thereby exacerbated procrastination. Aribas (2021)'s research study also found that there is a negative relationship between procrastination and time management skills, which explains that as their time management skills improved, the tendency to procrastinate academically decreased and vice

versa. The study done by Siraj (2023) also found a strong positive correlation between procrastination and binge-watching behaviour among its viewers. The positive correlation indicates that as procrastination increases, the binge-watching behaviour also increases and vice versa. The correlation between the pattern of poor time management may lead to issues in procrastination in getting things done and eventually lead to binge-watching addiction behaviour. Through this research, it may explain how poor time management among the students may impact their binge-watching behaviour pattern. Good time management skills can help schedule specific times for binge-watching, allowing individuals to enjoy favorite shows without compromising other commitments, preventing excessive or detrimental behavior (Panda & Pandey, 2017).

4.4 Conclusion

This chapter presented the findings from the data collected and analyzed, involving 112 undergraduate students from various universities in Malaysia. The inferential statistics provided insights into the hypotheses tested in this study. First, the study found no significant gender differences in binge-watching habits and executive functioning among undergraduate students. Second, there was a significant positive correlation between binge-watching and executive functioning. Problematic binge-watching was associated with poorer executive functioning, affecting plan management, time management, organizational skills, emotional regulation, and behavioral regulation. Lastly, time management and emotional regulation were significant predictors of binge-watching addiction behavior. Good time management and emotional regulation skills were associated with lower levels of binge-watching addiction. The study highlights the link between binge-watching behavior and executive functioning, emphasizing the need for effective time management and emotional regulation strategies to reduce addiction and improve academic and personal lives.

CHAPTER FIVE

LIMITATION, IMPLICATION, RECOMMENDATION, AND CONCLUSION

5.0 Introduction

This chapter explains the limitations of the research study, the implications, the recommendations and ends with conclusions.

5.1 Limitations of research

This research study required 384 sample sizes to represent the population of the undergraduate students in Malaysia. However, there are only 112 participants had participated in the study, with a total of 24 male students and 88 female students. The total of 112 students are less than half of the sample sizes, which concluded that the research study lack of generalizability. The sample size of 112 Malaysian undergraduate students falls short of the recommended sample size of 384 according to Krejcie and Morgan, reducing the representativeness of the findings. The presence of gender imbalance in this research study may not accurately represent the gender distribution of the broader undergraduate population in Malaysia.

Other than that, the research study used self-administered questionnaires, which can introduce response bias. Response bias occurs when participants do not answer questions truthfully due to social desirability or other factors influencing their responses. In this case, participants may have been inclined to provide answers that align with societal norms or the researchers' expectations, rather than their true beliefs or experiences. Completing survey questions in a very limited amount of time without careful consideration may distort the results, undermining the validity of the study's findings (Nikolopoulou, 2022). This highlights a potential limitation of using self-administered surveys in research studies.

The survey questionnaires used in the research study provided limited in-depth information about the respondents. Self-administered surveys typically have structured format with predefined response options, which can restrict the depth of information collected from participants. As a result, the study may have missed out on capturing nuanced insights or understanding the complexity of participants' experiences and perspectives. This limitation underscores the need for researchers to carefully consider the trade-offs between the

convenience of self-administered surveys and the depth of information they provide when designing research studies.

5.2 Implications of research

This research study is conducted to investigate the impact of binge-watching on executive functioning among undergraduate students in Malaysia in which the participants, involved all the undergraduate students from all the universities in Malaysia. Based on the findings, there are several implications that can be highlighted in which it provides a valuable insight to the reader into understanding the impact of binge-watching on executive functioning among undergraduate students. The findings of the research study carry significant implications for the students as well as the educators. By investigating the impact of binge-watching on executive functioning among undergraduate students, we can better understand the challenges students face in regulating their screen time and cognitive abilities.

Upon the findings of this research study, it can raise awareness regarding the potential effect of binge-watching on executive functioning among the students, especially among the undergraduate students. It enables to provide the possible consideration of intervention development in coping with the problematic addiction behavior which could impact the executive functioning by promoting balanced media consumption and enhancing the cognitive ability of the students through programs. For example, counseling services or digital wellness programs, can be implemented to support students in developing healthier media consumption habits and improve their cognitive abilities.

Other than that, the research study also paves the way for further research to explore the long-term effects of binge-watching on executive functioning. future studies could investigate potential moderators or mediators of this relationship. Understanding these moderating or mediating factors can provide valuable insights into how binge-watching may have an impact on executive functioning over time. Finally, researchers could explore various methods to assist students in reducing their binge-watching habits and evaluate if these interventions positively impact their cognitive abilities. By conducting such studies, the reader may gain insights into effective strategies for helping students regulate their media consumption and improve their academic performance.

5.3 Recommendations

For future research regarding related study, researcher may consider increase the sample size by gather more participants from all the undergraduate students around Malaysia to increase the generalizability of the research study. Rather than using non-probability sampling such as convenience sampling that may limits the generalizability of findings and create bias, researcher may use probability sampling methods such as simple random sampling, stratified random sampling, cluster sampling, and systematic sampling. Probability sampling ensures equal chance of inclusion in a study, a principle similar to random selection in research. Future research also should strive for more balanced gender distribution in the sample to better represent the population of undergraduate students in Malaysia.

To address the limitation of response bias introduced by self-administered questionnaires, ensuring anonymity and confidentiality is crucial. Research confidentiality ensures investigators can only identify individual responses, while anonymity prevents identifying information or linking to participants' identities unless essential to the study protocol (Hoft, 2021). By guaranteeing participants that their responses will remain completely anonymous and confidential, researchers can significantly reduce the pressure on participants to provide socially desirable answers. This assurance fosters a sense of security and trust, encouraging participants to answer questions more honestly and accurately. Participants are more likely to disclose their true thoughts and behaviors when they know that their identities will not be revealed, and their responses cannot be traced back to them. This approach helps to mitigate the influence of social desirability bias and enhances the reliability of the data collected.

Moreover, to obtain deeper understanding of the research phenomenon and gain participants' perspective more comprehensively, researchers should also explore the possibility of using qualitative research study instead of quantitative research study. Qualitative research study allows for a richer exploration of the nuances of the topic, enabling researchers to delve into the underlying reasons and motivations behind binge-watching behaviours and their impact on executive functioning. It offers advantages in understanding complex phenomena, addressing response bias in self-administered questionnaires, and providing a more flexible and adaptive design (Tenny et al., 2022). Complement self-administered surveys, with interviews, or focus groups to gain deeper insights into participants' experiences and

perspectives. Moreover, researcher can explore complex phenomena in detail and uncover nuances that quantitative approaches may not capture.

5.4 Conclusion

In conclusion, this study offered information on the influence of binge-watching on executive functioning among Malaysian undergraduate students. Despite limitations such as a small sample size and potential response bias from self-administered surveys, the findings provide important insights into the difficulties students confront in controlling their screen usage and cognitive ability. The findings of this study indicate the importance of raising awareness about the effects of binge-watching on executive functioning and designing interventions to encourage balanced media consumption and improve cognitive capacities among students. Future study recommendations include increasing the sample size, assuring a balanced gender distribution, using probability sampling methods, and incorporating qualitative methodologies to reduce response bias and acquire deeper insights. By addressing these limitations and recommendations, future research can build on these findings to better understand and manage the impact of binge-watching on executive functioning, resulting in greater academic performance and well-being for students.

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APPENDIX A

RAW SPSS OUTPUTS

OBJECTIVE 1: INDEPENDENT T-TEST

T-Test

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
BWAQ	male	24	35.0417	17.13496	3.49766
	female	88	38.1023	14.00578	1.49302

Independent Samples Test										
Levene's Test for Equality of Variances				t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
BWAQ	Equal variances assumed	.454	.502	-.903	110	.368	-3.06061	3.38866	-9.77613	3.65492
	Equal variances not assumed			-.805	31.866	.427	-3.06061	3.80299	-10.80832	4.68711

T-Test

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
ESQR	male	24	37.2500	15.70447	3.20566
	female	88	35.4091	13.39466	1.42788

Independent Samples Test										
Levene's Test for Equality of Variances				t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
ESQR	Equal variances assumed	1.791	.184	.575	110	.567	1.84091	3.20309	-4.50687	8.18869
	Equal variances not assumed			.525	32.692	.603	1.84091	3.50929	-5.30135	8.98317

OBJECTIVE 2: PEARSON CORRELATION

Correlations

Correlations			
		BWAQ	ESQR
BWAQ	Pearson Correlation	1	.440**
	Sig. (2-tailed)		.000
	N	112	112
ESQR	Pearson Correlation	.440**	1
	Sig. (2-tailed)	.000	
	N	112	112

** . Correlation is significant at the 0.01 level (2-tailed).

OBJECTIVE 3: MULTIPLE REGRESSION

Regression

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	Time_Management		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Emotional_Regulation		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: BWAQ

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.449 ^a	.202	.195	13.19423
2	.494 ^b	.244	.230	12.90090

a. Predictors: (Constant), Time_Management

b. Predictors: (Constant), Time_Management, Emotional_Regulation

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4846.040	1	4846.040	27.837	.000 ^b
	Residual	19149.639	110	174.088		
	Total	23995.679	111			
2	Regression	5854.449	2	2927.225	17.588	.000 ^c
	Residual	18141.229	109	166.433		
	Total	23995.679	111			

a. Dependent Variable: BWAQ

b. Predictors: (Constant), Time_Management

c. Predictors: (Constant), Time_Management, Emotional_Regulation

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	23.040	3.002		7.676	.000
	Time_Management	2.529	.479	.449	5.276	.000
2	(Constant)	19.758	3.224		6.129	.000
	Time_Management	1.722	.572	.306	3.012	.003
	Emotional_Regulation	1.826	.742	.250	2.461	.015

a. Dependent Variable: BWAQ

Excluded Variables^a

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	Emotional_Regulation	.250 ^b	2.461	.015	.229	.672
	Behavioural_Regulation	-.040 ^b	-.380	.705	-.036	.647
	Plan_Management	.107 ^b	.752	.454	.072	.361
	Organization	.081 ^b	.713	.477	.068	.568
2	Behavioural_Regulation	-.091 ^c	-.858	.393	-.082	.625
	Plan_Management	-.102 ^c	-.624	.534	-.060	.260
	Organization	.048 ^c	.432	.667	.042	.559

a. Dependent Variable: BWAQ

b. Predictors in the Model: (Constant), Time_Management

c. Predictors in the Model: (Constant), Time_Management, Emotional_Regulation

APPENDIX B

MATERIALS/INSTRUMENT

BINGE-WATCHING ADDICTION QUESTIONNAIRES (BWAQ)

Section C: Binge-watching Addiction Questionnaires (BWAQ)

This section aims to assess the level of binge-watching addiction among the students. You are required to answer all of the questions based on your own preferences and with honesty.

- 0 - Never
- 1 - Rarely
- 2 - Sometimes
- 3 - Often
- 4 - Always

1. How many times have you been watching TV series more than you would have liked? *

2. Do you happen to neglect household chores to spend more time watching TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

3. Do you often read reviews and opinions about new TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

4. Do people you hang out with complain about the amount of time you spend watching TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

5. Do you happen to check out the new on-demand releases before doing anything else important? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

6. Do you try to minimize when someone points out the time you spend watching TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

7. How many times do you find yourself diverting your attention from negative thoughts with the consoling thought of your favorite TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

8. Do you happen to foretaste the moment you will watch a TV series again? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

9. Do you happen to think that your life without the TV series would be boring, empty, and joyless? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

10. Do you happen to react abruptly, raise your voice, or rudely reply if someone disturbs you while you are watching a TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

11. Do you sleep less to stay up late to watch a TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

12. Do you happen to concentrate on your thoughts on TV series and fantasize about the evolution of the plot? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

13. Do you happen to find yourself saying "One more episode and I'll turn it off" when you watch a TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

14. Do you try to minimize or hide how much time you spend watching TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

15. Do you often feel depressed, irritable, or nervous when you can't watch a TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

16. Do you happen to choose to spend more time watching a TV series rather than hanging out with others? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

17. Do you happen to feel good when you are able to watch a TV series again? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

18. Do you happen to think that people overestimate the time you spend watching TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

19. Are you interested in new releases TV series? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

20. Does thinking about the moments when you watch your favourite TV series help you manage your stressful moments? *

	0	1	2	3	4	
Never	☐	☐	☐	☐	☐	Always

EXECUTIVE SKILLS QUESTIONNAIRE-REVISED (ESQ-R)

Section D: Executive Skills Questionnaire - Revised (ESQ-R)

This section aims to evaluate the level of skills functioning of the participants. You are required to answer all of the questions based on your own preferences and with honesty.

0 - Never or rarely

1 - Sometimes

2 - Often

3 - Very often

1. I act on impulse. *

0

1

2

3

☐☐☐☐

2. I say things without thinking. *

0

1

2

3

☐☐☐☐

3. I lose things. *

0

1

2

3

☐☐☐☐

4. I have a short fuse. *

0

1

2

3

☐☐☐☐

5. I get upset when things don't go as planned. *

0

1

2

3

☐☐☐☐

6. I run out of steam before finishing a task. *

0

1

2

3

☐☐☐☐

7. It's hard for me to set priorities when I have a lot of things to do. *

0

1

2

3

☐☐☐☐

8. My desk or workspace is a mess. *

0

1

2

3

☐☐☐☐

9. I have trouble keeping my house or room clean. *

0

1

2

3

☐☐☐☐

10. I have trouble estimating how long it will take to complete a task. *

0

1

2

3

☐☐☐☐

11. I'm slow at getting ready for school, work, or appointments. *

0

1

2

3

☐☐☐☐

12. If the first solution to a problem doesn't work, I have trouble thinking of a different one. *

0	1	2	3
☐	☐	☐	☐

13. I skip checking my work for mistakes, even when the stakes are high. *

0	1	2	3
☐	☐	☐	☐

14. I get annoyed when tasks are too hard. *

0	1	2	3
☐	☐	☐	☐

15. It's hard for me to put aside fun activities to start things I know I need to do. *

0	1	2	3
☐	☐	☐	☐

16. I have trouble with tasks where I have to come up with my own ideas. *

0	1	2	3
☐	☐	☐	☐

17. It's hard for me to tell how well I'm doing on a task. *

0	1	2	3
☐	☐	☐	☐

18. I have trouble reaching long-term goals. *

0	1	2	3
☐	☐	☐	☐

19. I "go with my gut" when making decisions. *

0	1	2	3
☐	☐	☐	☐

20. I get so wrapped up in what I'm doing that I forget about other things I need to do. *

0	1	2	3
☐	☐	☐	☐

21. Little things frustrate me. *

0	1	2	3
☐	☐	☐	☐

22. I have trouble getting back on track if I'm frustrated. *

0	1	2	3
☐	☐	☐	☐

23. I have trouble making a plan. *

0	1	2	3
☐	☐	☐	☐

24. I miss the big picture. *

0

1

2

3

☐☐☐☐

25. I live for the moment. *

0

1

2

3

☐☐☐☐