COGNITIVE DISSONANCE: THE RELATIONSHIP BETWEEN PERCEIVED CHOICE OF SUBJECTS AND ACADEMIC ACHIEVEMENT AMONG LEARNERS IN THE SELECTED SCHOOLS OF LUSAKA DISTRICT, ZAMBIA

BY

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DECLARATION

I, Ruth Nakamba, do hereby declare that this thesis represents my own work and it has not been submitted for any degree at any level at this University or any other University for the same purpose. All resources used have been acknowledged by means of complete references.

Signed_____ Date 11/04/2025

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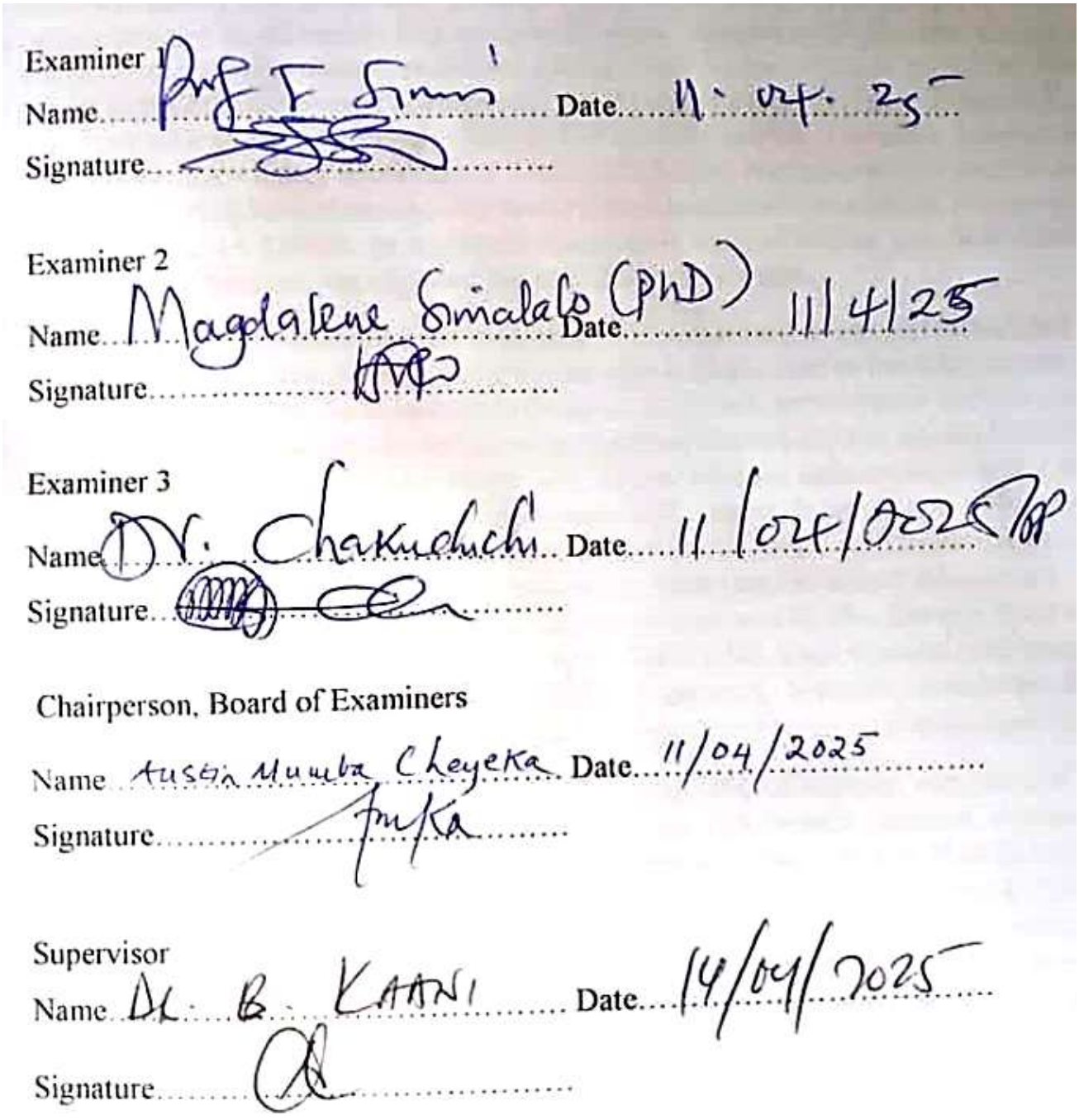
APPROVAL

This thesis of Ruth Nakamba is approved as fulfilling the partial requirements for the award of the Degree of Doctor of Philosophy in Educational Psychology by the University of Zambia.



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ABSTRACT

There is a dearth of studies on the relationship between cognitive dissonance and academic achievement in Africa and worldwide. According to Festinger, the proponent of cognitive dissonance theory, Cognitive dissonance occurs as a result of cognitive inconsistency between attitudes, beliefs and behaviour. Cognitive dissonance creates psychological discomfort which people attempt to eliminate in a number of ways. According to the free choice paradigm of cognitive dissonance theory, perceived choice leads to reduction of cognitive dissonance and results in the development of positive attitude. At senior secondary school level in Zambia, pupils are allocated subjects according to the marks they have scored. Therefore, learners are obliged to take subjects even if they dislike them. This conflict often creates cognitive dissonance for learners because they may have opposing beliefs and attitudes towards the subjects they are given. Limited research exists in Zambia on cognitive dissonance, subject choice and their relationships with academic performance, highlighting the need for further study.

This study sought to determine the level of cognitive dissonance among learners and the academic performance of learners with high and low cognitive dissonance in the selected schools of Lusaka District, and to assess the relationship between academic performance and perceived choice of subjects, as well as the association between cognitive dissonance and academic achievement. This study was guided by positivistic worldview. The positivistic epistemology is that of objectivism. Therefore, this study employed a cross-sectional survey design. Data collection instruments included, Cognitive dissonance scale, perceived choice scale and common examination. The sample comprised 200 randomly selected pupils from two secondary schools of Lusaka District. The percentage of girls was 36.5% girls and that of boys was 63.5%. The age of the learners ranged from 13 to 21 years, with a mean age of 16.03 (SD = 1.14). Data was analysed using the statistical tests which included: Multivariate Analysis of variance, bivariate correlation and descriptive statistics. The statistical package for Social Science (SPSS) was used to analyse the data.

Overall cognitive dissonance results revealed that 50% of learners experienced high cognitive dissonance. The cognitive dissonance sub scales represented personal domain and external domain. Among the sub scales representing personal domain, family dissonance had the lowest mean score while the subscale with the highest mean was personal adjustment. For the impersonal domain, dissonance based on school and learning had the lowest mean score while dissonance based on perpetuance had the highest mean score. There was a significant difference in the level of cognitive dissonance among learners with regard to school and gender. Additionally, findings indicated that there was a significant difference in academic performance among learners with regard to the level of dissonance. Five out of eight sub scales of cognitive dissonance correlated negatively with academic performance unlike three which were not statistically significant. These included cognitive dissonance based on the family, dissonance connected to socialization and dissonance based on personal adjustment. There was no significant relationship between perceived choice of subjects and academic performance. In conclusion, high level of cognitive dissonance leads to low academic achievement.

Keywords: cognitive dissonance, perceived choice, academic performance

DEDICATION

This dissertation is dedicated to my husband Mr. Obed Sichela, and my children, Ipaalo and Sankanaji for their endurance during the time I was away from home. I also dedicate this work to my father, Mr. Tenson Mulambya and my mother, Mrs. Beatrice Nakanyika Mulambya.

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Above all, I am deeply thankful to the Almighty God for His enduring grace, strength, and guidance, which have sustained me throughout this academic journey. To Him be all the glory.

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ACRONYMS

DISS	Cognitive Dissonance Scale
FAM	Family content
EMO	Emotional content
PAD	Personal Adjustment
HEA	Health and wellness
SCH	School and learning
SOC	Socialisation
PER	Perpetuance
SUB	Subservience/Dominance
MRCD	Multiple representation based on Cognitive Dissonance
PCASS	Perceived choice and awareness of self-scale
STEM	Science, Technology, Engineering and Mathematics

CHAPTER 1

INTRODUCTION

1.1 Overview

This chapter presents background of the study, statement of the problem, purpose of the study, study objectives, research questions, research hypotheses, significance of the study, theoretical framework and conceptual framework.

1.2 Background of the Study

The success of teaching and learning is measured by good academic performance. Research in educational psychology attaches great importance to the prediction of academic achievement (Cancino-Montecinos, 2020). According to Das Kumar, Halder, Mishra, and Debnath (2018), academic achievement is defined as learners' academic accomplishment, which is represented by grades or percentages in the educational system. Additionally, Kohli (1975), as cited in Das Kumar et al. (2018), defines academic achievement as the level of academic attainment in school subjects, which is obtained by learners in the examination. Academic achievement is determined by a number of factors. According to Arora and Singh (2017), academic achievement is an interplay of various factors, such as study habits, socialization, socio-economic status and educational background of parents, personality traits, personal interests of a student, as well as the teaching skills of concerned faculties.

1.2.1 Cognitive Dissonance and Academic Performance

There is little research done on the relationship between cognitive dissonance and academic achievement worldwide (Al Otaibi, 2012). Festinger (1957), the proponent of cognitive dissonance theory, argues that cognitive dissonance occurs as a result of cognitive inconsistency among

attitudes, beliefs, and behaviour. Cognitive dissonance creates psychological discomfort, which people attempt to eliminate in a number of ways, such as changing behaviour or cognition as well as justifying the behaviour or cognition by changing the conflicting cognition (Cancino-Montecinos, 2020). According to the free choice paradigm of cognitive dissonance, perceived choice leads to the reduction of cognitive dissonance and results in the development of a positive attitude (Festinger, 1957; Cancino-Montecinos, 2020). After selecting a particular option, people tend to increase liking for the selected alternative (Festinger, 1957; Cancino-Montecinos, 2020). When learners are given an opportunity to select optional subjects that align with their intended careers, they may become motivated to learn. This can lead to improved academic performance. The level of cognitive dissonance is determined by the idea of being responsible for the negative consequences of our actions (Harmones-Jones, Harmones-Jones, & Levy, 2015). Generally, people strive for consistency as well as positivity and maintaining a sense of self because they want to ensure that they appear competent, moral, and in control of their behaviour (Aronson, 1999 as cited in Harmon-Jones et al., 2015). In view of this, learners are likely to choose subjects in which they can perform well. They evaluate their abilities and inclinations.

The Ministry of Education revised the Curriculum in Zambia in 2013 with the help of the United States Agency for International Development with the sole purpose of improving academic performance among learners (Ministry of Education-Zambia Curriculum Framework, 2013). As a result, Education Curriculum framework was developed as a guide to the education sector in Zambia. The new curriculum framework brought about career pathways in Zambia. The curriculum for senior secondary school has been linked to Junior Secondary school career pathways in Zambia, which include academic and vocational career pathways.

Career pathways were created to meet the aspirations of different learners. However, each Senior Secondary School has been restricted to two options for either academic or vocational Career Pathway (Ministry of Education- Zambia Curriculum Framework, 2013). This makes it impossible for schools to cater for all career aspirations of learners. In some schools, learners may not be interested in any of the career pathways or optional subjects offered in the school. However, the Ministry of Education-Zambia Curriculum Framework (2013, p. 52) states, "When placing learners in different career pathways, schools shall assess learners after the first month in school. However, learners' interests need to be considered and also notwithstanding the availability of teachers." Similarly, Zambia has ratified the United Nations Convention on the Right of a Child (1989) as well the African Charter on the Rights and Welfare of a Child (1990). Hence, the need to promote the rights of children by allowing them to pursue their intended career pathways.

In Zambian schools, learners end up taking optional subjects that are not compatible with their prospective careers due to limited choice. If they feel that they cannot pass a particular subject and they have no enthusiasm to pursue knowledge in that subject, they may perform poorly in the final examination. Out of 125, 075 candidates who sat for the examination in 2022, 86,662 pupils representing 69.29% obtained school certificates. This represents an increase of 2.14% from 2021. Boys who obtained school certificates accounted for 69.31%, while girls accounted for 69.27%, with a small difference of 0.04% points favouring boys (Examinations Council of Zambia Performance Review Report, 2022). The percentage of learners who do not obtain school certificates is still high. This has been a common trend. Figure 1.1 shows the percentage of learners obtaining full certificates according to gender for the years 2019 to 2022.

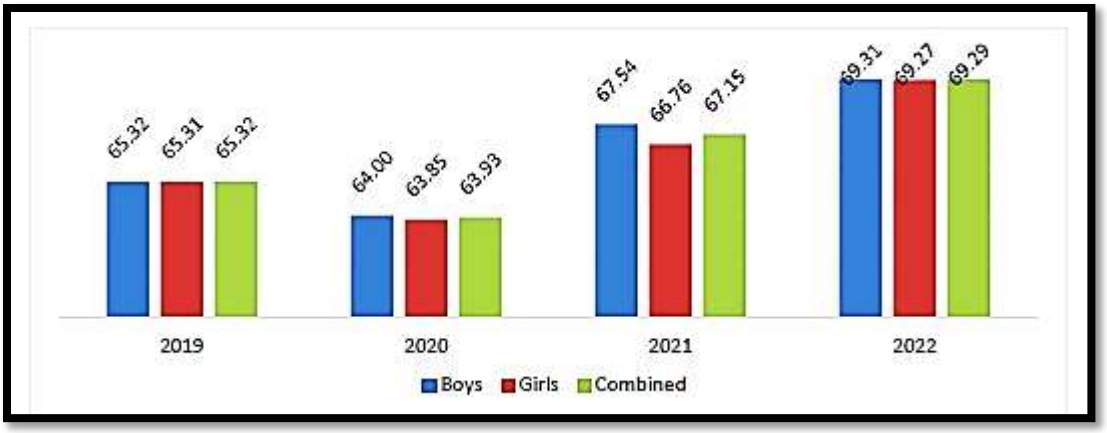

Figure 1.1: Percentages of candidates obtaining certificates by gender from 2019-2022

Source: Examinations Council of Zambia (2022)

The implementation of career pathways has not been without challenges. Mwila (2022) conducted a study that examined how well career pathways have been understood by important stakeholders and how they have been implemented. The findings indicated that the concept of career pathways was not fully understood because learners were not allowed to choose their career pathways with guidance from counselling and guidance teachers. However, schools chose the career pathway they wanted learners to follow. Furthermore, this study found that the Musical Arts Education pathway was not offered in most schools as it was considered to be expensive in terms of teaching and learning materials.

1.2.2 Academic Performance, Attitude and Subject Perceptions

Research evidence indicates that good academic performance is usually associated with self-perceptions, capabilities, and self-efficacy (Sarwar, Dildar, Ahmad, & Hussain, 2017). A positive attitude towards a particular subject enhances good performance. Vossen, Henze, Rippe, Van Driel, and De Vries (2018) conducted a study that revealed that the academic success of students

depends on their attitude towards a subject. "Attitudes include one's knowledge, values, feelings, motivation, and self-esteem shaping an individual's personal outlook" (Kind, Jones, & Barmby 2007 as cited in Vossen et al., 2018, p. 5). The belief that one can successfully perform a particular task plays a great role in the construction of attitudes (Bandura, 1997, as cited in Vossen et al., 2018). Attitudes are derived from beliefs, intentions, experience, observation, and the influence of social norms (Das Kumaret al., 2018). Das Kumar et al. (2018) conducted a study on the relationship between attitude and academic performance, and the findings indicated a very low negative relationship that was not statistically significant. On the other hand, Vossen et al. (2018) conducted a study that revealed that the academic success of students depends on their attitude towards a subject.

1.3 Statement of the Problem

Admission to Senior Secondary school in Zambia centres on performance in the Junior Secondary Leaving Examination (Ministry of Education-Educating our Future, 1996). At the senior secondary school level, pupils are allocated subjects according to the marks they have scored. Learners are obliged to take the subjects they are given, even if they dislike them. This conflict often creates cognitive dissonance for learners because they may have opposing beliefs and attitudes towards the subjects they are allocated. Cognitive dissonance leads to low academic achievement (Balaman, 2020; Zaiedy, Nor & Smith, 2019). This research is based on the theory of cognitive dissonance. Festinger (1957) identified the experience people have because of engaging in behaviour contrary to private attitude and beliefs as cognitive dissonance. Inconsistencies between attitudes and behaviour produce uncomfortable psychological effect which a person attempts to eliminate in a number of ways. Perceived choice reduces cognitive dissonance and a person is

likely to change an attitude favourably towards a specific behaviour (Festinger 1957; Cancino-Montecinos, 2020). This happens when a person believes that he or she chose to engage in a behaviour and was not forced to comply. Kaya and Shimimol (2017) investigated the relationship between cognitive dissonance and achievement in Mathematics among secondary school students in India. The findings indicated a positive relationship. On the other hand, Khalaj and Savoji (2018) found a negative relationship between academic achievement and cognitive dissonance. Limited research exists in Zambia on cognitive dissonance, subject choice and their relationships with academic performance, highlighting the need for further study.

1.4 Purpose of the Study

The purpose of this study was to determine the extent of cognitive dissonance as well as the relationship of cognitive dissonance and perceived choice of subjects with academic performance among learners in the selected secondary schools of Lusaka District.

1.5 Objectives

The above purpose of the study was addressed through the following objectives:

1.5.1 To determine the extent of cognitive dissonance among learners in selected secondary schools of Lusaka District.

1.5.2 To determine the difference in academic performance of learners with low and high cognitive dissonance.

1.5.3 To assess the relationship between cognitive dissonance and academic performance among learners in the selected secondary schools of Lusaka District.

1.5.4 To assess the relationship between perceived choice of academic subjects and academic performance among learners in the selected secondary schools of Lusaka District.

1.6 Research Questions

1.6.1 What is the extent of cognitive dissonance among learners in selected secondary schools of Lusaka District?

1.6.2 Is there a difference in academic performance of learners with high and low cognitive dissonance?

1.6.3 What is the relationship between perceived choice of subjects and academic performance of learners in the selected schools of Lusaka District?

1.6.4 What is the relationship between cognitive dissonance and academic performance among learners in selected schools of Lusaka District?

1.7 Hypotheses

1.7.1 H_o: There is no significant difference in the level of cognitive dissonance among learners in the regular and the STEM school in Lusaka District.

H_1: There is a difference in the level of cognitive dissonance among learners in the STEM and regular School in Lusaka District

1.6.5 H_o There is no significant difference in academic performance between learners with high and low cognitive dissonance

H_1 There is a difference in academic performance between learners with low and high cognitive dissonance in selected schools of Lusaka District

1.6.6 $H_{o:}$ There is no relationship between perceived choice of subjects and academic Performance among learners in selected schools of Lusaka District.

H_1 There is a relationship between perceived choice of academic subjects and academic Subjects among learners in selected schools of Lusaka District.

1.74. H_o There is no significant relationship between cognitive dissonance and academic

Performance among learners in selected schools of Lusaka District.

H_1 There is a significant relationship between academic performance and cognitive Dissonance among learners in selected schools of Lusaka District.

1.8 Significance of the Study

Investigating the relationship between students' perceived autonomy in selecting academic subjects and their academic performance through the lens of cognitive dissonance holds practical implications. Firstly, this study contributes to the existing body of knowledge by integrating cognitive dissonance theory into the educational context. Cognitive dissonance has been widely explored in various disciplines. However, its application to students' academic choices remains underexplored. By examining how perceived autonomy influences cognitive dissonance, this research offers great understanding of the psychological processes that drive student behaviour and academic performance. Similarly, by studying the connection between perceived choice, cognitive dissonance and academic outcomes, this study lays a foundation for subsequent investigations into interventions that can alleviate cognitive dissonance among learners.

1.9 Study Site

This study was conducted in Lusaka province situated in Zambia. Learners were drawn from two secondary schools. The schools included one regular school and one STEM school. This was done to compare academic achievement of learners as well as the level of cognitive dissonance.

1.10 Theoretical Framework

This study was informed by the cognitive dissonance theory, which has roots in early Gestalt psychology that advocates for cognitive consistency. According to Gestalt psychologists, the mind strives to organize its surroundings in a neat and coherent way to navigate through numerous stimuli (Kohler, 1959 in Cancino-Monticinos, 2020). The underlying factor of cognitive consistency is that people seek coherence in values, attitudes, behaviours, feelings, and beliefs. Any inconsistency in a stable system of cognitions results in a tense psychological feeling that must be dealt with (Harmones-Jones et al. 2015). The tense psychological feeling is cognitive dissonance, which produces psychological discomfort and motivates an individual to reduce conflict or avoid a situation, as well as information that could produce dissonance (Festinger, 1957). One method of reducing cognitive dissonance is selective exposure. Through selective exposure, people choose to do what fits their current state of mind, mood, or beliefs (Cancino-Monticinos, 2020). For example, people may only watch movies that are compatible with their beliefs. This is done to avoid cognitive dissonance.

Cognitive dissonance reduction is also explained by the perceived choice paradigm of cognitive dissonance, which will be used to explain the research findings. According to this paradigm, a person is likely to experience a positive change in attitude if he or she chooses to engage in an action and is not forced to comply (Festinger, 1957; Festinger & Carlsmith, 1959). Furthermore,

once people choose a particular option, they are ready and motivated to put in their best effort to achieve set goals. Motivation is revealed in favourable attitude change, which enhances the capacity to attain set goals (Harmon-Jones et al., 2015). The applicability of this theory hinges on the importance of perceived choice in the selection of optional subjects that align with the learners' intended career pathway. If learners are allowed to choose subjects from relevant subject groups, this can lead to a reduction in cognitive dissonance and, in turn, improved academic performance. Another important issue that should not be overlooked is that the choice of subjects determines one's career. If a learner is forced to take subjects that are not in line with the career he or she wants to pursue, that will have a negative impact on job performance. When learners choose subjects they like and enjoy, learning becomes pleasurable. Similarly, subject interest and a positive attitude foster academic performance (Dagnew, 2017). Learners are likely to choose subjects in which they can do well. When they are forced to take certain subjects, they may not put in their best effort. That may lead to poor performance.

1.11 Conceptual Framework

The conceptual framework is of great importance in any study because it shows the relationship between research variables and drives the research process (Kombo & Tromp, 2006). In this study, the conceptual framework was indispensable in the analysis of research findings. The researcher believes that perceived choice is an integral part of cognitive dissonance. When a person is allowed to make a choice between given options that will lead to the reduction of cognitive dissonance. On the other hand, if a pupil is forced to do academic subjects that are not in line with his or her own aspirations, this may have a negative impact on the execution of academic tasks and lead to low academic achievement. Additionally, perceived choice leads to

favourable attitude formation, which enhances academic performance. This study was conceptualised on the importance of giving learners the freedom to choose academic subjects that are in line with their intended future careers. This is determined by the career pathway undertaken by a pupil. When learners are allowed to choose subjects that are in line with their intended future careers, they will be motivated to work hard even when they encounter any form of difficulty. Lastly, cognitive dissonance brings about psychological discomfort that people cannot tolerate. Hence, they have to look for means of dealing with it. This psychological tension interferes with learning and leads to low academic achievement (Balaman, 2020). Cognitive dissonance is caused by conflicts in attitudes, values, and beliefs. This could be due to the school subjects that are not in line with their intended career as well as low self-efficacy (Tiyuri, Saberi, Miri, and Salehiniya, 2016; Sarwar et al., 2017). The diagrammatic presentation of the conceptual framework for this study is presented in Figure 1.2.

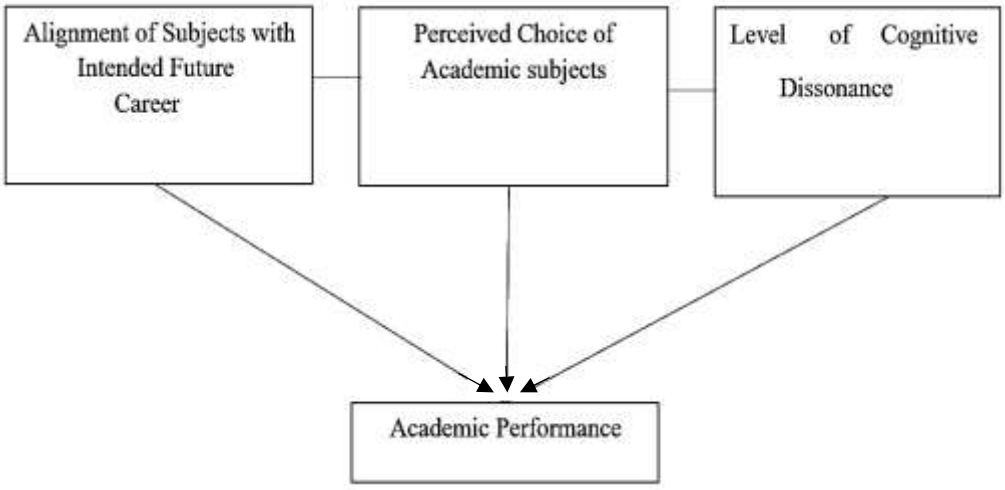

Figure1.2**:** Conceptual Framework

1.12 Summary of the Chapter

This chapter focused on the background of this study with the sole purpose of identifying the research gap. Therefore, the description of the research problem was given. Additionally, the explanation of the purpose of the study was provided, objectives, research questions, significance of the study and scope of the study were given. Similarly, the descriptions of the theoretical framework as well as the conceptual framework were given, and an explanation of how they fit in this study.

1.13 Operational Definitions

Cognitive Dissonance: refers to the psychological discomfort a person experiences when there is a conflict or inconsistency among behaviour, attitudes and beliefs

Academic performance: refers to the yardstick of quality education, determined by grades in continuous assessment and examination.

Attitude: refers to learned tendency to evaluate things or people a particular way which could be positive or negative and can be unknown at times.

Perceived choice: perceived choice reflects feeling a sense of choice with respect to one's behaviour.

Career pathway: refers to the subjects a learner takes in order to meet the requirements to take up a particular course leading to a certain career.

Perpetuance: Perpetuance focuses on self-sustenance, continuity or preservation.

Dominance: Dominance refers to the tendency of being assertive or imposing one's will on others.

1.14 Organisation of the Whole Dissertation

This dissertation has six chapters. Chapter one has highlighted the background of the study, statement of the problem, purpose of the study, research objectives and research questions, significance of the study, scope of the study, theoretical and conceptual framework. Chapter two reviewed literature that informed this study. Chapter three presents the description of methodology applied in this study. Chapter four presents the findings of this study. Chapter five presents discussion of findings and finally chapter six presents conclusions and recommendations arising from this study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this section, literature relevant to the present study is reviewed. The reviewed literature is based on description of paradigms of cognitive dissonance, studies indicating the relationship between cognitive dissonance and academic performance as well as studies showing the relationship between perceived choice and academic performance. Additionally, literature review focuses on dimensions of cognitive dissonance such as cognitive dissonance based on home and family, emotional control, personal adjustment, health and wellness, school and learning, socialisation, perpetuance and cognitive dissonance based on dominance and the relationship of these cognitive dissonance variables with academic achievement.

2.2 Paradigms of Cognitive Dissonance

The concept of cognitive dissonance originates from Gestalt psychology. This school of thought advocates for consistency and coherence in the manner in which the mind organises its information as a person encounters innumerable stimuli (Cancino-Montecinos, 2020; Kohler, 1959). Therefore, people seek coherence in values, attitudes, feelings, beliefs and behaviours and try to avoid any form of conflict. For example, people who have strong religious inclination may not advocate for abortion because it is against Biblical principles. They would not want to do anything that opposes their beliefs to avoid psychological discomfort.

Cognitive dissonance occurs when a person's behaviour is contrary to his or her beliefs, attitudes, values or ideals. According to Festinger (1957), the proponent of the cognitive dissonance theory, any form of disturbance to a stable system of cognitions results in a tense psychological feeling

which is referred to as cognitive dissonance. Festinger (1957) and Proulx, Inzlicht and Harmon-Jones (2012) define cognitive dissonance as state of aversive arousal. In the quest to maintain homeostasis, the body attempts to resolve any form of aversive state such as hunger and cognitive dissonance is not an exception (Festinger, 1957). Additionally, cognitive dissonance refers to unpleasant state triggered by awareness of inconsistencies among beliefs, attitudes or actions (Festinger & Carlsmith, 1959). Research evidence shows that cognitive dissonance determines how people evaluate their decisions (Brehm, 1956), their goals and behaviours (Aronson & Mills, 1959). According to Cooper (2019), not all inconsistencies result in dissonance but factors like perceived responsibility, foreseeability of consequences, and self-relevance play crucial roles in determining whether individuals experience dissonance-related discomfort.

Cognitive dissonance prompts people to reduce conflict since no individual would like to experience negative emotions. Festinger (1957) proposed three main ways in which cognitive dissonance could be reduced. These include: change of dissonant cognitions, justifying the behaviour or cognition by adding behaviours or cognitions as well as ignoring or denying the conflicts with existing beliefs. Another method employed to decrease dissonance has been explained by selective exposure theory. Through selective exposure, people choose to do what fits their current state of mind, mood and beliefs (Festinger, 1957).

The four paradigms of cognitive dissonance include: belief disconfirmation, induced compliance, free choice and effort justification paradigms. These paradigms explain what happens after a person acts inconsistently to his or her intellectual perspective.

Belief disconfirmation occurs every time there is a contradiction in terms of beliefs, values or ideals. This results in cognitive dissonance. Cognitive dissonance can be resolved either by altering

the challenged belief, refutation of the contradiction or seeking support from people who share the contradicted beliefs (Festinger, 1957). Additionally, someone may try to persuade other people that the contradiction is unreal (Festinger, 1957).

Induced compliance occurs when people are forced to engage in a behaviour that is inconsistent with their beliefs and attitudes. Therefore, a person experiences cognitive dissonance. Festinger and Carlsmith (1959) conducted a study in which participants were told to work on boring tasks. In one group, participants were given one dollar as a reward for engaging in counter-attitudinal behaviour whereas in the other group, participants received twenty dollars. When participants were told to evaluate the task they undertook, those who received one dollar rated the task as more enjoyable than those who were paid twenty dollars. These results contradicted then current reinforcement theories of attitude change which predicted that greater reinforcement would lead to greater attitude change (Skinner, 1958).

Effort justification occurs when a person invests a lot of time or money in the achievement of a particular goal. Cognitive dissonance occurs when a person voluntarily engages in ethical but unpleasant activities to achieve a goal (Festinger, 1957). The mental stress produced by cognitive dissonance is reduced by amplifying the desirability of the goal (Festinger, 1957). For example, if a woman pays a high price for a particular outfit, she may tell other people that she likes the outfit even if she thinks that it does not fit her very well.

In a free choice paradigm, there is an element of perceived choice. This paradigm may lead to favourable attitude change especially when people believe that they chose to engage in a behaviour, and they were not forced to comply (Elliot & Devine, 1994; Festinger, 1957). Festinger (1957) conducted a study among 225 female students who rated domestic appliances twice, before

and after choosing one appliance as a gift. The findings of the second-round rating indicated that female students rated the appliances they selected more favourably than the appliances they rejected. Similarly, Jeong, Zo, Lee, and Ceran (2019) conducted a study on the psychological discomfort experienced by social media users when exposed to conflicting opinions online. The theoretical framework was based on cognitive dissonance theory. This was a qualitative study with a sample of comprised 425 respondents recruited through Prolific Academia in South Korea. (Jeong et al., 2019). This study explored the effects of perceived heterogeneity where users encounter opposing viewpoints on social media on their psychological state and subsequent behavioural responses. The findings indicated that frequent social media users are more likely to be exposed to diverse and conflicting opinions, leading to heightened cognitive discomfort (Jeong et al., 2019). Similarly, findings revealed that selective exposure, a behavioural strategy in which users avoid contradictory information, was the most common method of reducing this discomfort. Conversely, effective behaviour, such as engaging in debates or attempting to persuade others, was less frequently adopted as a coping mechanism. The study's findings support Festinger's (1957) cognitive dissonance theory, suggesting that individuals strive to reduce the psychological tension caused by conflicting cognitions. Furthermore, research findings show that users' demographic and personality traits influence their likelihood of experiencing cognitive dissonance and their chosen coping strategies (Jeong et al., 2019). Findings also indicated that users with high levels of neuroticism were more prone to discomfort, whereas extraverted individuals were more likely to engage in affective behaviour to resolve dissonance.

Additionally, Jeong et al. (2019) concluded that social media platforms foster diverse discussions which also contribute to psychological discomfort, prompting users to select content that aligns

with their beliefs. Moreover, Jeong et al. (2019) examined the implications of cognitive dissonance in the context of online interactions while the present study focuses on the relationship between perceived choice of academic subjects and academic achievement.

Choice is cardinal in the educational setting as it enhances learners' autonomy. Sattin-Bajaj, Jennings, Corcoran, Baker-Smith and Hailey (2018) conducted a study examining how middle school guidance counsellors in New York City navigate the implementation of the city's universal high school choice policy and the role of cognitive dissonance in their decision-making processes. The study was conducted in the United States using structured interviews with 88 middle school counsellors and administrative data on school choice outcomes (Sattin-Bajaj et al., 2018). The research focused on understanding how counsellors perceive their role in assisting lower-income students in navigating the complex high school selection process. The findings revealed that most counsellors recognised the challenges students faced but refrained from providing explicit guidance, often citing parental agency as the reason for their limited involvement (Sattin-Bajaj et al., 2018). Additionally, the study demonstrated that cognitive dissonance emerged as a key factor in shaping counsellor behaviour, as they struggled to reconcile their understanding of students' needs with their inability to meet those needs due to resource constraints. The researchers found that many counsellors resolved this dissonance by narrowly defining their role, thereby limiting their perceived responsibility in influencing student decisions. Furthermore, the study highlighted that a subset of counsellors actively sought to mitigate inequalities by taking a more engaged approach, offering individualised support despite institutional pressures. The research also quantified the impact of different counselling approaches, showing that the absence of action-

guiding advice was associated with students being placed in lower-quality high schools (Sattin-Bajaj et al., 2018).

Moreover, Sattin-Bajaj et al. (2018) found that contrary to traditional expectations, not all school counsellors adopted uniform coping mechanisms in response to institutional constraints (Sattin-Bajaj et al., 2018). While some adhered to a passive role by deferring decision-making to parents, others took a proactive stance, leveraging their discretion to provide students with personalised advice. The research also found that structural inequalities in the school choice system disproportionately affect lower-income students, reinforcing existing educational disparities (Sattin-Bajaj et al., 2018). Findings indicated that interventions such as targeted training and clearer policy mandates could help standardise counselling practices and mitigate inconsistencies in student support. Sattin-Bajaj et al. (2018) explored the implementation of the city's universal high school choice policy while the present study focused on perceived choice as a dissonance reduction strategy.

Perceived choice may affect the adoption of wellness initiatives. Dajani, Bryant, Sackett, and Allgood (2021) conducted a qualitative study examining the unintended consequences of wellness initiatives implemented in undergraduate medical education, particularly their role in shaping students' perceptions of well-being. The study was conducted in the United States at A.T. Still University's School of Osteopathic Medicine in Arizona (Dajani et al., 2021). The researchers explored how mandatory wellness programmes, originally designed to promote mental and physical health, could paradoxically contribute to stress and cognitive dissonance among medical students. The findings revealed that wellness initiatives often led to unintended consequences such as loss of time for academic preparation, increased feelings of competition, and perceptions of

toxic positivity (Dajani et al., 2021). Additionally, students reported experiencing cognitive dissonance when wellness programmes emphasised self-care while the broader medical culture encouraged overwork and personal sacrifice. The study identified that faculty and staff participation in wellness activities played a critical role in mitigating this dissonance by reinforcing the legitimacy and importance of self-care. Moreover, the research highlighted that mandatory participation in wellness initiatives was often counterproductive, as students felt coerced rather than intrinsically motivated to engage in self-care practices (Dajani et al., 2021). The researchers suggested that allowing students to personalise their wellness experiences and making activities optional could enhance the effectiveness of such programmes. Furthermore, the study emphasised the need for integrating wellness education into the broader medical curriculum rather than treating it as an isolated initiative.

Moreover, Dajani et al. (2021) found that wellness initiatives often failed when they conflicted with the institutional culture of medical education, which prioritised endurance and resilience over self-care (Dajani et al., 2021). Furthermore, the research found that students perceived wellness programmes as lacking authenticity when faculty and administrators did not actively model the recommended behaviours. Additionally, the study highlighted that unaddressed moral injury where students were expected to prioritise patient care over personal well-being exacerbated the negative perceptions of wellness initiatives (Dajani et al., 2021). The researchers also found that confidentiality concerns discouraged students from seeking wellness resources, as they feared being stigmatised for experiencing burnout or mental health issues. Dajani et al. (2021) explored unintended consequences of wellness initiatives while the present study focused on the relationship between perceived choice of academic subjects and academic performance.

Understanding the role of cognitive dissonance in behavioural change matters. Pappas and Pappas (2015) conducted a study investigating the role of cognitive dissonance in motivating behavioural change towards sustainability among university students. The study was conducted in the United States. This study employed a survey-based experimental design involving 400 students from James Madison University (Pappas & Pappas, 2015). The researchers explored how individuals reconcile the gap between their stated values regarding sustainability and their actual behaviours, hypothesising that cognitive dissonance would encourage alignment between the two. The findings revealed that exposing students to multisource feedback about their sustainability-related behaviours increased their awareness of cognitive inconsistencies (Pappas & Pappas, 2015). Additionally, the study revealed that while most students reported an increase in their awareness and motivation to change, fewer reported achieving a complete alignment between their values and actions. The researchers identified that self-justification, economic constraints, and habitual behaviours were the primary barriers preventing students from adopting more sustainable practices. Furthermore, students who had prior exposure to sustainability education demonstrated a greater willingness to change their behaviours, suggesting that knowledge plays a crucial role in mitigating cognitive dissonance (Pappas & Pappas, 2015). The study also highlighted that the effectiveness of cognitive dissonance as a motivator for behavioural change varies among individuals, depending on their level of self-awareness and willingness to engage in introspection.

Moreover, Pappas and Pappas (2015) examined the broader implications of their findings, particularly in the context of higher education and sustainability policies. The study demonstrated that while cognitive dissonance can be an effective tool for motivating change, its impact is often temporary unless reinforced through ongoing education and social support (Pappas & Pappas,

2015). Furthermore, the researchers found that students in science and technology disciplines were more likely to report behavioural changes than those in psychology courses, highlighting the role of disciplinary frameworks in shaping sustainability-related attitudes. The findings suggested that integrating sustainability into various academic disciplines can create a more holistic approach to fostering sustainable behaviour. Additionally, the study revealed that students who received external feedback from peers and family members about their behaviours were more likely to experience cognitive dissonance and, consequently, take steps to reduce inconsistencies (Pappas & Pappas, 2015). The researchers also noted that while cognitive dissonance is a powerful psychological force, its effectiveness is influenced by individual personality traits, such as openness to change and resilience. Pappas and Pappas (2015) explored the role of cognitive dissonance in motivating behavioural change, the present study focused on the association between cognitive dissonance and academic performance.

It is important to manage cognitive dissonance because it causes psychological discomfort. Cancino-Montecinos, Björklund, and Lindholm (2018) conducted an experimental study among undergraduate students in Sweden using two experimental designs. This study investigated the relationship between cognitive dissonance and emotional regulation, particularly how positive and negative emotions influence attitude change. The researchers employed the induced compliance paradigm and they examined how individuals respond emotionally when required to write counter-attitudinal essays. The findings revealed that positive emotions were positively associated with attitude change, while negative emotions were inversely related to attitude change (Cancino-Montecinos et al., 2018). This suggests that cognitive dissonance reduction may function as an emotional regulation process, enabling individuals to adjust their attitudes to align with behaviour

to alleviate psychological discomfort. The study also indicated that those who experienced higher initial negative arousal but successfully reappraised their behaviour tended to experience greater attitude change and positive emotions. Additionally, the results indicated that trivialisation and suppression were alternative dissonance-reduction strategies, preventing the development of full negative emotions but failing to induce attitude change (Cancino-Montecinos et al., 2018). This aligns with broader theories of emotion, which suggest that individuals continuously reinterpret situations to maintain psychological consistency. Furthermore, the study identified that individuals who failed to change their attitudes experienced persistent negative emotions, reinforcing the role of cognitive appraisals in emotional adaptation.

Furthermore, the second experiment, conducted in a laboratory setting, introduced a longitudinal component by measuring attitudes and emotions at multiple time points (Cancino-Montecinos et al., 2018). The findings confirmed that attitude change persisted over time, with positive emotions continuing to reinforce the newly adopted positions. This suggests that cognitive dissonance reduction is not merely a temporary adjustment but rather an enduring psychological process supported by positive emotional reinforcement (Cancino-Montecinos et al., 2018). Additionally, the study found that individuals who trivialised their behaviour or suppressed emotions did not exhibit attitude change, supporting the notion that dissonance reduction requires an active cognitive reappraisal rather than mere avoidance. The research further indicated that the experience of cognitive dissonance varied among participants, with some individuals demonstrating a greater ability to resolve dissonance through reappraisal than others. Cancino-Montecinos et al. (2018) used the induced compliance paradigm while the present study employed the perceived choice paradigm of cognitive dissonance theory.

Researchers use cognitive dissonance to explain purchase choices. Tanford and Montgomery (2014) examined the combined effects of social influence and cognitive dissonance on travel purchase decisions. The research specifically investigated university students' hypothetical choices between sustainable (green) and non-sustainable resorts for spring break holidays in the United States. This study utilised an experimental design in which the researchers manipulated social influence through traveller reviews, portraying conditions of majority, minority, and no influence, and measured participants' pro-environmental attitudes using Dunlap's New Environmental Paradigm. The findings showed that participants were significantly less likely to select a sustainable resort when the minority of traveller reviews supported it, highlighting the impact of minority opinions on consumer behaviour in online environments (Tanford & Montgomery, 2014). Participants with strong pro-environmental attitudes displayed heightened cognitive dissonance when opting for non-sustainable resorts under minority influence conditions, demonstrating alignment with Festinger's (1957) original theory of dissonance. Moreover, consistent with dissonance theory, subjects positively biased their post-decision evaluations of chosen alternatives and sought additional information favouring their decisions, reflecting classic dissonance-reduction strategies. Particularly, selective exposure was observed when participants experiencing higher levels of dissonance actively requested more favourable information about their chosen resorts. Tanford and Montgomery (2014) concluded that online traveller reviews substantially shape consumer choices and post-purchase attitudes, particularly within high-involvement travel decisions. Additionally, Tanford and Montgomery (2014) emphasised the contemporary relevance of cognitive dissonance theory within online purchasing contexts, particularly where social influence and environmental concerns intersect while the present study focused on perceived choice as a method of cognitive dissonance reduction in the educational setting.

People usually employ different coping strategies as they deal with cognitive dissonance. Sedová, Slovák, and Ježková (2016) conducted a qualitative study examining how environmentally conscious students reconcile their knowledge of meat production's ethical and environmental issues with their dietary choices. The study was conducted in the Czech Republic with a sample of 13 master's students enrolled in environmental studies programmes at Charles University and Masaryk University (Sedová et al., 2016). The study utilised in-depth interviews as a method of data collection. The researchers explored how cognitive dissonance manifests among students who are aware of the negative consequences of meat consumption but continue to eat meat. The findings revealed that students employed a range of cognitive strategies to mitigate dissonance, including detachment, concealment, and shifting responsibility to external factors such as economic constraints or social pressure (Sedová et al., 2016). Additionally, the study found that while many participants acknowledged the ethical concerns surrounding meat production, they rationalised their continued consumption by prioritising personal health, taste preferences, and convenience. The research highlighted that students who reduced their meat intake but did not eliminate it entirely engaged in self-justification by comparing their consumption to that of the general population.

Furthermore, the study demonstrated that social norms within the environmental studies community played a critical role in shaping dietary habits, with students perceiving vegetarianism or reduced meat consumption as the prevailing norm (Sedová et al., 2016). However, family expectations and cultural traditions often conflicted with these new norms, leading students to consume more meat when visiting home. The study also found that participants employed promises of future behavioural change as a coping mechanism, postponing dietary modifications

while acknowledging the need for them. Similarly, Sedová et al. (2016) concluded that cognitive dissonance in meat consumption is deeply influenced by social, cultural, and economic factors, requiring both individual and systemic interventions to promote sustainable dietary shifts.

Moreover, Sedová, Slovák, and Ježková (2016) investigated the broader implications of cognitive dissonance in meat consumption, revealing that environmentally informed individuals often struggle to align their values with their eating habits. The study demonstrated that participants experienced psychological discomfort when faced with contradictions between their environmental awareness and their continued meat consumption (Sedová et al., 2016). The researchers found that avoidance was a common coping strategy, with students deliberately avoiding information about meat production's negative impacts to minimise feelings of guilt. Additionally, the research revealed that students often dissociated meat from its source, referring to it as a generic food product rather than acknowledging its animal origins. The study also highlighted the role of cultural justifications, where participants rationalised meat consumption by viewing it as a natural and necessary part of human diets (Sedová et al., 2016). Overall, Sedová et al. (2016) concluded that cognitive dissonance in meat consumption is a complex issue shaped by personal, social, and structural factors, necessitating a multidimensional approach to fostering dietary change. Unlike this study, the present study focuses on the relationship between cognitive dissonance and academic performance.

Recent research findings have revealed a lot of information on cognitive dissonance. De Vries, Byrne, and Kehoe (2014) examined the neural mechanisms underlying cognitive dissonance induction, using functional magnetic resonance imaging to determine how the brain processes cognitive conflict. The study was conducted in Ireland among undergraduate students from Trinity

College, Dublin. The researchers employed an experimental paradigm in which participants were first asked to endorse a set of moral values and afterwards they were asked to recall personal experiences which indicated instances when they acted inconsistently with those values. The purpose of this procedure was to induce cognitive dissonance, enabling the researchers to analyse the brain's response to psychological discomfort (De Vries et al., 2014). The findings indicated increased neural activation in key brain regions associated with conflict monitoring and emotional processing, including the anterior cingulate cortex and anterior insula. These findings aligned with previous neuroscience research on dissonance, supporting the idea that cognitive conflict elicits heightened activity in regions responsible for self-awareness and error detection. Remarkably, findings showed less activation in the prefrontal cortex than in prior dissonance studies, which the researchers considered as their focus on dissonance induction rather than reduction. De Vries et al. (2014) noted that cognitive dissonance manifests itself as psychological distress as well as neurophysiological response that can be measured and analysed. Similarly, the results showed that cognitive dissonance triggered activation in both the anterior cingulate cortex and insula, which are linked to emotional discomfort and decision-making processes (de Vries et al., 2014).

Surprisingly, research evidence indicates that cognitive dissonance detection and cognitive conflict both share the same area of brain activation which is the anterior cingulate cortex (De Vries et al, 2014). High level of cognitive dissonance could be observed more accurately using lower level research paradigms. This is an indication of the possibility of further research in this domain. On the other hand, the present study focused on the association between cognitive dissonance and academic performance.

2.3 Perceived Choice and Academic Performance

There are variations among cultures regarding post choice dissonance. The differences stem from various conceptualisations of choice that are derived from self-construal across cultures (Hoshino-Browne et al., 2005). In individualistic cultures, choice results in stronger commitment to the chosen option compared to collectivistic culture because it involves core aspects of being independent such as upholding personal preferences (Michail, Kokkoris, & Kihnen, 2014). In their study, Michail et al. (2014) examined differences in post choice dissonance reduction between Western and Eastern Europeans because they differ in the aspect of interdependence. Michail et al (2014) conducted an experiment involving movie choices using the free choice paradigm to examine differences in dissonance reduction between Western and Eastern Europeans. The results indicated that Eastern Europeans are less likely than Western Europeans to reduce post choice dissonance by spreading their alternatives. The findings also revealed that cultures with discrepancies in terms of independence and interdependence differ in their construal of choice and the way the act of choosing affect their self-concept. According to Michail et al. (2014), the characteristics of ideal western concept relevant to decision making seem to include the need for rational and independent choices which is not influenced by anyone. Conversely, East Asian decision making reflects the preferences of group members which serves as sign of being a member of that group.

A number of studies have been done to evaluate post choice dissonance among Eastern and Western Europeans. Hein and Lehman (1997) demonstrated cross-cultural differences in dissonance reduction between North Americans and East Asians using free choice paradigm of cognitive dissonance on the pretext of conducting market research of music compact discs. They

examined the relationship between cognitive dissonance and self-affirmation among Canadians and Japanese participants. The findings indicated cross-cultural differences in psychological functioning between the two groups of people. Canadians justified the choice of their compact discs as a means of reducing dissonance. On the other hand, Japanese participants did not justify their choices of compact discs and they did not experience dissonance when choosing highly rated compact discs. This study focused on cultural differences in dissonance reduction after selecting a particular option while the present study focused on the relationship between perceived choice of academic subjects and academic achievement.

Classroom learning environment affects academic achievement. Srisupawong, Koul, Neanchaleay, Murphy, and Jean Francois, (2017) investigated the interplay between classroom learning environments, sources of self-efficacy, and the development of computer self-efficacy beliefs among undergraduate computer science students. The study adopted Bandura's (1997) Social Cognitive Theory as a framework to examine how students' perceptions of autonomy, meaningfulness, and involvement in learning influence their computer self-efficacy (Srisupawong et al., 2017). The study sample comprised five hundred and twenty-four students across Ten Thai Universities and a survey research design was employed in this study. Structural equation modelling was utilised to assess relationships between classroom learning environment factors and sources of self-efficacy such as social persuasions, vicarious experiences, and physiological states. Findings indicated that classroom learning environments were characterised by meaningful engagement and autonomy positively correlated with students' computer self-efficacy, reinforcing research that links autonomy-supportive environments with higher self-regulated learning (Ryan & Deci, 2000). Social persuasions, particularly encouragement from teachers and peers, emerged

as the strongest predictor of computer self-efficacy, highlighting the importance of external reinforcement in shaping students' beliefs about their computing abilities. Findings indicated that students who observed successful peers, exhibited higher computer self-efficacy, supporting previous research on the role of vicarious experiences in self-efficacy development (Bandura, 1997). Conversely, negative physiological states such as stress and anxiety negatively affected computer self-efficacy. These findings highlight the necessity of fostering supportive classroom learning environments that reduce stress while enhancing self-efficacy through peer and instructor encouragement.

The study further explored how different classroom learning environment factors interact to shape students' computer self-efficacy, demonstrating that autonomy played a central role in predicting self-efficacy beliefs. Additionally, the study found that meaningful classroom learning environments where students saw relevance in their coursework, indirectly enhanced computer self-efficacy by reducing negative physiological states such as stress and frustration. However, the research also revealed that involvement in classroom activities did not have a direct effect on computer self-efficacy, suggesting that while participation is beneficial, it may not be sufficient to enhance self-efficacy without complementary autonomy and social persuasion factors. The findings also highlighted the differential effects of classroom learning environment elements, with autonomy exerting the strongest influence on self-efficacy, followed by meaningfulness and social persuasion. These insights suggest that computer science educators should prioritise autonomy-supportive teaching strategies, including personalised learning paths and peer mentorship programmes, to enhance student confidence in computing skills. Srisupawong et al. (2017) investigated the interplay between classroom learning environments, sources of self-efficacy, and

the development of computer self-efficacy beliefs while the present study focuses on the relationship between perceived choice of academic subjects and academic achievement.

The cognitive dissonance theory has been used extensively in politics. Acharya, Blackwell, and Sen (2018) investigated how cognitive dissonance theory explains preference formation, focusing specifically on political and social contexts within the United States. Acharya and colleagues utilised a theoretical framework rooted in Festinger's cognitive dissonance theory. They postulated that preferences can evolve as a consequence of actions rather than serving solely as their determinants, challenging traditional rational choice theory. Their model indicates how individuals adjust their political attitudes and preferences to reduce psychological discomfort emanating from inconsistency between actions and pre-existing beliefs.

Additionally, Acharya et al. (2018) recommended three key applications of this model: the emergence of partisan affiliations, empathy-driven shifts in political views, and the development and persistence of ethnic hostility. Their analysis demonstrated how partisanship can naturally arise even in complex, multidimensional policy environments due to individuals' attempts to align their preferences with previous electoral decisions. They argue that voters frequently adjust ideological positions to align with the political stance of parties or candidates they previously supported. This adjustment process is driven by cognitive dissonance which reinforces partisan identification and ideological polarization. This is predominant in high-information voters who experience significant discomfort when holding views inconsistent with their political affiliations. This study was conducted within the context of American politics. Therefore, it situates itself within the context of developed nations, providing insights relevant for understanding political behaviour and preference formation in similarly developed democratic contexts (Acharya et al.,

2018). This study highlights how cognitive dissonance explains preference in politics within the context of developed nations. On the other hand, the present study focuses on how perceived choice of academic subjects leads to reduction in cognitive dissonance.

A lot of reasons have been given for giving learners an opportunity to make choices in a classroom setting. According to Beymer and Thompson (2015), offering choice in the classroom motivates students because it fosters autonomy and competence thereby meeting the need for autonomy. Autonomy becomes meaningful when a task is considered to be connected to values, interests, and goals of an individual (Ryan & Deci, 2000b). Choice should be given to learners on the basis of age and ability. Students with higher ability are given more opportunities to make choices because teachers know that they can make wise decisions (Flowerday & Schraw, 2000). As teachers take into account the students' perspectives and offer learners an opportunity to make choices, they increase the satisfaction of the learners' autonomy needs (Petall, Dent & Wynn, 2013).

Perceived choice among learners enhances academic performance. In view of this, Flowerday and Schraw (2000) conducted interviews to find out if teachers consider offering choice relevant in the classroom setting. The findings indicated that choice encourages and enhances learning and motivation. Research results also showed that choice increases self- determination, increases personal interest and gives learners a chance to practise decision making skills. Learners are the future leaders. Therefore, they should develop decision making skills. According to Beymer and Thompson (2015), intrinsic motivation arises when a person possesses natural interest in a subject and children are more likely to experience intrinsic motivation from choice than adults. Petall, Cooper and Wynn (2010) conducted a study in which students were given a choice between different homework assignments. The findings revealed that learners developed more interest in

homework when they were given choice between two homework assignments. Their test results improved as well as grade point average (GPA) and they completed assignments. This study differs from the present study which focusses on the relationship between academic performance and cognitive dissonance.

Genetics determines the differences in academic performance. Rimfeld, Ayorech, Dale, Kovas, and Plomin (2016) explored the extent to which genetic factors influence academic subject choices and educational achievement beyond compulsory education. The study was conducted in the United Kingdom and the study sample comprised six thousand five hundred and eighty-four twin pairs from the Twins Early Development Study. Utilising, quantitative genetic methods, the researchers estimated that forty-four percent of the variance in choosing to pursue A-level studies was attributable to genetic factors, while subject-specific choices exhibited even higher heritability estimates ranging from fifty-two percent to eighty percent (Rimfeld et al., 2016). The study revealed that genetic influences extend beyond academic ability to include educational preferences, challenging the traditional view that subject choice is primarily a result of socialisation and environmental factors. Furthermore, findings indicated that achievement in A-levels was highly heritable, with estimates ranging from 35% to 76%, reinforcing previous findings that DNA differences contribute significantly to individual variations in academic performance. The study's findings align with genotype-environment correlation theory, which posits that individuals actively shape their educational experiences in accordance with their genetic predispositions.

Additionally, Rimfeld et al. (2016) found that students with higher genetic propensities for intelligence and academic motivation were more likely to choose advanced subjects such as

mathematics, chemistry, and physics. The findings also suggested that environmental factors like parental encouragement and school influence, played a great role in students' decisions to pursue further education but had a lesser impact on subject-specific choices. These insights highlight the interplay between genetic and environmental factors in shaping students' academic choices. Rimfeld et al. (2016) argued that both genetics and supportive learning environments determine the learners' educational pathways and are crucial for maximising student potential.

Furthermore, Rimfeld, Ayorech, Dale, Kovas, and Plomin (2016) investigated how genetic influences interact with environmental factors in shaping students' academic performance. The study emphasised that students' choices of A-level subjects were driven not only by prior academic achievement but also by intrinsic interests, both of which were substantially influenced by genetic factors (Rimfeld et al., 2016). The study revealed that both environmental factors and genetic differences contributed to students' initial decisions to continue with A-levels as well as their choice of specific subjects. This finding suggests that individuals are not passive recipients of educational experiences but rather actively construct their learning pathways in accordance with their genetic propensities. Additionally, findings revealed sex-based differences in subject selection, and girls were more likely to pursue humanities and Biology, whereas boys showed stronger preferences for Physics and Mathematics. Rimfeld et al. (2016) also discussed the policy implications of their findings, arguing that a more personalised education system that allows students to explore their strengths and interests could lead to better academic engagement and long-term success. The researchers indicated that while genetics contribute significantly to academic performance, environmental interventions such as teacher support, school resources, and parental involvement can help bridge achievement gaps. Similarly, the study highlighted the

importance of considering individual differences in educational policy-making, advocating for adaptive curricula that cater for students' diverse learning needs. The findings challenged the traditional one-size-fits-all educational models by highlighting the need for tailored learning experiences based on students' innate capabilities and preferences. Rimfeld et al. (2016) stressed the importance of genetics in shaping educational choices and outcomes and also environmental support that is indispensable in ensuring equitable learning opportunities while the present study focuses on the importance of perceived choice in bringing about reduction in cognitive dissonance, which in turn leads to improvement in academic achievement.

Studies which have investigated the relationship between choice and academic performance have yielded different findings. Murphy, Seneviratne, Cochrane, Davies and Mires (2013) investigated the impact of choice on academic performance among 301 medical students. The research results showed that there was no association between allocated preferences and student selected component grades. The findings also indicated that student choice may have educational benefits and that student choice plays an important role in undergraduate curriculum in many contemporary medical schools. However, there was no convincing evidence indicating that choice improves academic performance. Similarly, Iyengar and Lepper (2002) found that too much choice could create feelings of regret that emanate from being overloaded. Additionally, the findings also revealed that individuals are more likely to choose from smaller set of items and not larger set.

A number of studies have been done on the relationship between choice of courses in higher learning institutions and students' academic achievement. Rowbottom (2013) conducted a study on A-Level subject choice and academic performance among students pursuing Accounting Degree in United Kingdom. The findings indicated that British students from low socio-economic

backgrounds were predisposed to wider variety of A-Level subjects. However, results showed that there was no significant difference on average among students who enter university with two or more restricted subjects A-Level and others who took a wide variety of course combinations. This study is related to the present study because of the element of choice. In this study choice did have any impact on academic achievement.

Similarly, Boo, Kim, and Kim (2022) investigated the relationship among undergraduate students' career anxiety, choice goals and academic performance in Hospitality and Tourism Literature. The findings revealed that career anxiety correlated negatively with academic performance and choice goals. The research results also revealed that there was no relationship between choice goals and academic performance. This study is similar to the present study in that it focuses on the relationship between choice and academic performance. However, the present study is different as emphases the relationship between cognitive dissonance and academic performance.

Learners have different career aspirations. Research evidence indicates that adolescent career choice is influenced by many factors such as life context, personal aptitudes and educational attainment (Bandura, 2001). According to Kazi and Akhlaq (2017) career choice is determined by freedom given to a pupil to make an independent decision and counselling from the parents and teachers to share their insight and experience. Similarly, Kazi and Akhlaq (2017) pointed out that exerting pressure and dictatorial attitude may demotivate the students and also lower their performance. This study also revealed that students' main reason for their choice was their interest in the subject. Additionally, career interest of adolescents correlates with later careers (Low, Yoon, Roberts, & Rounds (2005) and Falck, Heblich, & Luedemann (2010) found that adolescents showed career stability from adolescence to adulthood. Therefore, career aspirations or career

pathways of adolescents should be taken seriously. If they take wrong careers, their job performance may not meet optimal standard.

The implementation of career pathways in Zambian Education system has not been free from challenges. Mwila (2022) conducted a study on the implementation of career pathways among learners in secondary schools in Zambia. The findings indicated that there was information gap on career choice among learners in secondary schools. The learners did not know the meaning of the concept career choice and they were not guided on the two career pathways which include academic and vocational career pathway. All the learners in the six schools which formed the sample, confessed that they were not given information on career choice related to vocational pathway and no school offered Music. Therefore, learners were mainly encouraged to take up academic subjects which could enable them find white collar jobs.

Additionally, Mwila (2022) found that learners were not allowed to choose career pathways but school administrators chose for them. However, Ministry of Education-Zambia Curriculum Framework (2013) states, "when placing learners in different career pathways, schools shall assess learners after one month of being in school. However, learners' interests need to be considered also and notwithstanding the availability of teachers". The findings also revealed that school administrators avoided practical subjects because they were expensive to maintain as schools received inadequate funding from Government. The money was not enough to purchase equipment. This exacerbates the already existing problem of unemployment (Kakupa, 2017) because white collar jobs are scarce in Zambia (International Youth Foundation, 2014). The educational system in Zambia does not provide sufficient knowledge and skills needed for social economic development (International Youth Foundation, 2014).

Findings on the implementation of career pathways revealed that when the policy of career pathways was initially implemented, learners were given tests in order to be allocated subjects according to their abilities. Nonetheless, tests were not given for subjects like Music (Mwila, 2022). This was short-lived and school administrators began to choose the career pathways they wanted their students to follow (Mwila, 2022). Although two career pathway options were given to each school for either vocational or academic to enable learners have an opportunity to choose (Ministry of Education-Zambia Curriculum Framework, 2013), the range of choice is not wide enough to cater for the needs of all the learners. Additionally, interests of learners should be considered when allocating academic subjects and career identification should start from primary school.

According to Ministry of Education-Zambia Education Curriculum Framework (2023), "There shall be eight pathways at secondary school ordinary level, namely; Social Sciences, Natural Sciences (STEM), Business and Finance, Agriculture (STEM), Home Economics and Hospitality (STEM), Technology (STEM), Performing and Creative Arts and Physical Education and Sport. Despite the introduction of eight career pathways, certain schools do not offer all the eight career pathways due lack of infrastructure or shortage of teachers. The career pathways offer learners opportunity to explore their interests and strengths while gaining valuable insight into future career options. The Ministry of Education-Zambia Curriculum Framework (2023) states, "Placing of learners in different career pathways shall be done based on results obtained at the end of primary education examination and the interests of learners. This shall be carefully done in order to guide learners to make sound choices on the pathways, which will eventually allow them to have their desired fields of study and specialisation at higher education level."

Zambia, just like other developing countries such as Kenya, most of the learners in secondary school lack information about training opportunities and requirements for post-secondary education (Mwila, 2022; Okumu & Rukwaro, 2011). It is important to provide career related information so that learners can have a smooth transition from secondary school to higher learning institutions. Article four of the African Charter on the Rights and Welfare of a Child (1990), states that when adults make decisions, they should think about how their decisions will affect children and the opinions of children should be taken into consideration. Zambia has also ratified the United Nations Convention on the Rights of the Child (1989). Hence, the need to promote the rights of children by allowing them to pursue their intended career pathways.

Zambia has endorsed international and regional human rights conventions. The government of the Republic of Zambia signed United Nations Convention on the Rights of the Child on 30th September 1990 and ratified this on 6th December 1991 with the United Nations. The African Charter on the Rights and Welfare of the Child was signed on 28th February 1992 and ratified on 2nd of December 2008 with the African Union (AU). This has resulted in the formulation of the 2015 National Child Policy and the National Plan of Action for children in Zambia. Furthermore, the recent enactment of the Children's Code Act which domesticated the provisions of the convention and the charter indicates a major milestone achievement. Among the major provisions of the United Nations Convention on the Rights of the Child and African Charter on the Rights and Welfare of the Child is to right to participate that provides for the rights of children to express themselves on issues that affect then, the right to be heard, their ideas are to be given weight and an opportunity to influence any such decisions to their best interest. Article 12 of the CRC recognises that children have a right to be heard and it states: "State parties shall assure to a child

who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of a child being given due weight accordance with age and maturity of a child."

The 2015 National Child Policy and the National Plan of Action for children in Zambia have a solid foundation which is based on four thematic areas. These include: child survival rights, child protection right, child developmental right and child participation rights. As stipulated in the child participation rights, children have the right to freedom of expression and their input matters in issues affecting them socially, economically, religiously, cultural and politically. When children express themselves freely and have a right to heard, they are being prepared also for an active role in society. Although the Zambian nation has made headways in policy and legislative provisions, organisations and institutions working with children and for children have not fully implemented the requirements of this principle (Zambia National Child Participation Framework, 2022).

In the United Kingdom, learners choose from a wide range of options in relation to career pathways. Schools, colleges, and training institutions have a responsibility of providing career guidance to assist young people under the age of 19 (Savickas, 2013). Learners are encouraged to identify their skills, values and interests, examine their areas of weakness and strength, then explore the job market and lastly, they reflect on their lifestyle preferences and long-term career goals as they make informed decisions about career paths (Sadler & Reisenberger, 1997). The key issue here is having a deeper understanding of themselves. In the United Kingdom, career choices are personal, learners reflect on their aspirations, abilities and passions when selecting a career pathway (Savickas, 2013).

Furthermore, in the United States of America, learners explore and choose career pathways based on their interests, goals and educational ambitions (Isaacson, 1985). Adults returning to high school and learners in high school have an option to complete high school diploma while preparing for a specific career path or go further in education (Isaacson, 1985). In the nutshell, learners in the United States of America have been given an opportunity to select career pathways whether through formal education, specialised programmes, or federal initiatives. Therefore, learners are encouraged to explore options which are compatible with their personal aspirations and goals.

There is no formalised career pathway selection process in Chinese Public Secondary Schools in Hong Kong (Wong & Yuen, 2022). However, students' choices of subjects and interactions with teachers indirectly determine students' future career trajectory (Wong & Yuen, 2022). In Chinese Secondary Schools in Hong Kong, only short training courses are available to teachers offering career-related support and these courses are taught by personnel who lack extensive training in career counselling and have little or no prior experience working in other occupational fields (Wong & Yuen, 2022). Research findings in Hong Kong also revealed deficiencies in career guidance and counselling in secondary schools. A wide survey involving 700 youths from 103 secondary schools found that 30% of the students reported that their teachers had provided little or no support concerning career planning and exploration (Federation of Youth Groups, 2019). Another study found that only 2.6% of 4850 students who formed the sample named their career guidance teacher as the source of most important career advice and support (Yuen, Cheung, Leung & Tang, 2020).

Deficiencies in career-related support emanate from traditional and cultural influences resulting in different principles, practices and priorities regarding career guidance and counselling (Arthur &

Collins, 2011). Hong Kong being a former British colony has greater access to western ideologies than residents in other parts of China (Chow, Fu, & Ng, 2020). However, conceptualisations of a perfect student are based on Chinese beliefs. For example, teachers are supposed to teach very well, keep their students under control and maintain social distance from their students (Salili, Chiu & Hong, 2001). Therefore, it is very difficult for an average teacher to provide personal counselling and individualised support (Wong & Yuen, 2022).

2.4 Dimensions of Cognitive Dissonance and Academic Performance

Academic performance is determined by a number of factors. These emanate from home environment, school environment and some are personal factors such as subject interest. In view of this, Arora and Singh (2017) conducted a study in India particularly in the city of Gurugram on factors affecting academic performance of college students. The findings indicated that academic achievement is an interplay of various factors. The significant predictors of academic performance included the following: teaching effectiveness which was perceived as the most important factor with the highest variance of 17.99%. It centres on teachers' expertise regarding the subject matter. It also includes updated knowledge relevant to the subject, open discussion and teaching skills. The second important factor according to Arora and Singh (2017), comprised distraction factors such as mobile phones, internet and peer pressure.

Additionally, the third important factor was based on personality traits which included variables such as disciplined behaviour, maintaining good relationship with friends and teachers as well as socialising networking skills. The fourth important factor revolved around study habits like studying regularly, putting more effort to learn difficult concepts and being attentive during lectures. The fifth factor was conducive family environment for studying, encouragement from

parents and parents' involvement in the academic performance of a child. In this study, girls had better grades than boys (Arora & Singh, 2017). This study is similar to the present study because it emphasises the importance of school environment, family environment and good relationships with teachers and peers as well as social networking skills in improving academic performance. However, the present study also focuses on the relationship between perceived choice of academic subjects and academic performance.

2.4.1 School and Learning and Academic Performance

Teachers' instructional strategies affect learners' academic performance. Francisco and Celon (2020) examined the effects of teachers' instructional practices on students' academic performance, using a descriptive-correlational research design. The study sampled 55 teachers and 295 students from private schools in Meycauayan, Bulacan, Philippines, during the 2018 and 2019 academic year. The research assessed instructional practices in three dimensions: planning strategies, instructional strategies, and assessment practices, using a standardised questionnaire (Francisco & Celon, 2020). The results indicated that teachers' instructional practices influenced student performance across five subjects such as English, Mathematics, Science, Filipino and Araling Panlipunan though to varying extents. The study found that assessment practices had the greatest impact on students' academic success, suggesting that formative and summative assessments play a crucial role in learning outcomes. However, regression analysis revealed that instructional practices, when considered collectively, did not produce a statistically significant effect on students' academic performance (Francisco & Celon, 2020). This finding challenged traditional assumptions that better instructional planning and teaching methods necessarily translate into higher student achievement. The study suggested that additional factors, such as student

engagement, socio-economic background, and school resources, may moderate the relationship between instructional practices and academic outcomes.

Additionally, findings indicated that planning and instructional strategies, while important, did not exhibit a statistically significant effect on students' academic performance, suggesting that curriculum design alone is insufficient in driving achievement (Francisco & Celon, 2020). The study also found that teachers frequently engaged in planning and assessment activities but only occasionally employed strategies that actively stimulated higher-order thinking skills. Furthermore, analysis by subject area revealed that instructional practices had a more pronounced impact on students' performance in Mathematics and Science compared to language-based subjects. Francisco and Celon (2020) examined the effects of teachers' instructional practices on students' academic performance whereas the present study focused on the relationship between perceived choice of subjects and academic achievement.

Teachers' interactions with learners have a great impact on teaching. Behm Cross, Tosmur-Bayazit and Dunn. (2018) examined the experiences of a White male preservice teacher navigating cognitive dissonance in an urban teaching context. This study employed a qualitative case study approach which focused on Brett, a middle-aged career-changer completing his student teaching in a historically under-resourced school serving predominantly African American students. Drawing on Cognitive Dissonance Theory (Festinger, 1957), the researchers investigated how Brett's White identity shaped his teaching experiences and responses to dissonance. Findings indicated that Brett experienced tension between his preconceived notions of effective teaching and the realities of working in an urban school, leading to fractured relationships with students, disengagement, and reliance on rationalisations rooted in White fragility and colour-blind racism

(Behm Cross et al., 2018). The study highlights how Brett's attempts to reconcile his dissonance often involved externalizing blame onto students, parents, and the structural conditions of the school, rather than engaging in self-reflection. Additionally, Brett's difficulty in forming connections with students and adapting his pedagogical strategies highlights the limitations of teacher education programs in adequately preparing white preservice teachers for diverse classrooms. Behm Cross et al. (2018) examined the experiences of a White male preservice teacher navigating cognitive dissonance in an urban teaching context while the present study focused on the association between cognitive dissonance and academic performance.

Management of cognitive dissonance among teachers while making instructional decisions may affect the teaching process. Showers (2021) examined how special education teachers navigate cognitive dissonance while making instructional decisions in the context of high-stakes testing. This study employed a qualitative research design and narrative inquiry to explore the lived experiences of three elementary special education teachers in Georgia. The study was grounded in Festinger's (1957) Cognitive Dissonance Theory, which suggests that individuals experience psychological discomfort when their beliefs and actions are misaligned. Findings reveal that special education teachers face significant tension between their professional beliefs emphasising individualised instruction and the mandated expectations of standardized assessments. Despite valuing differentiation and mastery learning, teachers reported feeling compelled to align their instruction with test content, often at the expense of their students' unique learning needs. Additionally, participants expressed frustration with the expectation that students with specific learning disabilities perform at the same level as their non-disabled peers, despite clear cognitive processing challenges. These pressures contribute to broader concerns regarding teacher burnout

and attrition in the special education sector, reinforcing existing literature on the impact of high-stakes testing on teacher retention.

Furthermore, Showers (2021) found that teachers who modified cognition adjusted their beliefs to justify test-focused instruction, convincing themselves that standardized testing was not detrimental to student learning. Others trivialized cognition by downplaying the significance of test scores, emphasizing alternative measures of student progress. Some teachers added additional cognition, incorporating extra justifications for their instructional choices to reduce dissonance, such as emphasizing that standardized assessments provided valuable data for instructional planning. However, the most concerning response was denial, where teachers rationalized that students with disabilities could perform well on standardized tests despite evidence to the contrary (Showers, 2021). Moreover, Showers (2021) argues that the emphasis on test preparation undermines the intent of special education by restricting opportunities for individualised and scaffolded learning. Showers (2021) examined how special education teachers navigate cognitive dissonance while making instructional decisions in the context of high-stakes testing while the present study focused on the relationship between cognitive dissonance and academic performance.

Learners' attitudes towards school affects academic performance. Verešová and Malá (2016) examined the relationship between attitudes toward school and learning and academic achievement among adolescents, highlighting the predictive power of attitude toward school learning in determining students' academic success. The study analysed data from 269 secondary school students and assessed the cognitive, behavioural, and affective components of attitude toward school and learning in relation to students' grade point averages. The findings indicated that

students with a more positive attitude toward school and learning achieved significantly higher academic performance, confirming that attitude toward school and learning is a key determinant of success (Verešová & Malá, 2016). Findings indicated that all three components of attitudes towards school and learning: cognitive, behavioural, and affective showed significant correlations with GPA, suggesting that students' beliefs, emotions, and learning behaviours collectively influence their performance. The research also found significant gender differences, with female students displaying more positive attitude toward school and learning than their male counterparts, particularly in terms of cognitive and behavioural engagement. The study supported previous research linking positive academic attitudes with higher motivation and greater effort in school tasks (Verešová & Malá, 2016). Additionally, academic performance in mathematics, Slovak language, and English was significantly associated with students' attitudes, reinforcing the importance of fostering a supportive learning environment.

Furthermore, Verešová and Malá (2016) confirmed that attitude toward school and learning significantly predicted Grade Point Average, explaining 9.8% of the variance in students' academic achievement. This supports previous studies suggesting that students with favourable attitudes toward learning are more likely to engage in effective study habits and demonstrate higher educational attainment (Verešová & Malá, 2016). The study also found that the behavioural component of attitude towards school and learning representing students' willingness to comply with school demands was the strongest predictor of Grade Point Average. In contrast, the affective component, which relates to students' emotional engagement with learning, showed a weaker association with academic performance. These findings suggest that students who exhibit proactive learning behaviours and self-discipline are more likely to achieve better academic

outcomes. Interestingly, gender differences were observed, with female students achieving higher academic success, particularly in Slovak language, but no significant gender differences were found in mathematics and English (Verešová & Malá, 2016). The study's results emphasise the need for educational strategies that cultivate positive learning attitudes through targeted student engagement initiatives. These findings also reinforce the idea that fostering a positive attitude towards education is crucial for academic achievement and long-term success. Verešová and Malá (2016) examined the relationship between attitudes towards school and learning and academic achievement while the present study focused on the association between cognitive dissonance and academic performance.

Motivation is an important factor determining academic achievement. Gbollie and Keamu (2017) investigated the role of motivation, learning strategies, and perceived barriers to academic performance among junior and senior high school students in Liberia. The study employed a cross-sectional quantitative research design and surveyed 323 students across public and private schools in two counties. The findings revealed that extrinsic goal orientation was the most dominant motivational belief among students, suggesting that many pursued education primarily for external rewards such as grades, parental approval, or career prospects (Gbollie & Keamu, 2017). In contrast, test anxiety was the least reported, indicating that students experienced relatively low stress regarding examinations. Additionally, the study found that students predominantly relied on rehearsal strategies, such as memorisation and repetition, while critical thinking and effort regulation were the least utilised strategies. These findings align with previous research suggesting that students in under-resourced education systems often resort to rote learning rather than deep learning strategies (Gbollie & Keamu, 2017). The findings revealed that motivation and learning

strategies were significantly correlated, indicating that students with stronger motivational beliefs were more likely to employ effective learning techniques. Furthermore, gender differences were observed, with female students showing greater effort regulation and self-efficacy, whereas male students reported higher levels of intrinsic motivation.

Additionally, Gbollie and Keamu (2017) found that barriers to learning included financial constraints and distance to school and they were the most significant challenges reported by students, with poverty-related stress emerging as a major concern. This aligns with previous research indicating that socio-economic factors significantly impact academic performance, particularly in developing countries. Surprisingly, social distractions such as peer pressure and video games were reported as minor obstacles to learning, contradicting common assumptions that recreational activities are primary distractions for students. The study also found that female students reported higher levels of academic hindrances compared to their male counterparts, particularly in terms of household responsibilities and financial stress. Additionally, inadequate learning environments, including a lack of textbooks, qualified teachers, and proper classroom infrastructure, were cited as major impediments to effective learning (Gbollie & Keamu, 2017). These findings highlight the structural challenges facing Liberia's education system despite ongoing reform efforts. Gbollie and Keamu (2017) explored on the role of motivation, learning strategies, and perceived barriers to academic performance while the present study focused on the relationship between cognitive dissonance and academic performance.

2.4.2 Family environment and Academic Performance

Family environment refers to physical and psychological conditions which exist in a home; these conditions determine a child's personality and academic achievement (Wilder, 2014; Krauss, Orth

& Robins, 2020). A learner's academic Self-efficacy affects academic performance. Yuan, Weiser and Fischer (2016) explored the role of self-efficacy as a mediator between parent–child relationships and academic performance among European American and Asian American college students. The study employed a quantitative approach with a study sample included 258 undergraduate students. The aim of the study was to determine the extent to which parental support influenced self-efficacy and, subsequently, academic success. The findings indicated that self-efficacy significantly mediated the relationship between parent–child relationships and academic performance, but this mediation effect was only significant for Asian American students (Yuan et al., 2016). Among European American students, parent–child relationships did not significantly influence self-efficacy, suggesting a cultural divergence in the role of parental support. The study also indicated that, in collectivistic cultures, strong parent–child relationships contribute positively to self-efficacy, which in turn fosters academic achievement. However, in individualist cultures, academic self-efficacy appears to be shaped more by personal experiences and institutional factors rather than familial influences (Yuan et al., 2016). The study's findings align with Bandura's (1997) self-efficacy theory, which emphasises that confidence in one's abilities is shaped by both personal experiences and social support. Asian American students reported stronger associations between parental support and self-efficacy, reinforcing previous research on the collectivistic values prevalent in Asian cultures. In contrast, European American students demonstrated greater independence in their self-efficacy development, supporting the notion that individualist societies encourage self-reliance in academic success (Yuan et al., 2016). The study also found that self-efficacy was a significant predictor of academic achievement across both cultural groups, though the pathways leading to high self-efficacy differed. The research further highlights the importance of positive parental engagement, particularly for students from collectivistic backgrounds, in

boosting confidence and resilience in academic settings. Yuan et al. (2016) explored the role of self-efficacy as a mediator between parent–child relationships and academic performance while the present study focused on the association between academic achievement and cognitive dissonance based on family and home environment.

Collaboration between parents and teachers enhances academic performance. Albrecht (2020) conducted a qualitative study examining the transition from traditional parent involvement in education to a more equitable, asset-based model of family-school partnerships. The study was conducted in the United States. A case study approach was utilised across three school districts with varying levels of parental engagement (Albrecht, 2020). The research explored how schools can shift from compliance-driven parental involvement, often dictated by funding requirements, to a sustainable alliance that empowers families as active partners in education. The findings revealed that cognitive dissonance often emerged among educators when they attempted to implement family engagement strategies that challenged traditional power structures (Albrecht, 2020). Additionally, the study identified key barriers to this paradigm shift, including deficit-based thinking, lack of shared leadership, and systemic resistance to change. The research demonstrated that successful family-school partnerships require a redefinition of parental roles, moving beyond passive involvement toward active decision-making and leadership. Furthermore, the study highlighted that meaningful engagement is contingent on schools recognising and valuing the cultural assets and knowledge that families bring to the educational process (Albrecht, 2020). The research found that schools that embraced bilingualism, community-based learning, and culturally relevant pedagogy had higher levels of parental trust and participation. Moreover, the study

emphasised the importance of sustained professional development for educators to challenge their own biases and develop culturally responsive engagement strategies.

Furthermore, Albrecht (2020) found that cognitive dissonance among educators arose when their professional training and institutional norms conflicted with the emerging paradigm of family-school partnerships. Additionally, the findings indicated that schools that invested in building personal relationships with families through bilingual liaisons, community events, and parent leadership programmes were more successful in fostering sustainable engagement. The research also suggested that schools must move beyond a one-size-fits-all approach by tailoring engagement strategies to meet the specific needs and cultural contexts of their communities (Albrecht, 2020). Albrecht (2020) examined the practical implications of transitioning from traditional parent involvement models to an alliance-based approach while the present study focused on the relationship between cognitive dissonance and academic performance.

Family support is a catalyst for high academic achievement. Roksa and Kinsley (2018) investigated the role of family support in facilitating the academic success of low-income college students. The study focused on emotional and financial assistance. Using data from 728 first-year low-income students at eight four-year institutions, the study examined the effects of family support on academic outcomes, including Grade Point Average, credit accumulation, and persistence. The findings revealed that emotional support played a significant role in fostering positive academic outcomes, primarily by enhancing psychological well-being and student engagement (Roksa & Kinsley, 2018). Emotional support was associated with higher levels of persistence, greater faculty engagement, and increased study time, highlighting its role in promoting academic success. Conversely, financial support was not significantly related to

academic outcomes for the entire sample, though it showed variation by first-generation status. Continuing-generation students benefited more from financial support than their first-generation peers, suggesting that economic resources alone are insufficient without complementary emotional reinforcement (Roksa & Kinsley, 2018). While traditional models of student retention often emphasise academic integration and institutional engagement, this study highlights the vital role of family connections in shaping student experiences. The results indicate that emotional support enhances students' sense of belonging, a crucial factor in determining retention rates, particularly for socio-economically disadvantaged students. Furthermore, the study identifies engagement with faculty and time spent studying as critical mediators in the relationship between emotional support and academic performance. Roksa and Kinsley (2018) investigated the role of family support in facilitating the academic success while the present study focused on the relationship between perceived choice of subjects and academic performance.

Family background affects learners' academic performance. Li and Qiu (2018) examined the impact of family background on children's academic achievement in contemporary China, analysing data from the Chinese Family Panel Study. The study identified two primary pathways through which family background influences academic performance: access to high-quality educational opportunities and parental engagement in children's learning processes. Using structural equation modelling, the research revealed that children from higher socioeconomic status families had significantly better access to quality schools and additional educational services, such as private tutoring (Li & Qiu, 2018). Moreover, these children benefited from higher levels of parental educational participation, including homework assistance and discussions about school experiences. The findings highlighted that urban students' academic achievements were

more affected by family social economic status than rural students, as urban families had greater resources to invest in education. The study also found that students' learning behaviour was a critical mediator in the relationship between family background and academic performance, with parental participation enhancing students' study habits and motivation (Li & Qiu, 2018). Furthermore, disparities in educational opportunities were largely due to institutional and systemic factors, with privileged families utilising social and economic capital to secure better educational resources. These findings emphasise the need for policies aimed at reducing educational inequality by improving access to quality education for lower-income families. The study concluded that while family background remains a significant determinant of academic success, targeted educational policies could mitigate some of its adverse effects.

Additionally, the results support human capital, cultural capital, and social capital theories, which collectively explain how financial resources, parental education, and parental engagement contribute to academic success (Li & Qiu, 2018).Similarly, the findings highlighted the role of school quality in moderating the relationship between family background and academic performance, revealing that students attending high-quality schools performed better regardless of their social economic status. However, the analysis also showed that students from higher social economic status families had greater access to these schools, perpetuating the cycle of educational inequality. Another important finding indicated that urban students exhibited stronger associations between family background and academic achievement compared to rural students, suggesting that urban environments exacerbate educational disparities (Li & Qiu, 2018). Li and Qiu (2018) examined the impact of family background on children's academic achievement while the present

study focused on the association between cognitive dissonance based on the family and academic performance.

Zhao and Zhao (2022) investigated the impact of family environment on adolescent's academic performance as well as the role of peer interaction quality and educational expectation gap. They employed a two-wave longitudinal survey to explore the influence of family environment on the academic achievement of adolescents in junior high school of China. The findings indicated that educational expectation gap moderates the effect of family environment on academic achievement and also on interaction quality. The findings also indicated that socialisation centred on family and peer interaction quality has a great bearing on academic performance from the perspective of significant others. This study is similar to the present study because it deals with family environment and the present study focused on family dissonance as a dimension of overall cognitive dissonance. However, the present study is different as it also focused on the relationship between perceived choice of subjects and academic achievement.

Although certain parents do not understand their role in improving the academic performance of their children, their input should be encouraged and guidance must be offered to them to enhance academic performance. In view of this, Li, Huang, Hu and Zhao (2022) conducted a study among Chinese students to explore the effects of parent student relationships on academic performance as well as the chain mediating the roles of gratitude and psychological capital. The results revealed that parent student relationships correlated positively with academic performance of college students. This study focused on gratitude, psychological capital and parent student relationships, as well as the relationship of these variables with academic performance. The common factor between this study and the present study is based on the importance of parent student relationships

in improving academic achievement. On the other hand, the present study focused also on the relationship between cognitive dissonance and academic performance.

Family environment affects academic performance. O'Malley, Voight, Renshaw and Eklund. (2015) investigated the moderating role of school climate on the relationship between family structure and academic achievement, considering various family environments such as two-parent, one-parent, foster-care, and homeless households. The study utilised a sample of over 490,000 high school students from 902 Californian public schools and measured their self-reported academic performance (GPA) alongside perceptions of school climate. Results revealed that students with positive school climate perceptions consistently reported higher GPAs, regardless of their family structure (O'Malley et al., 2015). However, the degree to which school climate influenced academic achievement varied, with the strongest effects observed among homeless and one-parent students, suggesting a protective function against home-related disadvantages. Foster-care students, however, exhibited a weaker association between school climate and GPA, indicating that their academic outcomes were less influenced by school climate than those of other at-risk groups (O'Malley et al., 2015). The study further identified a curvilinear trend for homeless students, with stronger effects at lower levels of school climate perceptions, implying that improvements in school climate yielded the most substantial academic benefits for this group when conditions were initially poor. The findings emphasise the role of positive school environments in mitigating the academic disadvantages associated with unstable or disadvantaged home structures. Additionally, the study highlights the need for educational interventions that foster a supportive school climate, particularly for students experiencing homelessness or single-parent family environments. The findings align with existing research suggesting that students from

disadvantaged backgrounds benefit more from a positive school climate than their peers from stable home environments. Additionally, O'Malley et al. (2015) investigated the moderating role of school climate on the relationship between family structure and academic achievement but the present study focused on the association between academic performance and cognitive dissonance.

Parental involvement in learners' academic activities enhances academic performance. Fernández-Alonso, Álvarez-Díaz, Woitschach, Suárez-Álvarez, and Cuesta (2017) investigated the influence of parental involvement styles on students' academic performance in Spain. The sample comprised 26,543 secondary school students. The researchers applied hierarchical-linear modelling to analyse the effects of home-based parental involvement on school achievement. The findings did not align with the widely held belief that increased parental involvement always leads to improved academic outcomes (Fernández-Alonso et al., 2017). This study revealed that students whose parents adopted a more communicative and supportive role performed better academically than those whose parents displayed a controlling and intrusive approach. The study indicated that excessive parental supervision of homework had a negative association with academic achievement, suggesting that autonomy-supportive parental behaviours are more effective than direct intervention. These results align with self-determination theory, which posits that students perform better when they perceive greater autonomy and intrinsic motivation. Moreover, Fernández-Alonso et al. (2017) found that school-level parental involvement profiles influenced intra-school differences in student performance, with schools characterised by greater parental communication displaying less academic disparity among students. Findings also revealed that family socio-economic status remained a significant predictor of academic success, emphasising the complex interplay between parental involvement, economic background, and student achievement.

Additionally, the researchers highlighted the need for school policies that promote indirect parental engagement strategies, such as fostering a supportive learning environment rather than direct supervision of academic tasks. Finally, Fernández-Alonso et al. (2017) concluded that effective parental involvement should prioritise open communication and encouragement over control and monitoring.

Furthermore, Fernández-Alonso et al. (2017) explored the broader implications of parental involvement on educational equity and school performance variability. The study found that schools with higher levels of parental communication exhibited lower differences in student achievement, suggesting that collective parental involvement plays a role in promoting educational consistency (Fernández-Alonso et al., 2017). This finding is particularly relevant for policymakers seeking to reduce academic disparities, as it indicates that fostering a school-wide culture of open family-school communication can enhance overall academic outcomes. The study also distinguished between different dimensions of parental involvement, with communication about school matters positively linked to student performance, while excessive parental control over homework was negatively associated with achievement. This aligns with previous research indicating that an overbearing approach to academic supervision can undermine students' self-efficacy and motivation. Additionally, the study demonstrated that these effects persist across socio-economic groups, reinforcing the argument that parental involvement strategies should be designed to enhance student autonomy rather than enforce rigid oversight. Moreover, this study emphasised the importance of parental engagement as well as the quality and style of involvement. Fernández-Alonso et al. (2017) concluded that less controlling and more communicative parental involvement fosters not only better academic outcomes but also greater student motivation and

educational equity. However, the present study focused on the relationship between cognitive dissonance and academic performance.

Nurturing family environment contributes to good academic performance. Similarly, Harris, Vazsorry, Ozdemir and Saakal (2020) investigated the relationship between family environment and school engagement among Turkish adolescent youths during middle school years. The study employed a longitudinal design. The findings indicated that family environment positively predicated changes in school engagement at each time point. Vazsorry et al. (2020) investigated the relationship between family environment and school engagement while the present study focused on family environment as a dimension of cognitive dissonance and academic performance.

A home should be a place where children receive inspiration to work hard at school. Taseer, Khan, Yasir, Kishwer and Iqbal (2023) investigated the impact of family involvement on academic performance at secondary school level. The sample comprised four hundred parents of secondary school students. The study focused on how parents can support their children to promote positive outcomes. The results revealed that family involvement is one of the major factors affecting academic performance leading to improvement in grades, attendance and motivation to learn. Research findings also indicated that parents who were more involved in their children's education were also able to provide academic resources, guidance, create supportive home environment and were also likely to establish high academic expectations. The findings also revealed that parents who did not know how to support their children academically seemed to be uninterested in their children's academic performance. After being guided, parents realised that their input was valuable and they knew how to support their children academically.

Furthermore, students felt that the input from parents was not important at the beginning of the study. After the researchers explained to the parents how they can support their children academically, the students changed their perceptions regarding the input of parents in their academic performance. Then learners began to appreciate their parents' input. Consequently, students were motivated to collaborate with their families regarding school work. The researchers taught families how to provide accurate feedback that would help learners improve academically. Taseer et al (2023) investigated the impact of family involvement on academic performance while the present study focused on the relationship between cognitive dissonance and academic performance.

2.4.3 Socialisation and Academic performance

Peer relationships among adolescents influence academic achievement. Gremmen, Dijkstra, Steglich, and Veenstra (2017) explored the role of peer selection and influence in shaping academic achievement among adolescents in the Netherlands. The study used a longitudinal social network analysis using the RSiena model to examine the friendship dynamics of 601 early secondary school students aged 12-16 on average. The study revealed a two-stage process in which students initially selected friends based on academic similarity (selection effect) before gradually influencing each other's academic performance over time (influence effect) (Gremmen et al., 2017). Specifically, in the first year of secondary school, students had a tendency to form friendships with peers who displayed similar performance in specific subject, such as languages, sciences, or social studies. However, by the second year, peer influence became a significant factor, leading to formation of friendships based on similar academic grades. The study further highlighted that low-achieving students predominantly formed friendships with similar low achievers, while high-achieving students did not want to associate with lower-performing peers.

These results in agreement with the social comparison theory (Festinger, 1954), which suggests that individuals seek social approval through associations with those of comparable ability. Additionally, Gremmen et al. (2017) found that peer influence had an upward effect on academic achievement, meaning that students were more likely to improve their grades when surrounded by high-achieving peers. The findings contribute to the broader discourse on educational inequality by demonstrating how social networks can either reinforce or mitigate academic disparities. This study revealed that peer relationships play a crucial role in shaping academic achievement, with implications for school policies aimed at fostering inclusive peer networks. Gremmen et al. (2017) focused on social networking skills in relation to academic performance. However, the present study focused on perceived choice of academic subjects and academic achievement.

Social integration is important in the educational setting. Patterson (2018) conducted a qualitative study investigating cultural dissonance and social integration among Black American male undergraduates from low socio-economic backgrounds at a predominantly White institution in the United States. The study utilised in-depth interviews with 17 participants attending a four-year public research university (Patterson, 2018). The research explored how campus engagement, recreation, and leisure activities influenced these students' social adaptation, focusing on their experiences of racial and socio-economic exclusion. The findings revealed that participants often felt isolated upon arrival at the university, experiencing difficulty in forming social connections with their predominantly White peers (Patterson, 2018). Additionally, cultural dissonance emerged as students struggled to navigate the intersection of their racial identity and the dominant campus culture, leading many to seek out social groups composed of other underrepresented students. The study also found that participation in student organisations and recreational activities played a

critical role in fostering a sense of belonging, though many participants reported encountering racism, microaggressions, and social barriers in predominantly White campus spaces (Patterson, 2018). Furthermore, the research demonstrated that students from low-income backgrounds faced additional financial constraints that limited their ability to engage in extracurricular activities. The findings also highlighted that some students attempted to integrate into mainstream campus activities but ultimately withdrew due to perceived discrimination or lack of acceptance.

Furthermore, Patterson (2018) examined the psychological and emotional effects of cultural dissonance, highlighting its impact on students' retention and academic performance. The findings indicated that many participants internalised feelings of alienation, reporting that they experienced heightened anxiety and self-doubt in classroom settings dominated by White students (Patterson, 2018). Additionally, the research demonstrated that campus engagement provided an avenue for coping with these challenges, yet systemic barriers often limited students' access to such opportunities. The findings suggested that while some students actively sought cross-racial interactions, others withdrew into same-race peer groups to mitigate feelings of discomfort and exclusion (Patterson, 2018). Additionally, the study revealed that financial limitations significantly influenced students' ability to participate in campus life, as many extracurricular activities required fees that students from higher socioeconomic backgrounds could more easily afford. The research also identified that cultural dissonance was reinforced by faculty and institutional policies that failed to address the unique challenges faced by Black male students. Overall, Patterson (2018) concluded that addressing cultural dissonance requires a multidimensional approach, incorporating structural, social, and financial interventions to support Black American male students from low-

income backgrounds. On the other hand, the present study focused on the relationship between cognitive dissonance and academic performance.

Singh (2017) explored the socialisation experiences of international students in New Zealand tertiary education, examining both student and teacher perspectives on classroom integration. The study employed a qualitative research design, utilizing focus groups with international students and interviews with teachers to assess the alignment between student expectations and lived experiences (Singh, 2017). Findings indicated that while students anticipated a smooth integration into the New Zealand education system, they often encountered cultural and linguistic barriers that created cognitive dissonance between their prior learning experiences and the expectations of the host institution. The study highlighted the role of peer interaction in facilitating successful socialisation, with students who actively engaged with local peers reporting higher levels of satisfaction and academic success. However, findings also revealed that many international students formed exclusive networks with peers from similar cultural backgrounds, limiting their exposure to local social norms and classroom practices. This hindered full integration into host academic communities. Singh (2017) emphasized the need for structured socialisation initiatives within tertiary institutions, including intercultural training for both students and faculty, to bridge the gap between student expectations and classroom realities.

Moreover, Singh (2017) reported that many teachers struggled to balance inclusive pedagogies with the demands of a fast-paced curriculum, resulting in limited opportunities for structured intercultural engagement. Additionally, the study identified language proficiency as a key factor influencing classroom socialisation, with students who had lower English fluency experiencing greater difficulty in participating in discussions and group work. Furthermore, Singh (2017)

highlighted the role of cultural perceptions in shaping classroom interactions, noting that students from hierarchical educational backgrounds often struggle with the more participatory, student-centred teaching approaches prevalent in New Zealand. Singh (2017) explored the socialisation experiences of international students in New Zealand tertiary education whereas the present study focused on the relationship between cognitive dissonance based on socialisation and academic performance.

Adolescents' relationships may have an impact learning outcome. Wachs, Görzig, Wright, Schubarth and Bilz (2020) investigated the associations between adolescents' relationships with parents, peers, and teachers, self-efficacy in social conflicts, and their willingness to intervene in bullying incidents. The study utilised Social Cognitive Theory to explore how these social relationships influence students' motivation and capacity to act in bullying situations (Wachs et al., 2020). Additionally, this study employed stratified random sampling to select 2071 adolescents aged 12 to 17 from 24 schools in Germany. The researchers applied structural equation modelling to examine direct and indirect effects. Findings indicated that strong parent–child and teacher–student relationships positively correlate with higher levels of self-efficacy in social conflicts, which in turn increases students' willingness to intervene in bullying (Wachs et al., 2020). However, the study found that while teacher–student relationships directly influenced students' willingness to intervene, parent–child relationships only had an indirect effect through self-efficacy. This suggested that while teachers actively shaped students' school-based behaviours, parents influenced their children's overall sense of self-efficacy rather than their immediate intervention decisions. The study also highlighted that students who have experienced bullying victimisation exhibited lower self-efficacy, which diminished their likelihood of intervening in

bullying situations. Wachs et al. (2020) advocated for comprehensive school-based interventions that foster teacher–student relationships and directly enhance students' self-efficacy to promote bullying prevention.

Furthermore, Wachs et al. (2020) found that self-efficacy in social conflicts functions as a critical determinant of students' ability to act upon their moral judgments. Their findings indicated that adolescents with strong self-efficacy are more likely to overcome the bystander effect and actively intervene in bullying incidents. Furthermore, the study found that bullying victimisation is negatively associated with self-efficacy, suggesting that students who experience repeated bullying develop learned helplessness, making them less willing to intervene in future incidents. However, the research also highlighted that teacher–student relationships significantly buffer against the negative effects of bullying victimisation, reinforcing the role of supportive school environments in fostering students' confidence (Wachs et al., 2020). Wachs et al. (2020) investigated the associations between adolescents' relationships with parents, peers, and teachers, self-efficacy in social conflicts while the present study focused on the association between cognitive dissonance based on socialisation and academic performance.

Foreign students have to adapt to the new environment to achieve academic success. Nagovitsyn, Osipov, Kudryavtsev and Markov (2020) examined the role of extracurricular activities in mitigating cognitive dissonance among foreign students studying at Russian universities. The study identified cognitive dissonance as a major challenge for international students, manifesting in socio-psychological maladaptation, neuropsychiatric instability, and psycho-emotional discomfort (Nagovitsyn et al., 2020). The study was based on a sample of 149 second-year international students enrolled in a bachelor's degree programme, the researchers used Statistical

Package Social Sciences (SPSS) version 20 to analyse changes in cognitive dissonance levels before and after targeted interventions. Findings indicated that students who actively participated in structured extracurricular activities experienced significant reductions in cognitive dissonance, with levels shifting from high to low across key indicators ($p < 0.01$ and $p < 0.05$). Findings indicated that participation in student self-governance, scientific societies, sports clubs, and cultural initiatives provided foreign students with essential social integration opportunities, reinforcing research on the role of socialisation in academic adjustment. Nagovitsyn et al. (2020) identified communication barriers and unfamiliar educational expectations as primary sources of cognitive dissonance, supporting findings that cultural and linguistic disparities can heighten students' emotional distress.

Furthermore, Nagovitsyn et al. (2020) found that students who participated in extracurricular activities exhibited higher levels of self-acceptance and greater emotional stability compared to those who remained disengaged. Additionally, the study demonstrated that students who engaged in structured social activities developed a greater appreciation for Russian culture and educational norms. However, research findings indicated areas where extracurricular interventions had limited impact, such as dominance in peer interactions and internal locus of control. The findings highlighted the need for more tailored mentorship and support strategies to address students' individual adaptation challenges. Nagovitsyn et al. (2020) examined the role of extracurricular activities in mitigating cognitive dissonance among foreign students studying at Russian universities while the present study focused on the relationship between cognitive dissonance and academic performance.

Schools should foster socialisation among learners. Garibaldi and Josias (2015) examined the role of the built environment in fostering socialisation processes in schools, emphasising how school design influences students' social and emotional development. The study employed a socio-technical systems perspective, arguing that schools serve as microcosms of broader society where students develop essential psychosocial and academic skills. The findings emphasised that social and emotional skills such as self-regulation, relationship-building, and responsible decision-making are fundamental to academic success and long-term occupational outcomes (Garibaldi & Josias, 2015). The study found that school climate, including interpersonal relationships, discipline policies, and participation opportunities, significantly shaped students' emotional well-being and engagement. Additionally, the built environment, encompassing factors such as lighting, classroom layout, and acoustics, was found to influence students' ability to concentrate and interact effectively. The research indicated that attributes such as natural daylight, flexible learning spaces, and noise reduction contributed positively to student engagement and cognitive performance (Garibaldi & Josias, 2015). Conversely, overcrowded classrooms and poor ventilation negatively impacted student learning and emotional stability.

Furthermore, the findings confirmed that safe, engaging, and well-structured environments foster positive student interactions and emotional development, reinforcing prior research on the role of school climate in educational success. The study also found that schools designed with communal spaces, such as atriums and shared learning areas, promoted peer collaboration and reduced social isolation (Garibaldi & Josias, 2015). Moreover, classroom seating arrangements that facilitated student-teacher interactions were associated with higher engagement and good academic performance (Garibaldi & Josias, 2015). Garibaldi and Josias (2015) examined the role of the built

environment in fostering socialisation processes in schools while the present study focused on the association between cognitive dissonance based on socialisation and academic performance.

Social-emotional learning has been proved to be a catalyst for high academic achievement. DeLay, Zhang, Hanish, Miller, Fabes, Martin, Kochel and Updegraff, (2016) examined the impact of a social-emotional learning intervention on peer influence and academic performance using longitudinal social network analysis. The study sample comprised 631 fifth-grade students from six elementary schools, with 14 intervention classrooms implementing a relationship-building intervention and eight control classrooms following standard educational practices. The findings revealed that students in intervention classrooms exhibited greater diversity in friendship selection, reducing social segregation by ethnicity and academic ability compared to control groups (DeLay et al., 2016). Additionally, peer influence on academic performance was significantly stronger in intervention classrooms, particularly in writing and mathematics, suggesting that social emotional learning programmes enhance positive academic socialisation. Furthermore, the results showed that high-achieving students positively influenced their lower-achieving peers, thereby improving overall classroom academic performance (DeLay et al., 2016). Findings also revealed that students in intervention classrooms formed friendships that were more diverse in academic ability, reducing traditional patterns of academic stratification. DeLay et al. (2016) highlighted the effectiveness of social network analysis in assessing how peer interactions shape educational outcomes over time while the present study focused on the association between cognitive dissonance based on socialisation and academic performance.

Kobayashi, Zappa-Hollman and Duff (2017) explored the process of academic discourse socialisation, focusing on how students navigate linguistic, cognitive, and cultural aspects of

academic communities. The study reviewed prior literature on academic discourse socialisation, highlighting the interplay between intertextuality, academic identity, and engagement in disciplinary discourse. The findings revealed that students' proficiency in the language of instruction significantly impacts their ability to participate in academic discourse, often leading to social stratification within educational settings (Kobayashi et al., 2017). The research also highlighted the challenges that international students face, including unfamiliarity with academic genres, evolving discourse practices, and implicit institutional expectations. Additionally, the study examined how socialisation agents, such as peers, instructors, and digital platforms, mediate students' integration into academic discourse communities (Kobayashi et al., 2017). Findings indicated that technology-mediated platforms, including Google Docs, online discussion forums, and video conferencing tools, have become essential mechanisms for fostering academic discourse participation.

Furthermore, Kobayashi et al. (2017) found that academic discourse socialisation is a complex, multidimensional process influenced by institutional norms, disciplinary conventions, and student agency. The research emphasised that learners often struggle with academic writing and oral discourse, particularly in fields with highly specialised terminologies (Kobayashi et al., 2017). Furthermore, the study found that academic discourse is not merely a means of knowledge transmission but also a site of power negotiations, where students must align themselves with disciplinary ideologies. Kobayashi et al. (2017) explored the process of academic discourse socialisation while the present study focused on the relationship between academic performance and cognitive dissonance.

Good social skills enable learners to relate to each other well and promote learning since learners develop good relationship with teachers. Bagum, Khan and Tehsain (2022) found that socialization level has a great value for academic related purposes and that most of the respondents agreed that socialization build confidence and good communication abilities. Similarly, Yu, Wang, Zheng, Zheng, Shao, Wang and Zhau (2023) found a significant positive relationship between academic performance and personal relationships. The findings also highlighted that of the three types of relationships: student parent relationships, student teacher relationships, student peer relationships correlated most closely with academic performance among the fourth and eighth graders in a Chinese city called Qingdao. Zheng et al (2023) explored the impact of personal relationships on academic performance while the present study focused on the relationship between perceived choice of academic subjects and academic performance.

Peer group relationship among learners can either lead to high academic achievement or poor academic performance. Filade, Bello, Uwaoma, Anwanane and Nwangburuka (2019) explored the influence of peer groups on the academic performance of undergraduate students at Babcock University, Ogun State, Nigeria. The study employed a mixed-method research design incorporating descriptive survey and ex post facto designs, with a sample of 116 students drawn from five departments in the School of Education and Humanities. The findings revealed a significant influence of peer groups on students' academic performance, confirming that peer relationships play a critical role in shaping academic outcomes (Filade et al., 2019). Findings also indicated that students who associated with academically motivated peers were more likely to exhibit higher engagement and improved academic performance. Conversely, students who formed peer relationships with individuals less committed to academic pursuits demonstrated

lower academic achievements. The results also indicated that peer influence extends beyond academic performance to include socialisation patterns, self-esteem, and emotional development Furthermore, the findings indicated that peer influence could be either positive or negative, depending on the nature of the group dynamics (Filade et al., 2019). Additionally, the study highlighted the need for trained counsellors to be deployed to institutions to help students navigate peer pressure and develop productive academic habits. The study found a statistically significant relationship between peer group affiliation and academic achievement, reinforcing previous literature on the socialisation effects of peer influence. Filade et al. (2019) explored the influence of peer groups on the academic performance while the present study stressed the importance of perceived choice as a dissonance reduction strategy.

A number of studies have yielded different findings on academic achievement. Sakirudeen and Sanni (2017) examined the study habits and academic performance in Mathematics among secondary school students in Uyo Local Government area of Akwaiborn State in Nigeria. The findings indicated that there was a significant relationship among note-taking, student use of the library, time allocation for study and academic performance in Mathematics. This study is based on one subject only which is Mathematics unlike the present study that focused on academic achievement of learners in all subjects both compulsory and optional subjects.

2.4.4. Adjustment and Academic Performance

Personal adjustment has been defined differently by a number of authors. According to Shaffer (1956), adjustment has been defined as a process by which a living organism maintains a balance between its needs and circumstances that influence the satisfaction of these needs. Biswal, Sahu and Sahoo (2021) define personal adjustment as a process by which a person changes behaviour

to achieve harmony with oneself, other people and the environment to maintain equilibrium. There is need for a person to adjust effectively because circumstances are ever changing. According to Lakhani, Jain and Chandel (2017), inability to adjust may result in mental health problems, school dropout and needs counselling. The researchers also found that well-adjusted learners are motivated to learn resulting in improved academic performance.

Adjustment enhances academic achievement. Yoo, Miller, and Yip (2015) examined the psychological effects of internalising the Model Minority Myth, concentrating on its impact on academic performance and psychological adjustment. The study was conducted in the United States among Asian adolescents and with a sample of 155 Asian American high school students in the Southwest region. The study used a confirmatory factor analysis to validate the Internalisation of the Model Minority Myth Measure, a psychometric tool developed to assess beliefs in the myth of achievement and unrestricted mobility (Yoo et al., 2015). The research results indicated that internalising the achievement aspect of Model Minority Myth was positively associated with academic expectation stress, whereas internalising the unrestricted mobility component negatively correlated with stress, after controlling for gender and academic performance. Furthermore, findings indicated that academic performance moderated the relationship between model Minority Myth and psychological distress, with high-achieving students experiencing lower distress when internalising the myth, while underperforming students showed heightened anxiety and self-doubt. These results line up with cognitive dissonance theory (Festinger, 1957), suggesting that students who internalise societal narratives of success but fail to meet them may experience psychological discomfort. Additionally, findings revealed that the Model Minority Myth disseminates unrealistic expectations that Asian Americans should excel academically without difficulty, resulting in

pressure that may undermine mental well-being (Yoo et al., 2015). Yoo et al. (2015) explored examined the psychological effects of internalising the Model Minority Myth with special focus on its impact on academic performance and psychological adjustment while the present study focused on the relationship between academic achievement and cognitive dissonance.

Emotional intelligence and motivation affect learners' academic performance. Trigueros, Aguilar-Parra, Cangas, Bermejo, Ferrandiz, and López-Liria (2019) examined the influence of emotional intelligence, motivation, and resilience on academic performance and the adoption of healthy lifestyle habits among adolescents in the context of physical education. The study utilised a structural equation modelling approach with a sample of 615 secondary school students aged between 14 and 19. The findings revealed that emotional intelligence positively predicted positive emotions, demonstrating the role of emotional regulation in shaping students' academic and behavioural outcomes (Trigueros et al., 2019). Positive emotions were found to enhance self-motivation and resilience, which in turn significantly predicted academic performance and engagement in physical activity. In contrast, negative emotions were associated with lower levels of resilience and motivation, reinforcing the need for emotional support in Physical Education settings. The study supports Self-Determination Theory, which posits that self-motivation fosters adaptive behaviours and long-term goal achievement (Trigueros et al., 2019). Additionally, students who exhibited higher resilience were more likely to develop intrinsic motivation and persist in both academic and physical activities. The findings suggest that Physical Education teachers play a crucial role in fostering students' emotional intelligence, which may indirectly enhance academic success.

Furthermore, Trigueros et al. (2019) found that motivation served as a critical mediator in the relationship between emotional intelligence, resilience, and academic performance. Students with higher emotional intelligence were more likely to experience positive emotions, leading to enhanced resilience and greater self-determined motivation (Trigueros et al., 2019). Similarly, the findings revealed that students with higher levels of self-motivation were more engaged in academic tasks and were more likely to sustain participation in physical activities. Trigueros et al. (2019) explored the influence of emotional intelligence, motivation, and resilience on academic performance but the present study focused on the relationship between perceived choice of academic subjects and academic performance.

Academic adjustment enhances academic performance. Van Rooij, Jansen and Van de Grift (2017) investigated the role of academic adjustment in first-year university students' academic success, focusing on motivation, self-regulated study behaviour, and degree programme satisfaction. The sample comprised 243 first-year students from the Netherlands. Using structural equation modelling, the study assessed how these factors influence academic adjustment and subsequent student outcomes. The findings revealed that academic adjustment significantly mediated the relationship between motivational and behavioural variables and academic performance, explaining 72% of the variance in adjustment (Van Rooij et al., 2017). Intrinsic motivation, self-regulated study behaviour, and degree programme satisfaction were the strongest predictors of adjustment, highlighting their importance in student success. However, academic self-efficacy was not directly linked to adjustment, suggesting that confidence in academic abilities alone does not ensure a smooth transition to university. The study also found that academic adjustment positively influenced both GPA and the number of credits attained. Interestingly, while adjustment predicted

academic success, only satisfaction with the degree programme predicted students' intention to persist in their studies. This finding highlights the importance of ensuring that students choose degree programmes aligned with their interests and strengths. Van Rooij et al. (2017) highlights the importance of academic adjustment in student achievement and retention while the present study focused on the relationship between cognitive dissonance associated with adjustment and academic achievement.

Personal adjustment is one of the factors which affects academic achievement. Bailey and Phillips (2015) investigated the influence of motivation and adaptation on students' subjective well-being, meaning in life, and academic performance, highlighting the psychological factors that contribute to academic success. The study was based on a sample of 184 first-year university students and employed a quantitative approach. The study aimed to assess how intrinsic and extrinsic motivation, along with amotivation, affected students' adjustment to university life. The findings revealed that intrinsic motivation was positively associated with greater subjective well-being, a stronger sense of meaning in life, and higher academic performance (Bailey & Phillips, 2015). In contrast, extrinsic motivation indicated weaker relationships with these outcomes, suggesting that external rewards such as grades and social validation do not strongly predict academic success. Amotivation, defined as a lack of motivation or purpose in learning, was consistently linked to poor academic performance, lower well-being, and increased psychological distress. The study supported Self-Determination Theory, demonstrating that students with self-determined motivation were more engaged and performed better academically (Bailey & Phillips, 2015). Additionally, the research found that successful adaptation to university, particularly in terms of social and academic adjustment, significantly influenced students' overall well-being and

performance. Students who reported higher levels of social and emotional adaptation were more likely to achieve academic success, reinforcing the importance of university support systems.

Furthermore, Bailey and Phillips (2015) provided valuable insights into the role of psychological adaptation in higher education, demonstrating how motivation and well-being interact to shape student outcomes. Additionally, findings revealed that intrinsic motivation was closely linked to positive affect and satisfaction with life, whereas amotivation was associated with higher levels of depression and anxiety. The research also showed that students with higher social and academic adjustment reported greater life satisfaction and a stronger sense of meaning (Bailey & Phillips, 2015). Bailey and Phillips 2015) explored the influence of motivation and adaptation on students' subjective well-being, meaning in life, and academic performance while the present study focused on the relationship between academic performance and cognitive dissonance.

The adjustment erosion hypothesis, which posits that behavioural and emotional difficulties negatively impact later academic performance has been used in a number of studies. Similarly, Deighton, Humphrey, Belsky, Boehnke, Vostanis, and Patalay, (2017) examined the longitudinal relationship between mental health difficulties and academic performance during middle childhood and early adolescence. Using two large-scale datasets, the study investigated the effects of internalising symptoms and externalising problems on academic attainment over a two-year period. The findings provided strong support for the adjustment erosion hypothesis, which posits that behavioural and emotional difficulties negatively impact later academic performance (Deighton et al., 2017). Externalising problems, such as aggression and disruptive behaviour, were found to significantly reduce academic achievement in both primary and secondary school learners. The study also found partial support for the academic-incompetence hypothesis,

indicating that low academic attainment in primary school was associated with increased internalising symptoms, such as anxiety and depression, at later stages (Deighton et al., 2017). Nevertheless, the relationship between academic failure and externalising problems became non-significant when shared-risk factors, such as socioeconomic status and special educational needs, were accounted for. The findings highlight the importance of early interventions that address behavioural difficulties to prevent long-term academic underachievement. Deighton et al. (2017) examined internalising problems such as anxiety and depression while the present study focused on the relationship between academic achievement and cognitive dissonance.

Psychological adjustment is an important factor which affects academic achievement. Fateel (2019) studied the impact of psychological adjustment on academic performance among private university students. The findings indicated that there is a positive significant relationship between psychological adjustment and students' academic performance. The present study is different from this study as it focuses on the relationship between academic performance and eight dimensions of cognitive dissonance which include dissonance based on personal adjustment. Similarly, Ayele (2018) conducted a study in Ethiopia among first year students and the findings indicated a positive relationship between psychological adjustment and academic performance. On the contrary, Koradag (2017) found that psychological adjustment had a negative impact on academic performance. Furthermore, Al-Msedin, Fauzee, and Kaur (2017) found a positive relationship between social adjustment and academic adjustment among secondary school female students in Jordan. Unlike this study, the present study focuses also on the relationship between cognitive dissonance and academic performance.

School adjustment plays a significant role in improving academic performance. In view of this, Basharpoor, Heidari, Narimani and Barahmand (2020) investigated the mediating role of school engagement, and academic self-concept in relation to family adaptability, social acceptability and school adjustment among two hundred and sixty-eight fifth and sixth grade students from elementary school in Iran. Results indicated that school adjustment had a positive relationship with family adaptability, social acceptability, school engagement and self-concept. The findings also revealed that coherent and adaptable family systems and high social acceptability of students influence school adjustment both directly or indirectly through school engagement and academic self-concept. This study is related to the present study because it focused on adjustment which is a dimension of cognitive dissonance. However, the present study is different as it concentrated on the relationship between cognitive dissonance and academic performance.

Adjustment plays a great role in the educational setting. Li, Jia, and Wang (2023) explored the role of maximising tendency in predicting university adjustment and academic performance among students in China. The trait activation theory was applied to explore how students with a high maximising tendency were characterised by a strong desire for optimal outcomes which demonstrate better adaptability in university life. The researchers conducted two longitudinal studies across four universities, with Study first involving 552 students over one academic year and second Study tracking 309 students across four years (Li et al., 2023). Research findings indicated that students with a strong maximising tendency exhibited superior university adjustment in their first year and achieved higher Grade Point Averages (GPAs) by the end of their degree programmes. Furthermore, eudaimonic well-being was identified as a mediator in the relationship between maximising tendency and university adjustment, emphasising the importance of

psychological well-being in academic success. The research revealed that high achievers are driven by a desire for the best possible outcomes, actively seek alternative strategies for success such as time management and academic networking. Similarly, the findings indicated that university adjustment played a crucial mediating role in the relationship between maximising tendency and long-term academic performance, suggesting that early adaptation significantly influences later success (Li et al., 2023). The study also identified a positive correlation between maximisation, self-efficacy, and intrinsic motivation, reinforcing the notion that students who strive for excellence tend to engage in proactive learning behaviours. On the other hand, the researchers cautioned that maximising tendencies could also lead to emotional strain due to heightened expectations and the constant pursuit of perfection. Ultimately, Li et al. (2023) found that maximising decision-making styles enhance academic success when supported by adaptive coping strategies and well-being interventions. Li et al. (2023) focused on the role of maximising tendency in predicting university adjustment and academic performance but the present study emphasises the relationship between academic achievement and cognitive dissonance based on personal adjustment.

2.4.5 Emotional Control and Academic Performance

Test anxiety affects educational outcomes. Thomas, Cassady and Heller, (2017) explored the impact of emotional intelligence, cognitive test anxiety, and coping strategies on undergraduate academic performance, highlighting the interplay between affective and cognitive factors in shaping long-term academic outcomes. The sample comprised 534 university students and the study employed a longitudinal design. Data collection instruments included, the Schutte Emotional Intelligence Scale, the COPE Inventory, and the Cognitive Test Anxiety Scale-Revised. The findings revealed that cognitive test anxiety negatively predicted four-year GPA, with students

experiencing higher levels of anxiety demonstrating lower academic performance over time (Thomas et al., 2017). Additionally, the study found that emotion-focused coping strategies, which involve regulating emotions rather than addressing academic challenges directly, were associated with lower GPA scores. In contrast, problem-focused coping strategies, which involve actively managing stressors, did not significantly predict academic outcomes, suggesting that their effectiveness may vary depending on the context (Thomas et al., 2017). Emotional intelligence was initially found to be a positive predictor of academic success. However, its predictive power diminished when cognitive test anxiety was introduced into the regression model. This finding suggests that while emotional intelligence may enhance emotional regulation, its role in academic performance is mediated by students' ability to manage test-related stress. The study supports existing literature indicating that cognitive test anxiety disrupts information processing and contributes to low academic performance. Furthermore, the findings reinforce the need for universities to provide interventions that help students develop adaptive coping mechanisms to mitigate the adverse effects of test anxiety. Thomas et al. (2017) focused on factors influencing academic performance by providing empirical evidence on the role of emotional intelligence and coping strategies. On the other hand, the present study examined the relationship between academic performance and cognitive dissonance.

Emotional difficulties often lead to low academic achievement. Sánchez-García et al. (2018) examined the relationship between emotional and behavioural difficulties, emotional well-being, affect, and academic performance in adolescents. The study utilised a representative sample of 1,664 adolescents aged 14 to 19, employing various psychological assessment tools, including the Strengths and Difficulties Questionnaire and the Positive and Negative Affect Schedule for

Children. The findings revealed that 7.7% of the adolescents exhibited a potential risk of poor mental health, with emotional and behavioural difficulties negatively correlating with subjective well-being and positive affect while positively associating with negative affect (Sánchez-García et al., 2018). Additionally, students with lower academic performance reported higher emotional and behavioural difficulties, reinforcing the link between psychological well-being and educational success. The study highlighted that students with hyperactivity and peer-related problems were particularly vulnerable to poor academic outcomes. Moreover, the study identified prosocial behaviour as a protective factor, with students who demonstrated greater social engagement showing higher well-being and academic success. The results emphasise the need for school-based interventions to promote emotional well-being and mitigate behavioural problems in adolescence.

Furthermore, Sánchez-García et al. (2018) found that negative affect, characterised by anxiety, frustration, and sadness, was a significant predictor of poor academic performance, whereas positive affect was linked to higher student engagement and motivation (Sánchez-García et al., 2018). Sánchez-García et al. (2018) explored the relationship between emotional difficulties and academic performance while the present study focuses on the relationship between cognitive dissonance and academic performance.

Emotional control is another factor that affects academic achievement. Tao, Mao, Jiang and Gao (2021) conducted a meta-analysis to evaluate the influence of positive and negative academic emotions on learning. The findings indicated that positive academic emotions promoted learning. Research results further indicated that academic anger had a statistically significant higher learning ratio than sad emotions whereas confusion and boredom correlated negatively with learning gains.

This study is similar to the present study as it concentrated on emotional control which is a dimension of cognitive dissonance. However, the present study is different as it focused on the relationship between cognitive dissonance and academic achievement.

Thomas and Allen (2020) explored the role of emotional intelligence and academic buoyancy in influencing student engagement within higher education contexts. The study was conducted in the United States among 253 undergraduate and graduate students (Thomas & Allen, 2020). The researchers employed a path analysis model to examine the direct and indirect relationships among emotional intelligence, behavioural engagement, emotional engagement, behavioural disaffection, and emotional disaffection. The findings indicated that emotional intelligence had a significant direct effect on both behavioural and emotional engagement while also reducing behavioural and emotional disaffection (Thomas & Allen, 2020). Additionally, academic buoyancy, defined as students' ability to cope with routine academic stressors, emerged as a significant mediator between emotional intelligence and engagement-related outcomes. This suggests that students with higher emotional intelligence were more resilient in academic settings, which, in turn, enhanced their engagement and reduced disengagement behaviours. The study further indicated that emotional intelligence plays a crucial role in fostering students' ability to regulate emotions, manage stress, and persist in challenging learning environments (Thomas & Allen, 2020). Moreover, the research highlighted that interventions designed to enhance emotional intelligence could significantly improve student retention and academic performance. Ultimately, Thomas and Allen (2020) concluded that higher education institutions should prioritise emotional intelligence training to promote student success and well-being.

Furthermore, the study found that students who exhibited higher emotional intelligence were more likely to experience positive emotions such as interest, enjoyment, and enthusiasm in academic settings (Thomas & Allen, 2020). These positive affective experiences were closely linked to increased behavioural engagement, as emotionally intelligent students demonstrated greater persistence and effort in their studies. Furthermore, the findings indicated that emotional intelligence was negatively associated with academic disaffection, meaning that students with greater emotional regulation skills were less likely to exhibit withdrawal behaviours, such as disengagement and avoidance of academic tasks (Thomas & Allen, 2020). The study also reinforced the idea that emotional intelligence enhances problem-focused coping strategies, which enable students to effectively manage academic challenges. Additionally, the results suggested that academic buoyancy partially mediated the relationship between emotional intelligence and engagement, indicating that emotionally intelligent students were better equipped to handle academic adversity. The researchers noted that while emotional intelligence training could be beneficial, its impact is maximised when coupled with institutional support systems that foster resilience and student well-being (Thomas & Allen, 2020). Thomas and Allen (2020) examined the mechanisms through which emotional intelligence facilitates academic engagement, providing insights into the protective role of academic buoyancy while the present study focused on the relationship between cognitive dissonance and academic achievement.

Anxiety is often associated with poor performance in Summative Examination. Tang and He (2023) conducted a meta-analysis of the relationship between anxiety and academic performance during 2019 Corona virus pandemic. The findings showed a negative correlation between anxiety and academic performance. Similarly, Brown-Wright, Tyler, Graves, Thomas, Stevens-Watkins

and Mulder (2016) examined the associations among home-school dissonance, amotivation and disruptive behaviour among urban high school juniors and seniors in the United States of America. The findings indicated that home-school dissonance predicted both amotivation and classroom disruptive behaviour. This study focuses on amotivation, and disruptive behaviour while the present study focuses on academic performance and cognitive dissonance. The similarity between the two studies is based on cognitive dissonance. It becomes difficult for pupils to learn if they are not eager to learn. This situation is exacerbated by disruptive behaviour.

Burke, Schmidt, Wagner, Hoffman, and Hanlon (2017) examined the experiences of cognitive dissonance among social workers involved in transracial adoption planning for Aboriginal children. The qualitative study was conducted in Canada using semi-structured interviews with 21 social workers employed by Delegated Aboriginal Agencies and the Ministry of Children and Family Development (Burke et al., 2017). The researchers explored how social workers reconciled conflicts between professional obligations and personal values, particularly in cases which involved transracial adoptions which were viewed as culturally harmful. The findings indicated that social workers experienced significant cognitive dissonance due to tensions between ethical commitments to Aboriginal communities and the legal mandates requiring them to place children in non-Aboriginal adoptive homes (Burke et al., 2017). Furthermore, participants reported that institutional policies and bureaucratic constraints increased the level of dissonance, as they were often unable to implement culturally appropriate solutions. The study also highlighted that social workers experienced emotional distress, including guilt and anxiety, as they navigated conflicts between systemic expectations and their own cultural awareness. Additionally, the research revealed that cognitive dissonance was most acute when participants perceived their actions as

contributing to the legacy of colonialism and cultural displacement. Many social workers employed coping mechanisms such as rationalising their decisions, seeking peer support, or engaging in resistance strategies to align their work with their values (Burke et al., 2017). A key contribution of this study was its application of cognitive dissonance theory to social work practice, offering a psychological explanation for workplace stress in child welfare settings. Additionally, Burke et al. (2017) argued that addressing cognitive dissonance in social work requires systemic reforms that prioritise culturally sensitive permanency planning and strengthen Indigenous decision-making authority.

Furthermore, Burke et al. (2017) explored the long-term impacts of cognitive dissonance on social workers' mental well-being and professional identity, revealing that unresolved dissonance contributed to burnout and emotional exhaustion. The study found that many social workers struggled with moral distress, as they were forced to implement policies that contradicted their professional values and ethical responsibilities (Burke et al., 2017). Participants described feeling isolated and unsupported within their organisations, particularly when they advocated for alternative approaches to child placement that were not systemically recognised. Furthermore, the findings indicated that social workers who could not reconcile their dissonance often experienced emotional withdrawal, disengagement, or ultimately left the profession to avoid continued ethical conflicts (Burke et al., 2017). The study also demonstrated that Aboriginal social workers experienced a unique form of dissonance, as they often viewed their professional roles as being in direct conflict with their cultural and community obligations. Additionally, the research found that some social workers engaged in acts of resistance, such as challenging adoption decisions or advocating for culturally appropriate care plans, to mitigate their dissonance and align their

practice with Indigenous values. A key limitation noted was the study's reliance on self-reported data, which may not fully capture unconscious dissonance resolution mechanisms. Overall, Burke et al. (2017) examined impact of cognitive dissonance on the social workers' mental wellbeing which resulted in emotional exhaustion. On the other hand, the present study focused on the use of perceived choice as a dissonance reduction strategy.

Duckworth, Taxer, Eskreis-Winkler, Galla, and Gross, (2019) conducted comprehensive meta-analysis of the mechanisms underlying self-control in academic settings. Duckworth et al. (2019) explored the role of self-control in academic achievement, defining self-control as the ability to regulate thoughts, emotions, and behaviours in alignment with long-term academic goals. The study reviewed extensive empirical evidence demonstrating that self-control is a strong predictor of academic success, often surpassing intelligence in its influence on course grades and persistence in education. Using the process model of self-control, the authors illustrated how self-regulation operates in a recursive cycle, where students actively manage impulses that conflict with academic goals (Duckworth et al., 2019). The findings suggested that self-controlled students perform better across all educational levels, from primary school to university, due to their ability to resist immediate temptations and prioritise studying. The study also examined situational and attentional strategies that students employ to enhance self-control, such as modifying their environment to reduce distractions. Furthermore, the research indicated that academic self-control is closely linked to conscientiousness, which encompasses traits like orderliness and dependability (Duckworth et al., 2019). Despite these insights, the study acknowledged challenges in self-control measurement, noting discrepancies between task-based assessments and self-report questionnaires. Additionally, it highlighted the influence of socio-economic factors on self-control, as students from

disadvantaged backgrounds often face greater environmental challenges in exercising self-regulation. The findings emphasised the necessity of interventions that support students in developing long-term academic self-control strategies.

Furthermore, Duckworth et al. (2019) argued that self-control is particularly relevant in academic contexts due to the frequent conflict between immediate gratification and long-term educational goals. Empirical evidence revealed that self-control predicts not only course grades but also standardised test performance and overall academic attainment (Duckworth et al., 2019). However, the study found that self-control is more strongly associated with grades than with test scores, as consistent effort and homework completion play a more significant role in coursework success. The process model of self-control illustrated how impulses arise and how students can regulate them using various strategies, including situational, attentional, and appraisal-based techniques. Additionally, the study emphasised the importance of self-monitoring and mindfulness as tools for enhancing self-regulation in students. While self-control can be consciously exercised, the study suggested that long-term success relies on forming habits that make self-regulation more automatic (Duckworth et al., 2019). The study concluded that fostering self-control in students requires a combination of personal strategies and institutional support. This study focused on the importance of self-control in fostering academic performance while the present study focused on the relationship between cognitive dissonance based on emotional control and academic performance.

Camacho-Morles, Slemp, Pekrun, Loderer, Hou, and Oades, (2021) conducted a meta-analysis to examine the relationship between activity-related achievement emotions and academic performance. The study focused on four discrete emotions, enjoyment, frustration, anger, and boredom as well as their impact on educational outcomes across different levels of schooling.

Using a systematic review of 68 studies, the authors analysed data from 57 independent samples for enjoyment (N = 31,868), 25 for anger (N = 11,153), 9 for frustration (N = 1,418), and 66 for boreom (N = 28,410) (Camacho-Morles et al., 2021). The study found that enjoyment of learning was positively correlated with academic performance ($\rho = .27$), while anger ($\rho = -.35$) and boredom ($\rho = -.25$) showed negative associations. Frustration, however, had a near-zero correlation with academic performance ($\rho = -.02$), indicating its minimal effect on learning outcomes. The research identified that the relationship between emotions and academic success was stronger among secondary school students than primary or tertiary-level learners. Additionally, the study revealed that when achievement emotions were measured using the Achievement Emotions Questionnaire, Mathematics effect sizes were more pronounced (Camacho-Morles et al., 2021). The findings align with the Control-Value Theory, which suggests that perceived control over learning activities influences the intensity and impact of academic emotions. Findings indicated that understanding these emotional influences could enhance classroom interventions aimed at improving student engagement and performance.

Conversely, boredom was found to undermine learning by decreasing attention, motivation, and persistence in academic tasks (Camacho-Morles et al., 2021). The study noted that while anger was predominantly detrimental, some research suggests it may enhance performance in competitive academic environments when channelled effectively. Frustration's negligible correlation with academic outcomes suggests it may not directly hinder learning but could contribute to momentary setbacks (Camacho-Morles et al., 2021). The study highlights the importance of fostering emotionally supportive classroom environments that promote enjoyment

while minimising boredom and anger. On the other hand, the present study focused on the association between perceived choice of academic subjects and academic achievement.

Procrastination has a negative impact on academic achievement. Diotaiuti Valente, Mancone and Bellizzi (2021) examined the mediating effects of emotional balance and procrastination on academic performance, highlighting the role of self-regulation as a key predictor of academic success. The study utilised a sample of 450 university students and employed mediation analysis to test how action orientation, a self-regulation component, influences procrastination and subsequent academic performance. The findings indicated that action orientation had a direct positive effect on academic achievement, suggesting that students with strong self-regulatory abilities tend to exhibit less procrastination and achieve better academic outcomes (Diotaiuti et al., 2021). Furthermore, the study confirmed that procrastination negatively affected academic performance, reinforcing previous literature linking time management deficits to lower achievement. Emotional balance played a crucial mediating role, as students with better emotional regulation were less likely to procrastinate, ultimately improving their academic outcomes. The results align with self-regulation theories, which suggest that successful learners engage in proactive behaviours such as goal-setting, planning, and emotional management to optimise performance (Diotaiuti et al., 2021). Additionally, gender differences were observed, with male students exhibiting higher levels of procrastination, potentially due to difficulties in emotional regulation. The researchers argued that interventions focusing on enhancing students' emotional awareness and self-monitoring skills could help mitigate procrastination and improve academic success. These findings emphasise the importance of emotional and behavioural regulation in educational settings.

The findings indicated that students with high emotional balance were better equipped to manage stress and academic demands, leading to lower levels of procrastination and higher academic performance (Diotaiuti et al., 2021). This finding is consistent with prior research indicating that students who effectively regulate their emotions are more likely to maintain focus, set realistic goals, and persist through academic challenges. Additionally, research findings identified procrastination as a behavioural coping mechanism that students use to temporarily alleviate negative emotions associated with academic tasks. However, this short-term relief often leads to long-term academic difficulties, creating a cycle of avoidance and poor performance (Diotaiuti et al., 2021). Diotaiuti et al. (2021) examined the mediating effects of emotional balance and procrastination on academic performance while the present study focused on the relationship between cognitive dissonance based on emotion control and academic achievement.

Emotional intelligence leads to high academic achievement. Al-Adamat and Atoum (2022) conducted a study investigating the relationship between cognitive dissonance and emotional intelligence among university students, focusing on the role of academic specialisation, gender, and academic level. The study was conducted in Jordan, a developing country, using a survey-based quantitative approach with a sample of 235 students from Al al-Bayt University (Al-Adamat & Atoum, 2022). The researchers measured cognitive dissonance using the Cognitive Dissonance Scale and assessed emotional intelligence using Al-Alwan's (2011) Emotional Intelligence Scale. The findings revealed that students exhibited a moderate level of cognitive dissonance, suggesting that university life presents various psychological and social contradictions that require cognitive adjustment (Al-Adamat & Atoum, 2022). Furthermore, the study identified statistically significant differences in cognitive dissonance based on gender, with male students reporting higher levels of

dissonance than females. The researchers attributed this difference to cultural expectations, where males face greater societal pressures regarding career aspirations and financial responsibilities. Additionally, students in humanities disciplines exhibited significantly higher cognitive dissonance than those in scientific fields, which the study linked to the nature of humanities education, where students engage more in critical thinking and subjective analysis (Al-Adamat & Atoum, 2022). The study also found that second, third, and fourth-year students experienced greater cognitive dissonance compared to first-year students, suggesting that exposure to diverse academic and social experiences increases cognitive conflicts. A key contribution of this research was its examination of how cognitive dissonance interacts with student's emotional intelligence, providing insights into how psychological resilience can mitigate dissonance effects. Ultimately, Al-Adamat and Atoum (2022) concluded that emotional intelligence plays a crucial role in managing cognitive dissonance by enabling students to regulate their emotions and adapt to conflicting academic and social pressures.

Moreover, Al-Adamat and Atoum (2022) explored the predictive ability of emotional intelligence in explaining cognitive dissonance variance, demonstrating that emotional regulation and social communication skills significantly contribute to dissonance resolution. The study found that emotional intelligence accounted for 9.3% of the variance in cognitive dissonance, with emotional knowledge being the strongest predictor, followed by social communication (Al-Adamat & Atoum, 2022). This finding suggests that students with higher emotional intelligence are better equipped to handle cognitive conflicts, as they can effectively process emotions and seek social support to reduce psychological discomfort. Furthermore, the study revealed that individuals with lower emotional intelligence struggled more with cognitive dissonance, as they lacked the

necessary skills to reframe conflicting thoughts or engage in adaptive problem-solving strategies. The researchers highlighted that emotional intelligence training could serve as a potential intervention to help students navigate academic challenges and minimise dissonance effects (Al-Adamat & Atoum, 2022). Additionally, the study found that emotional intelligence plays a moderating role in dissonance-induced stress, reinforcing the notion that psychological resilience is key to maintaining mental well-being in academic environments. Overall, Al-Adamat and Atoum (2022) concluded that fostering emotional intelligence in university students is essential for reducing cognitive dissonance, enhancing psychological well-being, and promoting adaptive academic engagement. Unlike this study, the present study focused on the relationship between cognitive dissonance and academic performance.

Njuguna, Mwangi and Ireri (2022) conducted a study on procrastination and the relationship between test anxiety and academic performance. This study employed correlational research design. The study was guided by temporal motivation theory and different types of sampling were used which included: Purposive sampling, proportionate sampling and stratified random sampling. The sample comprised 410 form three students with age ranging from 15 to 17 years from 19 public secondary schools in Gatundu South, Kiambu County. Piloting of questionnaires was done in one of the public secondary school. Data collection instruments included using test anxiety scale and academic procrastination scale as well as academic achievement proforma table. Academic performance was obtained from their third term examination scores. Pearson's Product Moment Correlation Coefficient and Multiple The results indicated that there was a positive correlation between test anxiety and academic procrastination and a negative correlation between academic

procrastination and academic achievement. The intersection between this study and the present study is test anxiety which is covered by emotional control, a sub scale of cognitive dissonance.

2.4.6. Perpetuance and Dominance Cognitive Dissonance Variables' Correlation with Academic Performance

One subscale of cognitive dissonance is based on perpetuance which means continuity or self-sustenance and implies perseverance. Another sub scale is based on dominance which refers to the tendency of being assertive. Self-efficacy is related to these sub scales. A number of studies have been done on the relationship between academic performance and self-efficacy. Self-efficacy was defined by Bandura as a belief in one's abilities in performing tasks successfully, and it also focuses on the ability to cope with life (Bandura, 1977; Dumbauld, 2014). Khasawneh, Gosling and Williams (2021) investigated the impact of Mathematics efficacy among university students. The results indicated that there was a significant positive relationship between students' Mathematics efficacy and Mathematics performance. Similarly, Tiyuri et al. (2016) found that self-efficacy is one of the main factors influencing successful execution of research. The findings also indicated a significant positive relationship between students' research self-efficacy and successful execution of research. This study is related to the present study as it focuses on self-efficacy which is similar meaning to dominance and perpetuance which are aspects of cognitive dissonance scale.

Wolters and Hussain (2014) examined the relationship between grit, self-regulated learning, and academic achievement among college students in the United States. The study sample comprised 213 ethnically diverse college students from a large public university, who completed an online self-report survey measuring grit, self-regulated learning indicators, and academic performance. The research distinguished between two components of grit, perseverance of effort and consistency

of interest, emphasising that perseverance of effort was a strong predictor of self-regulated learning engagement (Wolters & Hussain, 2014). The study revealed that perseverance of effort was positively associated with self-efficacy, cognitive and metacognitive strategies, time management, and motivational regulation, indicating that gritty students engage more actively in self-regulated learning. However, consistency of interest was not significantly related to most self-regulated learning indicators, suggesting that maintaining long-term academic goals does not necessarily translate into effective self-regulation. Moreover, the study found that perseverance of effort was initially correlated with academic achievement but lost its predictive power when self-regulated learning factors were accounted for. This suggests that self-regulated learning mediates the relationship between perseverance of effort and academic success, reinforcing the argument that self-regulation is a crucial mechanism for achieving high academic performance. Additionally, there was an inverse relationship between procrastination and grit, particularly perseverance of effort, further validating the idea that grit supports sustained academic engagement. The study's findings align with broader research suggesting that motivational factors play a critical role in student learning outcomes.

Similarly, Wolters and Hussain (2014) explored the implications of grit for student motivation and learning strategies, stressing the importance of perseverance in fostering effective academic behaviours. The findings highlighted that students with higher perseverance of effort were more likely to perceive their coursework as valuable and demonstrate confidence in their ability to succeed academically (Wolters & Hussain, 2014). This aligns with existing literature on self-efficacy, which emphasises the role of belief in one's abilities as a predictor of academic success. This study also found that students who persist through challenges are more likely to engage in

reflective and strategic learning practices. Wolters and Hussain (2014) explored the implications of grit for student motivation and learning strategies while the present study focused on the relationship between academic achievement and cognitive dissonance.

Perseverance enhances learning. DiNapoli and Miller (2020) investigated the role of perseverance in mathematical problem-solving, particularly focusing on the effect of scaffolding on students' ability to persist through challenges. The study employed a mixed-methods research design, incorporating think-aloud interviews and video-reflection interviews to capture students' cognitive processes. Drawing from Social Cognitive Theory and Problem-Solving Theory, the research highlighted how embedded scaffolding prompts students to conceptualise mathematical situations before engaging in problem-solving tasks. Data collected from 30 ninth-grade students engaging with scaffolded and non-scaffolded tasks revealed that conceptual scaffolds significantly increased students' ability to re-initiate problem-solving attempts. The study also emphasizes the importance of preliminary conceptualisation in sustaining mathematical engagement, particularly in overcoming moments of frustration and perceived failure. Additionally, the research challenges traditional notions that perseverance in problem-solving is solely an individual trait, arguing instead that it can be strategically cultivated through instructional design (DiNapoli & Muller, 2020). These findings emphasise the necessity of integrating perseverance-supporting strategies into curricular frameworks, reinforcing the notion that mathematical problem-solving should be viewed as both a cognitive and socio-emotional process. However, the study also highlights potential drawbacks, such as the risk of students becoming overly reliant on scaffolds rather than developing intrinsic problem-solving resilience. DiNapoli and Miller (2020) investigated the role

of perseverance in mathematical problem-solving while the present study focused on the relationship between cognitive dissonance and academic performance.

Owens, Kottwitz, Tiedt, and Ramirez (2018) conducted a comprehensive review examining the challenges and strategies for achieving work-life balance among academic faculty members. The study was conducted in the United States using an integrated literature review approach to analyse faculty workload, job satisfaction, and burnout (Owens et al., 2018). The researchers highlighted that faculty members experience significant cognitive and emotional dissonance due to the competing demands of teaching, research, service, and institutional expectations. The findings revealed that workload imbalance and role conflict are major contributors to faculty stress, particularly among non-tenure track and early-career faculty members (Owens et al., 2018). Additionally, faculty members often experience cognitive dissonance when their personal expectations of academic roles do not align with institutional demands, leading to frustration and job dissatisfaction. The study also found that emotional dissonance, resulting from maintaining professional composure despite workplace stressors, contributes to burnout and disengagement. Furthermore, the research indicated that work-life balance is particularly challenging for female faculty members, who often face additional pressures related to family responsibilities and institutional inequities (Owens et al., 2018). The study proposed that structured mentoring programmes and institutional support systems are crucial for helping faculty manage work-life balance effectively. Moreover, implementing flexible work policies and wellness initiatives was identified as a key strategy for reducing faculty stress and improving job satisfaction. Ultimately, Owens et al. (2018) concluded that achieving faculty work-life balance requires a holistic approach that integrates self-care, institutional policies, and supportive workplace cultures.

Moreover, Owens et al. (2018) explored the psychological impact of faculty workload on career satisfaction, identifying key barriers to achieving work-life balance. The study demonstrated that faculty members experience chronic stress due to excessive work hours, unclear expectations, and competitive academic environments (Owens et al., 2018). Many participants reported experiencing role ambiguity, where the expectations of their academic duties were not clearly defined, leading to higher work-related stress. Furthermore, the study found that the pressure to publish and secure research funding often leads to work-life imbalance, as faculty members prioritise professional demands over personal well-being (Owens et al., 2018). The research also highlighted the negative effects of institutional policies, particularly in universities with rigid tenure-track structures that reinforce performance-based evaluations. Additionally, the study identified emotional exhaustion and reduced job satisfaction as common consequences of faculty workload imbalance, contributing to high turnover rates in academia. The researchers recommended fostering workplace cultures that promote collaboration, peer support, and open communication to mitigate stress and enhance faculty engagement (Owens et al., 2018). Owens et al. (2018) focused on strategies for achieving work-life balance which is key to maintaining a healthy lifestyle to maintain self-sustenance while the present study focused on the relationship between cognitive dissonance and academic performance.

Perseverance enhances academic performance. Halperin and Eldar Regev (2021) examined the role of grit defined as perseverance and passion for long-term goals in predicting academic success among nursing students within a multicultural context. The study utilised a descriptive, exploratory research design, surveying 237 nursing students in Israel to assess the relationship between grit and academic performance. The findings revealed that students exhibited relatively high levels of

perseverance (M = 4.00) and passion (M = 3.56), suggesting that grit is a prominent characteristic among nursing students (Halperin & Eldar Regev, 2021). The study found that higher passion and overall grit scores were predictive of higher average college grades, confirming prior research linking grit to academic achievement. However, perseverance alone was not significantly correlated with overall college grades, contradicting previous findings that suggest perseverance plays a direct role in academic success. Interestingly, no significant relationship was found between grit and clinical performance, indicating that other factors such as practical experience and professional skills may be more critical in clinical assessments (Halperin & Eldar Regev, 2021). Additionally, the study highlighted cultural differences in academic performance, with Jewish students outperforming Arab students, potentially due to language barriers or socio-economic disparities. The study also found that Israeli-born students performed better academically than immigrant students, reinforcing the role of cultural familiarity and language proficiency in shaping educational outcomes. Halperin and Eldar Regev (2021) examined the role of perseverance and passion in predicting academic success while the present study focused on the relationship between academic performance and cognitive dissonance.

Perceived autonomy has been known to enhance academic performance in the educational setting. Huéscar Hernández, Moreno-Murcia, Monteiro and Rodrigues (2020) investigated the effects of perceived autonomy support on academic performance, focusing on the mediating role of grit, intrinsic motivation, and basic psychological needs satisfaction. The study applied a structural equation modelling approach to data collected from 474 Sports Science students to determine the relationships among these variables. The findings revealed that perceived autonomy support significantly influenced students' academic performance through perseverance, but not through

passion, highlighting the differential effects of grit's two components (Huéscar Hernández et al., 2020). Findings indicated that students who perceived higher autonomy support from their teachers reported greater satisfaction of their psychological needs, which in turn fostered intrinsic motivation. This motivation was positively associated with perseverance, suggesting that students with a strong sense of autonomy are more likely to persist in academic challenges. However, grit-passion did not exhibit a significant indirect effect on academic performance, indicating that perseverance is the more critical determinant of success in higher education (Huéscar Hernández et al., 2020). Furthermore, the study found that autonomy-supportive teaching strategies create an environment that enhances students' perseverance, leading to improved academic outcomes. Findings also indicated that students with high levels of perseverance were more likely to achieve better academic results, while passion alone did not significantly contribute to performance.

Huéscar Hernández et al. (2020) explored effects of autonomy on academic performance while the present study focused on the relationship between cognitive dissonance and academic performance.

Research on grit has revealed conflicting results. Jachimowicz, Wihler, Bailey and Galinsky, (2018) examined the inconsistencies in research on grit and its impact on performance by proposing that prior studies have focused excessively on perseverance while neglecting passion. The study conducted a meta-analysis of 127 studies (n = 45,485) and found that grit's predictive power was stronger in cases where individuals demonstrated passion for the performance domain. Furthermore, the findings indicated that perseverance alone does not significantly enhance performance unless accompanied by passion, reinforcing the need for a dual-component approach to measuring grit (Jachimowicz et al., 2018). Additionally, a study with 422 employees revealed

that those who attained their desired levels of passion exhibited higher supervisor-rated job performance. A subsequent study of 248 students confirmed that the combination of perseverance and passion was predictive of higher academic achievement, particularly through increased immersion (Jachimowicz et al., 2018). These results suggest that perseverance without passion is insufficient to drive long-term success, challenging the traditional grit scale, which primarily measures perseverance. Jachimowicz et al. (2018) explored inconsistencies in research on grit and its impact on performance while the present study focused on the relationship between cognitive dissonance and academic performance.

Grit affects academic achievement. Lee (2017) investigated the relationships among grit, academic performance, perceived academic failure, and stress in associate degree students in Hong Kong. The study applied path analysis to examine the impact of two dimensions of grit interest and perseverance on students' academic outcomes and stress levels. The findings revealed that both interest and perseverance were negatively associated with stress, suggesting that students with higher levels of grit experience lower academic stress (Lee, 2017). Interestingly, the study found that perseverance was positively associated with academic performance, while interest did not significantly predict achievement. These findings align with prior research suggesting that sustained effort is a stronger determinant of success than transient passion. Additionally, the study found that perceived academic failure was positively associated with stress, whereas actual academic performance had no direct effect on stress levels (Lee, 2017). The study further demonstrated that gender differences exist in grit levels, with male students exhibiting higher perseverance and lower interest than their female counterparts. However, no gender differences were found in perceived academic failure or stress levels. The study also found that students who

demonstrated high perseverance were more likely to succeed academically, whereas those with high interest but low perseverance did not exhibit significant performance gains (Lee, 2017). Lee (2017) investigated the relationships among grit, academic performance, perceived academic failure while the present study focused on the association between academic achievement perceived choice of subjects.

There are several studies which have addressed the relationship between self-efficacy and academic performance. Talsma, Schüz and Norris, (2018) investigated the calibration of academic self-efficacy and its relationship with academic performance among undergraduate students. The study applied a metacognitive calibration paradigm to examine whether students' self-efficacy beliefs aligned with their actual academic performance. The findings revealed a prevalent miscalibration of self-efficacy, with students demonstrating both over-efficaciousness and under-efficaciousness in different academic tasks (Talsma et al., 2018). Specifically, students tended to overestimate their performance on overall subject grades while underestimating their abilities in specific tasks such as written assignments and exams. The study also found that high-achievers exhibited under-efficaciousness, meaning they perceived themselves as less capable than their actual performance suggested, whereas low-achievers displayed over-efficaciousness, overestimating their capabilities (Talsma et al., 2018). These findings challenge the conventional assumption that self-efficacy functions as a self-fulfilling prophecy, suggesting instead that inflated self-efficacy beliefs may lead to complacency and poorer academic regulation. Additionally, the research identified that self-efficacy bias predicted future academic performance, with under-efficacious students performing better than their over-efficacious counterparts. These

results align with previous studies indicating that overconfidence can hinder effective self-regulated learning by reducing the motivation to seek help or engage in preparatory activities.

Moreover, Talsma et al. (2018) found that self-efficacy is not necessarily a linear predictor of academic success and that discrepancies in self-efficacy judgments can influence learning outcomes. Findings indicated that while self-efficacy positively correlated with performance at the group level, individual-level analyses revealed substantial variations, with some students benefiting from lower self-efficacy (Talsma et al., 2018). This finding contradicts traditional self-efficacy theories, which posit that higher self-efficacy is universally advantageous for academic success. The study further examined how self-efficacy influences academic behaviours, showing that over-efficacious students were more likely to underestimate the effort required for success, leading to poorer outcomes. Conversely, under-efficacious students were more likely to exert additional effort, seek feedback, and adopt adaptive learning strategies (Talsma et al., 2018). Talsma et al. (2018) investigated the calibration of academic self-efficacy and its relationship with academic performance while the present study focused on the relationship between academic achievement and perceived choice of subjects.

Perseverance affects academic performance. Xu, Cunha-Harvey, King, de Koning, Paas, Baars, Zhang and de Groot, (2021) conducted a meta-analysis cross-cultural study examining the relationship between perseverance, self-regulated learning, motivation, and academic achievement among students from East Asian and Western countries. The study was based on 24,352 15-year-old students across six countries: Hong Kong, South Korea, Australia, New Zealand, Scotland, and the United States. The findings revealed that perseverance positively predicted academic achievement, though the strength of this relationship varied by cultural context (Xu et al., 2021).

Similarly, the study found that perseverance was more strongly associated with achievement in East Asian countries compared to Western nations, where its impact was more modest. Additionally, control strategies emerged as the most effective self-regulated learning mechanism in Western countries, while memorisation and elaboration strategies were less predictive of academic success. Interestingly, instrumental motivation had a negative mediating effect on perseverance and achievement in Western countries, indicating that extrinsic motivation may not always be beneficial in these contexts (Xu et al., 2021). These findings challenge the universal applicability of perseverance as a predictor of academic success, suggesting that cultural factors significantly shape learning strategies. The study also reinforced the role of self-regulated learning as a key mediator, showing that perseverance alone is insufficient without effective learning strategies. The findings confirmed that while perseverance positively influenced academic achievement in both East Asian and Western contexts, the underlying mechanisms differed. Specifically, self-regulated learning strategies such as control and elaboration had stronger effects in Western countries, whereas perseverance played a more direct role in achievement for East Asian students (Xu et al., 2021). Similarly, Xu et al. (2021) the investigated the relationship between perseverance, self-regulated learning, motivation, and academic achievement while the present study focused the association between perceived choice and academic performance.

Khan (2023) explored the relationships between academic self-efficacy, stress coping strategies, and academic performance among undergraduate students. The study employed a quantitative research design, surveying 66 university students in the North-western United States and assessing their self-efficacy, coping mechanisms, and grade point average. The findings revealed a significant positive correlation between academic self-efficacy and academic performance ($r = .49$,

$p < .01$), suggesting that students with higher self-efficacy tend to achieve better academic results (Khan, 2023). Additionally, the study found that students who utilised problem-focused coping strategies, such as planning, exhibited higher GPAs, whereas those who relied on avoidant coping mechanisms, such as substance use, demonstrated lower academic performance. Notably, the planning subscale of the COPE Inventory was positively correlated with GPA ($r = .32$, $p < .05$), indicating that students who actively managed their academic responsibilities were more likely to succeed Additionally, the study found that self-efficacy levels varied among students depending on prior academic experiences and their perceived ability to succeed in a university setting (Khan, 2023). Khan (2023) examined the relationships between academic self-efficacy, stress coping strategies, and academic performance while present study focused on cognitive dissonance and academic performance.

Self-efficacy and academic performance have received great attention in the educational setting. Hwang, Choi, Lee, Culver, Hutchison, (2015) conducted a longitudinal study examining the reciprocal relationship between academic self-efficacy and academic achievement among Korean students. This study employed an autoregressive cross-lagged model which tracked 1,177 students from the 8th to the 12th grade, assessing the causal direction between past performance, self-efficacy beliefs, and academic success. The findings revealed a significant reciprocal relationship, where past academic performance positively predicted self-efficacy beliefs, which in turn influenced future academic achievement (Hwang et al., 2015). However, the study found that the effect of past academic performance on self-efficacy was stronger than the reverse effect, suggesting that students' confidence in their academic abilities is largely shaped by prior successes or failures. This supports Bandura's (2001) social cognitive theory, which posits that self-efficacy

is formed through mastery experiences and influences goal-setting and persistence. Additionally, the research demonstrated that students with higher self-efficacy engaged more in self-regulated learning strategies, such as goal-setting and strategic planning, which contributed to improved performance (Hwang et al., 2015). These findings align with previous meta-analyses indicating that self-efficacy has a moderate to strong effect on academic outcomes. Moreover, findings highlighted the role of motivation, showing that students with higher self-efficacy exhibited greater resilience in the face of academic challenges.

The findings confirmed that self-efficacy is not a fixed trait but rather evolves in response to past academic experiences, reinforcing the importance of continuous feedback and encouragement in education. Similarly, findings revealed that self-efficacy beliefs were more predictive of academic performance in earlier grades, while the influence of past performance became stronger in later academic years (Hwang et al., 2015). This suggests that early interventions aimed at boosting self-efficacy may have long-term benefits for students' academic trajectories. Additionally, the study found that gender differences existed in self-efficacy development, with male students demonstrating higher self-efficacy beliefs than their female counterparts, despite similar academic achievements. These findings align with prior research indicating that cultural and social factors influence the formation of self-efficacy beliefs, particularly in highly competitive education systems. Furthermore, the study highlighted the importance of fostering realistic self-efficacy perceptions, as students who overestimated their abilities were more likely to underperform (Hwang et al., 2015). Hwang et al. (2015) explored reciprocal relationship between academic self-efficacy and academic achievement while the present study focused on the association between academic performance and cognitive dissonance.

Motivation and academic self-efficacy determine the learners' academic performance. Dogan (2015) investigated the relationships between student engagement, academic self-efficacy, academic motivation, and academic performance among middle and high school students in Turkey. The study employed a correlational research design, with a sample of 578 students across multiple schools to assess the predictive role of these variables in academic achievement. The findings revealed that cognitive engagement, a sub-dimension of student engagement, was a significant predictor of academic performance, whereas emotional and behavioural engagement did not exhibit a meaningful relationship with academic outcomes (Dogan, 2015). This suggests that students who actively engage in cognitive learning processes, such as deep processing and strategic thinking, tend to achieve higher academic success. Additionally, academic self-efficacy was found to be the strongest predictor of academic performance, accounting for 25.4% of the variance, indicating that students' beliefs in their abilities significantly shape their academic achievements (Dogan, 2015). The findings indicated that academic motivation positively correlated with performance, although its predictive power was lower than that of self-efficacy. These results align with previous research suggesting that intrinsic motivation, when paired with high self-efficacy, enhances academic persistence and success.

The findings confirmed that self-efficacy is the most significant predictor of academic performance, reinforcing Bandura's (1997) social cognitive theory, which posits that individuals with strong self-efficacy beliefs are more likely to exert effort and persist in challenging tasks. Similarly, the study found that students with higher self-efficacy also demonstrated greater cognitive engagement, suggesting that belief in one's abilities translates into active participation in learning (Dogan, 2015). Additionally, while academic motivation was positively associated with

performance, its impact was relatively weaker than that of self-efficacy, indicating that motivation alone may not be sufficient for academic success without the presence of strong self-efficacy beliefs. Findings also revealed that behavioural engagement, such as following school rules and attending classes regularly, did not significantly contribute to academic performance (Dogan, 2015). This challenges conventional assumptions that student engagement in school activities directly leads to better academic outcomes. Additionally, the findings highlighted that emotional engagement, including feelings of belonging and teacher-student relationships, does not have a direct impact on performance but may play a supporting role in fostering motivation. Dogan (2015) explored Student engagement, academic self-efficacy, and academic motivation as predictors of academic performance while the present study focused on the association between academic performance and cognitive dissonance.

Usually learners who exhibit perseverance acquire good academic results. DiNapoli (2019) explored the role of perseverance in secondary mathematics education, examining how students persist in problem-solving despite encountering cognitive obstacles. The study was built on Cognitive Dissonance Theory (Festinger, 1957) and Problem-Solving Theory, emphasizing how productive struggle contributes to mathematical learning. This study utilised a qualitative research design and ninth-grade algebra students were engaged with low-floor/high-ceiling mathematical tasks over six weeks. The findings reveal that students who were encouraged to conceptualise problems before attempting solutions exhibited greater perseverance, as they were more likely to reinitiate problem-solving efforts after encountering an impasse. Additionally, students who recorded their conceptual thinking before starting a task demonstrated improved self-regulation and resilience when faced with mathematical difficulties.

Furthermore, DiNapoli (2019) found that students who received scaffolded guidance were more likely to attempt alternative problem-solving approaches, rather than abandoning a task at the first sign of difficulty. Findings also revealed that perseverance improved more significantly on scaffolded tasks over time, suggesting that deliberate practice in productive struggle fosters cognitive resilience. Furthermore, students' perceptions of their problem-solving abilities evolved throughout the study, with many reporting increased confidence in tackling complex mathematical problems (DiNapoli, 2019). DiNapoli (2019) explored the role of perseverance in secondary mathematics education while the present study focused on cognitive dissonance and academic performance.

Grit, persistence, and perseverance enhance academic achievement. DiNapoli (2023) examined the conceptual distinctions of grit, persistence, and perseverance in the context of learning mathematics with understanding. DiNapoli (2023) argued that while these constructs are often used interchangeably, they offer unique insights into students' engagement with mathematical problem-solving. Grounded in theoretical perspectives on motivation and learning, the research critically reviewed literature on dispositional factors that influence students' ability to persist through challenging mathematical tasks. DiNapoli (2023) defines grit as the sustained effort and passion toward long-term goals, persistence as the voluntary continuation of goal-directed action despite obstacles, and perseverance as the ability to re-initiate problem-solving efforts in the face of setbacks. The study highlighted that while grit is often linked to broader academic success, persistence and perseverance are more relevant to in-the-moment cognitive engagement during problem-solving. Findings suggested that perseverance, in particular, is critical for conceptual mathematical learning, as it enables students to re-strategise when initial attempts fail.

Additionally, the research critiques the overemphasis on grit in education policy, arguing that perseverance offers a more precise lens for understanding students' mathematical thinking and engagement. The study called for a clearer differentiation between these constructs in both research and instructional practice, advocating for targeted interventions that promote perseverance rather than a generalized emphasis on grit.

DiNapoli (2023) argued that instructional strategies should focus on fostering perseverance through structured opportunities for productive struggle, rather than simply encouraging students to "never give up." The research critiques the common misconception that struggling learners lack grit, emphasizing that perseverance is a skill that can be nurtured through guided reflection and adaptive learning environments. Classroom interventions that encourage students to analyse their problem-solving approaches and adjust their strategies have been found to significantly improve perseverance (DiNapoli, 2023). Additionally, the study highlighted the role of teacher feedback in shaping students' willingness to persist through mathematical difficulties. Non-directive questioning and scaffolding techniques are shown to enhance perseverance by promoting deeper cognitive engagement, while overly directive feedback may discourage independent problem-solving (DiNapoli, 2023). The findings indicated that effective mathematics instruction should balance challenge with support, ensuring that students view struggle as an opportunity for learning rather than as a sign of failure. Moreover, DiNapoli (2023) emphasised the need for professional development programs that equip educators with strategies to cultivate perseverance in diverse student populations while the present study focused on the relationship between cognitive dissonance based on perpetuance and academic achievement.

The reciprocal relationship between self-efficacy and academic performance matters in the educational setting. Talsma, Schüz, Schwarzer and Norris (2018) conducted a meta-analysis to investigate the reciprocal relationship between self-efficacy and academic performance. The study sought to determine whether self-efficacy influences academic achievement or if it merely reflects past performance. The researchers systematically reviewed longitudinal studies that measured self-efficacy and academic performance at two points in time, incorporating data from 11 studies with a total sample of 2,688 participants (Talsma et al., 2018). The findings revealed that while self-efficacy had a small but significant effect on academic performance ($\beta = 0.071$, $p < 0.001$), previous academic performance had a stronger influence on subsequent self-efficacy ($\beta = 0.205$, $p < 0.001$). This suggests that past academic success plays a critical role in shaping students' self-efficacy beliefs, which then contribute to future performance in a cyclical manner. Moreover, the study found that the reciprocal relationship between self-efficacy and performance was more pronounced in adults than in children, indicating that cognitive maturity enhances the ability to translate confidence into academic success (Talsma et al., 2018). The research also highlighted the role of methodological factors, such as the specificity of self-efficacy measures and the type of scale used, in moderating the strength of the observed effects. Studies that used unipolar self-efficacy scales and task-specific performance measures showed stronger cross-lagged effects. The study challenges the notion that self-efficacy is merely a by-product of past performance, instead positioning it as a dynamic construct that interacts with academic achievement over time. These findings emphasise the importance of fostering both self-efficacy and performance through targeted educational interventions.

Furthermore, findings from multiple studies indicate that while both pathways are significant, performance has a stronger effect on self-efficacy than vice versa. This has important implications for educational psychology, as it suggests that interventions aimed at improving student performance may also enhance self-efficacy, thereby creating a positive feedback loop (Talsma et al., 2018). The study also identified key moderators of the self-efficacy-performance relationship, including participant age, measurement lag, and scale type. Specifically, the reciprocal effects were stronger in adults than in children, reinforcing the idea that cognitive maturity plays a role in the development of self-efficacy beliefs. Additionally, studies with shorter measurement lags showed stronger effects, suggesting that the temporal distance between performance and self-efficacy assessments influences their observed relationship. The findings advocate for educational strategies that integrate self-efficacy enhancement with structured opportunities for performance success, rather than treating them as separate constructs. Talsma et al. (2018) investigated the reciprocal relationship between self-efficacy and academic performance but the present study focused on the association between academic performance and cognitive dissonance.

The relationship between grit and academic performance has been widely studied. Mason (2018) explored the explored the relationship between grit and academic performance among first-year university students in South Africa, focusing on the distinct roles of perseverance of effort and consistency of interest. The study surveyed 121 natural science students and utilised the Grit Scale to assess their self-reported perseverance and interest levels. The findings revealed that perseverance of effort was a stronger predictor of academic performance than consistency of interest, accounting for 9% of the variance in students' academic scores (Mason, 2018). In contrast, consistency of interest explained only 3% of the variance, indicating that sustained effort plays a

more crucial role in determining academic success than maintaining stable interests. The study also found that students with higher grit scores achieved better academic outcomes, supporting previous research on the role of perseverance in educational achievement. Additionally, female students reported higher overall grit scores than male students, suggesting potential gender differences in self-discipline and persistence (Mason, 2018). Interestingly, findings indicated that students with high perseverance scores exhibited greater engagement in learning tasks, whereas those with high consistency of interest did not necessarily perform better academically (Mason, 2018). Mason (2018) explored the relationship between grit and academic performance whereas the present study focused on the association between academic performance and cognitive dissonance.

There is an association between academic self-efficacy and academic performance. Matovu (2020) investigated the relationship between academic self-efficacy and academic performance among undergraduate university students in Uganda. The study employed a quantitative correlational research design and the study sample comprised 293 students from two universities (one public and one private), drawn from three faculties: Education, Humanities, and Sciences. The findings revealed a statistically significant positive correlation ($r = 0.816$, $p < .01$) between academic self-efficacy and academic performance, suggesting that students with higher self-efficacy achieve better academic outcomes (Matovu, 2020). The study also found significant gender differences, with male students demonstrating higher levels of self-efficacy ($M = 4.63$, $SD = .36$) and academic performance ($M = 4.01$, $SD = .43$) compared to their female counterparts ($M = 4.02$, $SD = .65$; $M = 3.68$, $SD = .63$, respectively). These results align with Bandura's (1997) social cognitive theory, which posits that individuals' beliefs in their abilities influence their

academic behaviour, motivation, and resilience. Furthermore, the study suggested that students with higher academic self-efficacy engage more in self-regulated learning strategies such as goal-setting, time management, and strategic learning behaviours (Matovu, 2020). The findings also indicated that students with lower self-efficacy were more prone to academic anxiety and underperformance, reinforcing the importance of psychological interventions.

Additionally, Matovu (2020) found that academic self-efficacy plays a critical role in determining students' academic performance, supporting previous research in Western and Asian contexts. Notably, the study found that academic self-efficacy perceptions significantly affected students' persistence, effort, and approach to challenging tasks, indicating its broader impact beyond mere academic scores (Matovu, 2020). The research also highlighted the mediating role of self-regulation in the relationship between self-efficacy and performance, with students demonstrating high self-efficacy engaging in effective learning strategies. Additionally, the study found that self-efficacy beliefs were influenced by external factors such as feedback from instructors, past academic experiences, and peer interactions (Matovu, 2020). Matovu (2020) investigated the relationship between academic self-efficacy and academic performance while the present study focused on the relationship between academic performance and cognitive dissonance.

2.4.7. Health and Academic Performance

Good health is another determinant of good academic performance. Health encompasses both mental and physical health. Recent studies have stressed the importance of well-being including mental health as determinants of student academic achievement. Bantjes, Saal, Gericke, Lockner, Roos and Auerbach (2021) conducted a study among university students suffering from common mental disorders such as anxiety and depression. The findings indicated that students experiencing

depression and anxiety are likely to perform poorly when compared to students without mental disorders.

Good mental health promotes learning. Agnafors, Barmark & Sydsjo (2020) conducted a conducted a longitudinal study to investigate the relationship between mental health and academic performance from childhood to early adulthood. The study sample comprised 1,700 children in Sweden. Findings revealed that poor mental health in early childhood and adolescence results in higher risk of poor academic performance showing the need for early intervention in terms of awareness and treatment to foster academic performance. Furthermore, findings from a longitudinal study in the United Arab Amirates found that higher levels of depression predicted lower GPA scores. Similarly, Shaw, Gomes, Polotskaia & Jankowska (2015) found that unhealthy children are more likely to experience school failure and dropout. For example, learners who are sickly may not consistently attend classes and that may affect their performance at school negatively. These studies are similar to the present study because health and wellbeing represent one dimension of cognitive dissonance in the present study.

Meta-analysis has revealed interesting findings on the association between academic achievement and good health. Michael, Merlo, Basch, Wentzel and Wechsler (2015) conducted a comprehensive literature review examining the relationship between student health and academic achievement using the Whole School, Whole Community, and Whole Child framework. The study focused on five key pathways through which health influences education: sensory perceptions, cognition, school connectedness, absenteeism, and school dropout rates. The findings indicated that chronic health conditions such as asthma and poor vision negatively affect students' motivation and ability to learn, leading to lower academic performance (Michael et al., 2015).

Additionally, poor health behaviours, including physical inactivity, poor nutrition, and inadequate sleep, were linked to lower test scores, reduced cognitive function, and increased behavioural issues. The research findings also revealed that physical activity had the most consistent evidence supporting its positive association with academic achievement, particularly in improving memory, concentration, and overall cognitive function (Michael et al., 2015). Similarly, the study found that safe and positive school environments significantly enhance students' health and educational outcomes by reducing stress and promoting engagement. Engaging families and communities in school health initiatives was also identified as a critical factor in supporting student well-being and academic success. The findings support the need for school health services to provide early intervention for chronic conditions and promote healthy behaviours among students. Michael et al. (2015) examined relationship between student health and academic achievement whereas the present study focused on the association between perceived choice of academic subjects and academic achievement.

Mental wellbeing enhances academic performance. Bhugra, Sauerteig, Bland, Lloyd-Kendall, Wijesuriya, Singh, Kochhar, Molodynski and Ventriglio, (2019) conducted a large-scale survey examining the mental health and wellbeing of doctors and medical students in the United Kingdom, focusing on the impact of working conditions on psychological distress and burnout. The study was conducted in the United Kingdom, through an online survey distributed by the British Medical Association, receiving 4,347 responses (Bhugra et al., 2019). The researchers assessed burnout levels using the Oldenburg Burnout Inventory and measured wellbeing using the Office of National Statistics four-dimensional wellbeing scale. The findings revealed that doctors working the longest hours were at the highest risk of burnout, with 91% of junior doctors and 83%

of consultants reporting significant exhaustion and disengagement (Bhugra et al., 2019). Additionally, the study found that medical students and junior doctors were most likely to report a formally diagnosed mental health condition within the past year, reflecting their vulnerability during the early stages of their careers. The research highlighted a substantial disconnect between the availability of mental health support and its accessibility, with junior doctors least aware of how to seek help. Furthermore, the study demonstrated that older doctors, staff grade, associate specialist, and specialty doctors, as well as overseas-qualified doctors, were the most likely to have sought support but received no assistance from their employers (Bhugra et al., 2019). The results highlighted the systemic challenges within the medical profession, where high stress levels, long working hours, and limited institutional support exacerbate psychological distress. Moreover, the findings suggested that despite experiencing poor wellbeing, doctors continued to work in high-pressure environments, leading to professional disengagement and reduced patient care quality. Similarly, Bhugra et al. (2019) concluded that improving mental health in the medical workforce requires institutional reforms, including reducing workload pressures and enhancing access to tailored psychological support.

Moreover, Bhugra et al. (2019) found that 90% of respondents attributed their mental health challenges to their working, training, or studying environment, reinforcing the role of institutional stressors in physician wellbeing (Bhugra et al., 2019). Furthermore, the findings indicated that women were more likely than men to report mental health concerns, while men were more likely to resort to self-medication, including alcohol and drugs, as coping mechanisms. The study also demonstrated that access to mental health support was unevenly distributed, with medical students reporting higher awareness of available services compared to junior doctors, who were often

unaware of where to seek assistance (Bhugra et al., 2019). Additionally, the research highlighted that burnout was associated with reduced work performance, with affected doctors reporting higher levels of concern about making medical errors. Bhugra et al. (2019) examined mental health and wellbeing while the present study focused on the association between cognitive dissonance based on health and academic performance.

Healthy eating promotes good health. Mohajerani (2018) examined the role of socialisation agents and individual determinants in shaping healthy lifestyle behaviours among Generation Y in Australia. The study adopted a quantitative research design, utilised Structural Equation Modelling to analyse survey data from 650 participants (healthy eating) and 675 participants (physical activity). Findings indicated that exposure to positive media messages significantly enhanced perceived parental and peer support for healthy behaviours, reinforcing prior research on the media's role in shaping health perceptions. However, exposure to discouraging media messages negatively influenced peer support, suggesting that media narratives can undermine social reinforcement mechanisms for health-promoting behaviours. Findings revealed that parental and peer support positively contribute to the development of health values, self-efficacy, and personal moral norms, highlighting the significance of socialisation agents in health-related decision-making (Bandura, 1997). These results highlighted the complex interplay between external influences and individual cognitive determinants in promoting or deterring healthy lifestyle behaviours.

Furthermore, Mohajerani (2018) found that individuals who perceived strong parental and peer support were more likely to internalise health values, leading to higher self-efficacy and stronger attitudes towards healthy eating and physical activity. This aligns with previous research

suggesting that intrinsic motivation plays a great role in sustaining long-term health behaviours (Deci & Ryan, 2000). Additionally, the study highlighted that self-efficacy and personal moral norms significantly predicted behavioural intentions, which in turn directly influenced actual health behaviours. However, the findings also revealed gaps in intention-behaviour consistency, indicating that external barriers such as time constraints, affordability, and social pressures can hinder the translation of positive intentions into action. Mohajerani (2018) examined the role of socialisation agents and individual determinants in shaping healthy lifestyle behaviours whereas the present study focused on the association between cognitive dissonance based on socialisation and academic achievement.

Good health and psychological wellbeing are linked to high academic achievement. McConville, McAleer and Hahne (2016) conducted a meta-analysis to assess the effectiveness of mindfulness training on psychological well-being, learning, and clinical performance among health profession students. The study reviewed 19 randomised and non-randomised controlled trials, encompassing 1,815 participants from medical, nursing, psychology, and social work disciplines. The findings demonstrated that mindfulness-based interventions significantly reduced stress, anxiety, and depression while improving mood, self-efficacy, and empathy in health profession students (McConville et al., 2016). Additionally, the studies found that mindfulness-based stress reduction programmes were more effective than standalone mindfulness meditation, suggesting that structured interventions incorporating mindful movement, meditation, and self-reflection yield the most benefits. The findings also indicated that mindfulness training enhanced students' ability to regulate emotions and cope with academic challenges, aligning with previous literature on stress management in higher education. Furthermore, shorter interventions, such as the five-week

Mindful Gym programme, were found to produce positive effects, particularly when delivered through multimedia or online platforms. The meta-analysis revealed that students who engaged in mindfulness training reported enhanced emotional regulation and resilience. McConville et al. (2016) examined the effectiveness of mindfulness training on psychological well-being and learning while the present study focused on healthy based cognitive dissonance and academic performance.

Studies on health and wellbeing are essential in understanding academic performance. Grunschel, Schwinger, Steinmayr and Fries (2016) explored the effects of motivational regulation strategies on students' academic procrastination, academic performance, and well-being in higher education. The study utilised two separate samples of university students (N1 = 419, N2 = 229) and applied structural equation modelling to assess whether academic procrastination mediated the relationship between motivational regulation strategies and academic performance. The findings revealed that students who utilised motivational regulation strategies exhibited lower levels of academic procrastination, which in turn positively influenced their academic performance and well-being (Grunschel et al., 2016). Specifically, strategies such as mastery self-talk, goal setting, and situational interest enhancement were associated with reduced procrastination and improved academic outcomes. In contrast, performance-avoidance self-talk, which involves self-statements that focus on avoiding failure rather than achieving success, was linked to increased procrastination and lower academic performance. The study confirmed that motivational regulation strategies function as an essential component of self-regulated learning, reinforcing previous research on the role of self-efficacy and self-discipline in academic success (Grunschel et al., 2016). Additionally, students who engaged in effective motivational regulation reported

greater cognitive and affective well-being, indicating that these strategies support both academic and psychological adjustment. Grunschel et al. (2016) examined the effects of motivational regulation strategies on students' academic procrastination, academic performance, and well-being in higher education while the present study focused on the association between cognitive dissonance based on health and wellbeing and academic performance.

Socialisation and mental wellbeing matter in the school setting. Bashkireva, Bashkireva, Morozov, Evdokimova and Tsvetkov (2021) conducted a study examining the impact of digitalisation on students' psychological safety and social health, focusing on how the rapid expansion of digital learning environments influences cognitive dissonance and well-being. The study was conducted in Russia, using qualitative and quantitative methods to analyse the effects of digitalisation on educational participants, including students, teachers, and parents (Bashkireva et al., 2021). The researchers explored how exposure to vast and often contradictory digital information contributes to social cognitive dissonance, affecting students' mental states and self-perception. The findings revealed that students frequently experience anxiety and stress due to conflicting digital content, which challenges their pre-existing cultural and educational norms (Bashkireva et al., 2021). Additionally, the study identified that cyber addiction, misinformation, and the erosion of traditional social values exacerbate cognitive dissonance, leading to difficulties in decision-making and trust formation. The research highlighted that self-esteem becomes increasingly dependent on digital validation, particularly among younger students exposed to social media trends. Moreover, the study found that students' ability to navigate digital environments safely is influenced by their digital literacy, suggesting the need for structured interventions to enhance critical thinking and information processing skills (Bashkireva et al., 2021). Furthermore, the study

demonstrated that the psychological safety of students is vital for maintaining a healthy learning environment in digitalised education systems. Ultimately, Bashkireva et al. (2021) concluded that educational institutions must implement strategies to mitigate cognitive dissonance, promote digital well-being, and enhance psychological safety in online learning.

Moreover, Bashkireva et al. (2021) found that digitalisation, while offering numerous educational benefits, also presents significant challenges, including the potential for information overload and the distortion of social values (Bashkireva et al., 2021). Furthermore, the researchers found that social cognitive dissonance is heightened in digital spaces where students are frequently exposed to contradictory information, leading to confusion and decision fatigue. The findings suggested that the digitalisation of education should be accompanied by measures that promote emotional resilience, self-regulation, and the ability to critically evaluate online content. Additionally, the study highlighted that while many students support the integration of digital technologies in education, the majority still prefer traditional learning methods, emphasising the importance of blended learning approaches (Bashkireva et al., 2021). Bashkireva et al. (2021) examined the impact of digitalisation on students' psychological safety and social health while the present study focused on cognitive dissonance based on socialisation and academic performance.

Quality sleep and good mental health have been linked to high academic achievement. Al-Khani, Sarhandi, Zaghloul, Ewid, and Saquib (2019) conducted a cross-sectional study to examine the relationship between sleep quality, mental health, and academic performance among medical students in Saudi Arabia. The study utilised the Pittsburgh Sleep Quality Index to assess sleep quality and the Depression Anxiety Stress Scales to evaluate psychological distress, including depression, anxiety, and stress. The findings revealed that 63.2% of the medical students were

classified as poor sleepers, with physical inactivity and excessive screen time being significant contributors to poor sleep (Al-Khani et al., 2019). Interestingly, poor sleepers were more likely to achieve higher academic performance than those with good sleep quality, contradicting existing literature suggesting that sleep deprivation impairs cognitive function. The study found that sleep quality was significantly associated with mental health outcomes, as students with poor sleep exhibited higher levels of depression (42%), anxiety (53%), and stress (31%) (Al-Khani et al., 2019). Moreover, the findings suggest that high-achieving medical students may sacrifice sleep to maintain academic excellence, potentially at the cost of their mental well-being. The study supports previous research showing that medical students are at high risk of sleep deprivation due to demanding academic workloads. Al-Khani et al. (2019) focused on the relationship between sleep quality, mental health, and academic performance while the present study examined the relationship between health based cognitive dissonance and academic achievement.

Food insecurity psychosocial health affects academic performance. Raskind, Haardörfer and Berg (2019) conducted a longitudinal study examining the relationship between food insecurity, psychosocial health, and academic performance among college and university students in Georgia, United States of America. The study utilised structural equation modelling to assess the mediating role of psychosocial health, comprising depression, anxiety, and hope on the association between food insecurity and academic performance. The findings revealed that 29% of students experienced food insecurity, and this status was significantly associated with poorer psychosocial health (Raskind et al., 2019). Depression and anxiety were higher among food-insecure students, whereas their levels of hope were lower. The study found that psychosocial health fully mediated the relationship between food insecurity and grade point average, indicating that the negative

impact of food insecurity on academic performance operated primarily through its effect on mental health (Raskind et al., 2019). The research highlighted the importance of considering psychosocial stressors as key determinants of academic success in higher education. The findings also suggested that interventions addressing both food insecurity and mental health could mitigate the adverse effects of financial hardship on academic outcomes. Additionally, students from low-income backgrounds and those with adverse childhood experiences were at greater risk of food insecurity, further reinforcing the role of socio-economic disparities in shaping educational attainment. Raskind et al. (2019) examined the relationship between food insecurity, psychosocial health, and academic performance whereas the present study focused on the relationship between perceived choice and academic performance.

2.5. Academic Performance and Cognitive Dissonance

Cognitive dissonance and culture are inseparable. Culture varies from one location to another. It is the way of life of a particular group of people. According to Kanene (2011), culture is the sum total of the way of life of a society. Whereas Howard (1989) defines culture as a process which initiates creation and maintenance of ideas, behaviour patterns, values by which man is regulated. Culture determines one's beliefs, ideologies and preferences as well as behaviour. Therefore, it is indispensable from any discussion based on cognitive dissonance. Cognitive dissonance occurs when there is a conflict among someone's beliefs, attitude and behaviour.

Culture and cognitive dissonance have an intricate relationship. Hoshino-Browne, Zanna, Zanna and Katayama (2005) posit that culture is key to arousal and reduction of cognitive dissonance. They found that cognitive dissonance is culturally constructed between the eastern and western Europeans. Their findings indicated that independent western self-concepts enhance self-

affirmation which tend to reinforce people's beliefs in their individual uniqueness from other people. The findings also revealed that cognitive dissonance occurs because westerners tend to justify their choices based on independent self-concepts and any contradiction to their individual beliefs and attitudes results in cognitive dissonance. On the other hand, self-affirmation of East Asian self-concepts tend to reinforce connectedness. Therefore, when their culturally valued sense of self is threatened, they experience cognitive dissonance (Hoshino-Browne et al., 2005). Easterners reduce cognitive dissonance by justifying their choices based on interdependent self-concepts (Chung & Darke, 2006).

In collectivistic cultures, individuals prefer to maintain social harmony and tend not to express negative emotions (Markus & Kitayama, 1990). Collectivistic cultures also promote consented efforts to better the whole community (Kaani & Machila; 2022). Furthermore, people from collectivistic cultures emphasise interdependence, conformity to group norms and identification based on group membership and they do not always experience cognitive dissonance when there is a conflict between their attitude and behaviour (Streamer, 2007).

Similarly, collectivistic cultures place group needs above the needs of an individual and it is not important for an individual to feel personally consistent (Triandis, 1995). On the other hand, in individualistic cultures, individual freedom and autonomy matter. People in individualist cultures have the propensity to identify themselves according to their attributes and behaviour and any conflict between attitude and behaviour triggers cognitive dissonance. (Streamer, 2007).

Individualistic people care about consistency regarding personal beliefs and behaviours. Conversely, people from collectivistic cultures are more interested in being consistent in their public behaviours (Chung & Darke, 2006). Studies on cognitive dissonance indicate varying

results. Streamer (2007) examined cognitive dissonance among individuals with collectivist and individualist tendencies within a culture. The findings revealed that participants who were in a high choice condition experienced more cognitive dissonance than those who were in a low choice condition. Additionally, the findings showed that participants who scored high in individualism and those who scored low dissonance showed no significant difference in dissonance experienced. This finding implies that cross-cultural differences in terms of cognitive dissonance may not be attributed to individualism. This study focused on culture and cognitive dissonance while the present study is based on cognitive dissonance and academic performance.

Rodríguez-Izquierdo (2021) conducted a study on the impact of service learning on the development of intercultural sensitivity among university students in Spain. The study compared two groups of first-year undergraduate students enrolled in a Didactics course. One group was engaged in service learning and the other following a traditional non-service learning methodology. This study adopted used a quasi-experimental research design with pre-test and post-test measures. The study assessed intercultural sensitivity development using the Intercultural Development Inventory, an instrument for measuring intercultural competence. Findings indicated that the service learning group showed significant increases in intercultural sensitivity across multiple subscales, particularly in the acceptance/adaptation and reversal dimensions of the Intercultural Development Inventory, which signify higher levels of intercultural awareness and adaptability (Rodríguez-Izquierdo, 2021). However, there were no significant differences observed in the denial/defence and minimisation stages, suggesting that while service learning enhances certain aspects of intercultural sensitivity, it may not be adequate to transform deeply ingrained ethnocentric orientations. The study revealed that that service learning provides

experiential learning opportunities that expose students to diverse cultural contexts, resulting in cognitive dissonance that fosters intercultural growth. Participants engaged in structured reflection, a crucial component of service learning, which made them process their experiences critically and integrate new perspectives into their worldview. Additionally, Rodríguez-Izquierdo (2021) emphasised that service learning facilitates real-world interactions with individuals from different cultural backgrounds. Thereby allowing students to challenge their biases and expand their cultural understanding. The study ultimately supports the growing consensus that service learning is a powerful pedagogical tool for fostering intercultural sensitivity in higher education institutions.

Additionally, this study, emphasised the importance of cognitive dissonance in driving intercultural learning (Rodríguez-Izquierdo, 2021). Findings indicated that students participating in service learning encountered discomfort at the beginning when engaging with culturally diverse communities, as their pre-existing assumptions and expectations were challenged. This dissonance later acted as a catalyst for transformation, prompting students to reflect on their cultural biases and adapt their attitudes accordingly. Similarly, the study emphasised the importance of meaningful intercultural contact, indicating students who actively engaged with marginalised groups like Roman children in underprivileged Spanish communities experienced intercultural sensitivity gains (Rodríguez-Izquierdo, 2021). Rodríguez-Izquierdo (2021) conducted a study on the impact of service learning on the development of intercultural sensitivity but the present study focused on the association between cognitive dissonance and academic achievement.

Cognitive dissonance and culture are inseparable. Namaste (2017) examined the role of cognitive dissonance in transformative learning among students participating in study abroad programmes.

The study was conducted in Canada. The researcher explored how intercultural experiences contributed to students' development of intercultural competency by fostering dissonance between their preconceived cultural assumptions and their lived experiences abroad. The findings revealed that exposure to a foreign culture does not automatically lead to transformative learning; rather, students must actively engage with cognitive dissonance to achieve meaningful changes in perspective (Namaste, 2017). The study highlighted that guided reflections, structured assignments, and facilitated discussions were essential in helping students navigate and make sense of their experiences. Additionally, the research demonstrated that students who were encouraged to analyse cultural differences in their host country critically were more likely to develop deeper intercultural awareness. The study also identified that students who remained within their comfort zones or primarily interacted with their peers from the same cultural background exhibited less cognitive and personal growth (Namaste, 2017). Furthermore, the research found that students who engaged in structured intercultural competency assignments showed measurable improvements in their ability to appreciate cultural differences.

Moreover, Namaste (2017) examined the implications of cognitive dissonance in intercultural education, emphasising the importance of structured interventions in study abroad experiences. Findings indicated that students who lacked guided reflection opportunities struggled to make sense of their cultural encounters, often reverting to ethnocentric perspectives (Namaste, 2017). Furthermore, the research demonstrated that transformative learning depends not only on immersion but also on students' ability to critically compare their home culture with that of the host country. The findings also indicated that assignments that triangulated learning by incorporating readings, lived experiences, and comparative analysis were most effective in

fostering deep cultural understanding. Additionally, the study revealed that cognitive dissonance was most pronounced when students encountered unfamiliar social norms and practices that directly contradicted their cultural expectations (Namaste, 2017). The research also revealed that some students initially resisted changing their perspectives but later exhibited significant shifts in worldview after structured discussions and mentorship. Furthermore, the study emphasised the role of educators in guiding students through discomforting experiences to ensure constructive learning rather than reinforcing stereotypes. Namaste (2017) examined the implications of cognitive dissonance in intercultural education while the present study focused on the association between cognitive dissonance and academic performance.

There is a dearth of studies on the relationship between cognitive dissonance and academic performance (Al Otaibi, 2012). Cognitive dissonance teaching strategies have been used the educational setting. Weiss (2017) examined the effectiveness of problem-oriented learning in geography education, focusing on the role of cognitive dissonance in fostering student motivation and engagement in Germany. The study employed an empirical research design to analyse the impact of problem-based learning approaches in primary and secondary school settings (Weiss, 2017). The research examined various strategies for structuring geography lessons around real-world problems to encourage active student participation and conceptual understanding. The findings revealed that creating cognitive dissonance by presenting contradictions or unexpected information significantly increased student curiosity and engagement (Weiss, 2017). Additionally, the study demonstrated that problem-oriented learning is particularly effective in geography education because of the subject's interdisciplinary nature and its emphasis on complex human-environment interactions. The research emphasised that problem-solving tasks must be both

authentic and challenging to stimulate students' cognitive engagement and willingness to explore new concepts (Weiss, 2017). Furthermore, the findings suggested that allowing students to take on expert or helper roles in problem-solving scenarios further increased their motivation to participate. The study also highlighted that problem-oriented learning fosters critical thinking skills by encouraging students to question existing knowledge structures and seek evidence-based solutions. Moreover, the research indicated that successful implementation of problem-oriented learning requires structured guidance from teachers to help students navigate ill-structured problems effectively. Similarly, Weiss (2017) found that integrating problem-oriented learning into geography education enhances student learning outcomes by promoting deeper engagement with complex geographical issues.

Moreover, Weiss (2017) demonstrated that students who engaged in problem-oriented learning exhibited higher levels of motivation and conceptual retention compared to those taught using traditional lecture-based methods (Weiss, 2017). Furthermore, the research suggested that incorporating cognitive dissonance into problem-oriented learning activities such as presenting conflicting data or requiring students to justify their assumptions enhanced their ability to process and apply new information. The findings also indicated that while problem-oriented learning is highly effective, its success depends on the careful construction of problem scenarios that are relevant and sufficiently complex to challenge students' cognitive abilities. Additionally, the study found that students responded more positively to problems that had real-world implications, such as climate change, urban planning, and resource management (Weiss, 2017). The research also highlighted that teachers must strike a balance between providing structure and allowing for student autonomy, as excessive guidance can limit students' ability to develop independent

problem-solving skills. Weiss (2017) examined the effectiveness of problem-oriented learning in geography education, focusing on the role of cognitive dissonance in fostering student motivation and engagement. On the other hand, the present study focused on the relationship between cognitive dissonance and academic performance.

Cognitive dissonance-based methodology enhances learning. Köpeczi-Bócz (2025) examined the application of cognitive-dissonance-based educational methodology to facilitate conceptual change, enhance learning motivation, and increase institutional confidence among students. The study employed a pre-test/post-test experimental design within a short-cycle university training programme, focusing on modifying misconceptions about entrepreneurial innovation (Köpeczi-Bócz, 2025). Findings indicated that cognitive dissonance plays a critical role in reshaping learners' attitudes, as demonstrated by a significant shift in preference scores towards more contemporary entrepreneurial knowledge. This aligns with previous research suggesting that cognitive-dissonance-based interventions effectively challenge pre-existing beliefs and encourage deeper engagement with learning materials (Festinger, 1957; Harmon-Jones & Mills, 2019). The study further highlighted that learners who experience cognitive dissonance are more likely to develop reflective thinking skills. Moreover, Köpeczi-Bócz (2025) identified institutional confidence as a key outcome, with 66% of participants enrolling in subsequent skills development programmes following the intervention. The research underscores the potential of cognitive-dissonance-based strategies to drive sustainable learning motivation by actively involving students in critical reflection and self-correction. By integrating these methodologies into higher education curricula, institutions can create a more resilient and adaptive learning environment, better equipping students for complex problem-solving in professional settings.

Köpeczi-Bócz (2025) found that cognitive dissonance, when strategically induced, facilitates social identity development and helps students reconcile discrepancies between prior knowledge and new learning. This finding aligns with research on vicarious dissonance, which suggests that observing contradictory behaviours in others can prompt attitudinal shifts and self-reflection. Additionally, the study highlighted the emotional engagement aspect of dissonance, reinforcing literature that links heightened emotional responses to increased motivation and deeper learning. The study also positioned cognitive dissonance as a catalyst for critical thinking. Furthermore, Köpeczi-Bócz (2025) identified a strong correlation between cognitive-dissonance-based learning and students' self-efficacy, as those who successfully resolved dissonance exhibited greater confidence in their academic abilities. This aligns with research suggesting that overcoming cognitive conflicts fosters resilience and autonomy in learning (Bandura, 1997). Köpeczi-Bócz (2025) examined the application of cognitive-dissonance-based educational methodology to facilitate conceptual change whereas the present study focused on the relationship between cognitive dissonance and academic performance.

Cognitive dissonance theory has been used in as a theoretical framework in many studies. Rietsche, Duss, Persch, and Söllner (2018) explored the development and evaluation of an IT-based formative feedback tool designed to enhance student performance in large-scale university lectures in Switzerland and Germany. The study conducted to address the challenge of providing high-quality formative feedback in higher education regardless of rising student numbers and limited resources. This study employed a design science research methodology to develop a web-based feedback tool and cognitive dissonance theory (Festinger, 1957) was used as a theoretical framework. The tool facilitated self-assessment and computer-based assessment, permitting

students to compare their perceived knowledge with objective test results (Rietsche et al., 2018). This comparison induced cognitive dissonance, prompting students to engage in self-regulated learning to reduce the psychological discomfort caused by discrepancies between their expectations and actual performance. The study revealed that students who frequently used the tool showed significant improvements in both examination scores and perceived learning outcomes. Additionally, the findings revealed that immediate feedback, combined with self-reflective assessment, enhanced students' motivation and academic self-efficacy. The tool was particularly effective in promoting deep learning and critical thinking skills, as students were encouraged to actively monitor and adjust their learning strategies. Rietsche et al. (2018) found that IT-based formative feedback can serve as a solution for universities seeking to improve student engagement and academic performance in large cohorts. By integrating cognitive dissonance theory, the study explained how the tool activated students' motivation to reconcile inconsistencies between self-perceived and actual knowledge. Findings showed that students who experienced moderate levels of cognitive dissonance and not excessive or insufficient dissonance were most likely to engage in self-regulated learning (Rietsche et al., 2018). The intersection between this study and the present study is the application of cognitive dissonance theory as a theoretical framework.

Students' perceptions of school environment may cause them to like or dislike a school. Tyler, Stevens-Morgan and Brown-Wright (2016) investigated the associations between middle level student's perceptions of home-school dissonance and reports of school attachments. The sample comprised seven hundred and seventy-six middle level students in Grade six up to grade eight of diverse student population such as African Americans, Caucasians, Asian Americans and Latinos.

The study was based on two Central Kentucky public Middle schools. The findings revealed that the interaction variables assessed in this study such as being critical or passive, pleasant, and being demanding were the only significant predictors of school attachment. Unlike this study, the present study focused on the relationship between cognitive dissonance and academic performance.

Tyler, Burris, and Coleman (2016) explored the relationship between home-school dissonance and disruptive classroom behaviour among middle school students in the United States. The study was conducted in urban public schools in low-income communities and employed structural equation modelling to examine how home-school dissonance influences students' academic motivation and behaviour. Home-school dissonance was defined as the perceived conflict between the cultural values and expectations of students' home environments and those present in their formal schooling experiences (Tyler et al., 2016). The study found that students experiencing high levels of home-school dissonance displayed lower academic efficacy, reduced mastery goal orientation, and heightened disruptive classroom behaviours. Additionally, home-school dissonance positively correlated with performance-approach and performance-avoidance goal orientations, suggesting that students experiencing cultural discontinuity may focus more on external validation rather than intrinsic learning (Tyler et al., 2016). The findings were in agreement with prior research signifying that cultural discrepancy between home and school environments negatively effects student engagement and academic success. Particularly, African American students reported higher levels of home-school dissonance compared to their Caucasian peers, emphasising concerns about inequities in the education system. The study also revealed gender differences, with male students demonstrating higher levels of disruptive behaviour, while female students exhibited stronger mastery goal orientations. These findings suggest that cognitive dissonance stemming

from cultural discontinuity can lead to emotional distress and maladaptive coping strategies. Tyler et al. (2016) highlighted the importance of reducing home-school dissonance through culturally responsive teaching strategies which may help improve student engagement and behavioural outcomes in urban schools. Tyler et al. (2016) examined the psychological mechanisms through which home-school dissonance affects classroom behaviour, focusing on motivational mediators such as goal orientations and academic efficacy while the present study focused on the relationship between cognitive dissonance and academic performance.

A number of studies have investigated how applicable cognitive dissonance theory is in the educational setting. Guerra and Wubbena (2017) explored cognitive dissonance theory in public elementary schools of south-western United States. They employed qualitative research design and investigated teachers' beliefs regarding culturally proficient teaching practices and deficit beliefs about students from diverse backgrounds in environments influenced by high-stakes standardised testing. They also used surveys and classroom observations with teachers from two demographically diverse elementary schools, Guerra and Wubbena (2017) identified inconsistencies between teachers' professed culturally proficient beliefs and observed classroom practices. The findings indicated a significant contradiction. Even if teachers reported holding culturally proficient beliefs such as incorporating diverse cultural perspectives into daily instruction, the observed classroom practices predominantly reflected deficit-oriented beliefs. Instruction was mainly teacher-centred, with minimal engagement of culturally relevant pedagogies, limited utilisation of student experiences, and minimal interactions facilitating meaningful cultural integration in learning. Research findings also revealed that dissonance arises largely from contextual pressures in high-stakes, test-driven environments, typical of education

systems in developed countries, like the United States. Teachers tended to resolve cognitive dissonance by aligning classroom practices with deficit beliefs, reinforcing pre-existing stereotypes and perpetuating educational inequalities. Guerra and Wubbena (2017) argued that reducing this dissonance requires professional development interventions targeting teachers' deficit beliefs, promoting genuine implementation of culturally proficient practices in increasingly diverse classrooms. Unlike this study which investigated the teachers' beliefs, the present study focuses on the relationship between academic performance and cognitive dissonance.

Similarly, Guerra and Wubbena (2017) provided evidence of how high-stakes testing environments in the United States create conditions favourable for cognitive dissonance to flourish, influencing teacher decision-making in culturally diverse classrooms. They argued that educational policies driven by accountability through standardised testing may reinforce deficit thinking by encouraging practices that limit culturally responsive teaching strategies. Teachers frequently attributed academic disparities to external factors beyond their instructional control, including perceived deficiencies in students' home environments, lack of parental involvement, and students' behaviours or attitudes towards school. Despite recognising the importance of understanding cultural and expressing positive beliefs about culturally inclusive instruction, observed classroom interactions predominantly reflected low engagement with culturally relevant materials and minimal student-centred instructional practices. Guerra and Wubbena (2017) emphasised that such differences arise largely from the pressures associated with high-stakes testing environments, which prioritise standardised test performance over culturally responsive educational practices. This study emphasised the implications of cognitive dissonance for educational practice and policy, highlighting how misalignment between beliefs and practices

contribute to sustaining achievement gaps. Therefore, the authors recommended integrating cognitive dissonance awareness into diversity training programmes, promoting culturally relevant practices, and addressing barriers perpetuating educational inequalities.

Cognitive dissonance is indispensable when initiating change. Mia and Aisling (2023) conducted a study in Ireland on teacher professional development using a case study research design because of insufficient focus on its impact including minimal evidence of changes to practice together with inadequate emphasis on student outcomes. This study investigated the impact of a seven-month professional development initiative designed to support teachers in implementing a reform approach to mathematics teaching. Data was collected using teacher interviews, lesson observations, student focus group interviews, and document reviews. Findings showed that impoverished initial mathematics experiences later began to show signs of enrichment. Students' insights into changing practice indicate that students want to be challenged more in mathematics and experience this challenge in inclusive learning environments where all students are valued and supported. The main finding was effectiveness of student insights with increasing teachers' engagement with the professional development initiative. Professional development also resulted in teacher motivation and increased teacher engagement as well as commitment to the reform process. These findings highlight the complexity of the teacher change process, in particular, how cognitive dissonance plays a key role in changing practice. The direct results of cognitive dissonance were students' insightful perspectives about learning mathematics. This research revealed that student voice can provide unique context-specific insights although it is under-utilised in professional development theory and practice. On the other hand, the present study focused on the relationship between cognitive dissonance and academic performance.

Cognitive dissonance has been utilised in some studies by presenting learners with knowledge which conflicts with what they already know. Zaiedy Nor and Smith (2019) examined the effect of psychosocial characteristics on students' training attitudes and well-being, focusing on cognitive dissonance as a predictor of negative well-being. The study was conducted at Cardiff University in the United Kingdom. This was a longitudinal study conducted among first-year undergraduate psychology students to assess the relationship between motivation to learn, transfer intention, cognitive dissonance, and well-being.

Findings also indicated that positive psychosocial characteristics like positive coping, organisational commitment, and supportive work characteristics correlated significantly with motivation to learn and training transfer intention (Zaiedy Nor & Smith, 2019). Surprisingly, cognitive dissonance emerged as a crucial negative predictor, indicating a significant association with negative well-being, including stress, anxiety, and depressive symptoms. The findings revealed that students experiencing cognitive dissonance had challenges with application of newly acquired knowledge and skills, resulting in increased emotional distress. Moreover, regression analyses revealed that while training attitudes initially appeared to influence well-being, their effects diminished when broader psychosocial factors were included, highlighting the role of personality and commitment as stronger predictors of student well-being. Similarly, this study emphasised that positive training attitudes, motivation to learn and learning had a significant relationship with increased satisfaction and happiness, whereas cognitive dissonance contributed to emotional exhaustion and frustration. Zaiedy Nor and Smith (2019) concluded that students who experience dissonance when applying knowledge should receive structured support to reduce the impact of psychological distress and enhance learning outcomes. This study also emphasised the

need for targeted interventions to manage cognitive dissonance in educational contexts, ensuring that training effectiveness translates into sustained well-being.

Moreover, Zaiedy Nor and Smith (2019) explored the mechanisms through which cognitive dissonance affects students' learning experiences and psychological well-being. Findings showed that students who perceived inconsistencies between previous knowledge and new educational material were more likely to report cognitive dissonance, leading to discomfort and self-doubt. This dissonance often resulted in negative well-being indicators, such as heightened stress and lower academic confidence (Zaiedy, Nor & Smith, 2019). The researchers found that cognitive dissonance in academic settings arises when students face conflicting learning paradigms, necessitating cognitive restructuring to integrate new information successfully. Furthermore, the study demonstrated that students with high commitment to their studies exhibited better coping mechanisms, reducing the negative impact of cognitive dissonance on well-being. Findings also indicated that positive work characteristics, such as supportive academic environments and peer encouragement, played a crucial role in fostering resilience against dissonance-induced stress. Although cognitive dissonance triggers negative psychological effects, it was also identified as a potential catalyst for deeper learning when managed effectively through guided reflection and academic support. On the other hand, the present study focused on the importance of choice as a method of reducing cognitive dissonance among learners.

The level of cognitive dissonance should be managed among learners to enhance learning. Kivirinta (2014) investigated the role of cognitive dissonance in introductory computer science courses, focusing on how persisting dissonance contributes to high dropout rates. The findings indicated that students pursuing introductory computer science courses often struggle with

unresolved conflicts between their expectations of programming and the cognitive challenges posed by learning to code. Drawing from Cognitive Load Theory and Cognitive Dissonance Theory (Festinger, 1957), the research identifies three key mechanisms through which dissonance exacerbates learning difficulties: resource depletion, excessive cognitive load, and avoidance failure (Kivirinta, 2014). These mechanisms create a vicious cycle in which students experience increasing mental strain, leading to disengagement and ultimately course withdrawal. Furthermore, Kivirinta (2014) argued that many students possess varying skill levels when they begin introductory computer science courses. This amplifies their cognitive dissonance when faced with complex programming concepts. The study also critiques traditional teaching methods that prioritize problem-solving without providing adequate metacognitive support, reinforcing students' frustration and disengagement. The study highlights the importance of structured interventions in introductory computer science courses to help students navigate the psychological barriers associated with learning programming. Kivirinta (2014) investigated the role of cognitive dissonance in introductory computer science courses while the present study focused on the relationship between cognitive dissonance and academic achievement.

Wilkin (2017) explored how assessment design can enhance critical thinking skills among postgraduate accounting students at Monash University in Australia. The study employed a case study approach to examine how a redesigned problem-based assessment encouraged students to engage in higher-order thinking. The assessment task presented new material that triggered cognitive dissonance, requiring students to resolve inconsistencies between their prior knowledge and the novel concepts presented (Wilkin, 2017). This approach is in agreement with Festinger's (1957) cognitive dissonance theory, which suggests that individuals experience psychological

discomfort when confronted with conflicting cognitions and seek to restore consistency. Findings indicated that students who engaged with the dissonance-inducing material demonstrated improved critical thinking, as evidenced by their ability to articulate complex arguments, evaluate multiple perspectives, and synthesise information. Furthermore, Wilkin (2017) found that the scaffolding provided within the assessment process helped students gradually develop confidence in their critical reasoning abilities. The results indicated that cognitive dissonance, when effectively incorporated into pedagogy, can serve as a powerful catalyst for deeper learning. Moreover, the study showed that students who initially struggled with cognitive dissonance later displayed higher levels of cognitive flexibility and problem-solving skills. The findings support the growing emphasis on incorporating real-world problem-solving tasks in higher education curricula to bridge the gap between academic knowledge and professional competencies. Wilkin (2017) found that assessment strategies designed to challenge students' preconceived ideas can significantly enhance their critical thinking and analytical abilities. Moreover, Wilkin (2017) explored the role of cognitive dissonance in fostering engagement and motivation among accounting students whereas the present study focused on the relationship between cognitive dissonance and academic performance.

Wilkins, Butt, and Heffernan (2017) examined the antecedents of cognitive dissonance and student satisfaction in co-branded higher education programmes, concentrating on international brand alliances between universities. The study was conducted in Hong Kong, a developed country and Sri Lanka, a developing country. This study utilised a structured survey questionnaire completed by 528 students. The research examined how brand credibility, student-institution identification, and perceived service quality influenced cognitive dissonance and overall satisfaction with co-

branded degree programmes (Wilkins et al., 2017). The findings showed that brand credibility of the foreign institution played a more significant role in shaping student perceptions compared to the local institution. The students in Hong Kong and Sri Lanka reported stronger identification with the foreign institution, resulting in lower cognitive dissonance when engaging with the co-branded programme. Additionally, Findings revealed that cognitive dissonance negatively impacted student satisfaction, emphasising the importance of ensuring alignment between pre-enrolment expectations and actual academic experiences. The results indicated higher perceived service quality in teaching, but not necessarily in support services, contributed to reduced cognitive dissonance. Wilkins et al. (2017) contended that cognitive dissonance should be actively managed to prevent dissatisfaction, particularly in international partnerships where students' expectations are shaped by the reputation of foreign universities. Findings also indicated that students in Sri Lanka exhibited higher overall satisfaction with their co-branded programmes compared to those in Hong Kong, a finding attributed to differences in educational market saturation and institutional prestige. Wilkins et al. (2017) explored the relationship between cognitive dissonance and student satisfaction whereas the present study focused on the relationship between cognitive dissonance and academic achievement.

The cognitive dissonance theory has been used widely in studies involving culture. Mitchell and Paras (2018) investigated the role of cognitive dissonance in intercultural learning within study-abroad programmes. This study was based on Indian students and it was conducted at the University of Guelph in Canada, which is a developed country. The study explored how students' exposure to cultural differences and unexpected similarities shaped their ability to develop intercultural competence. The researchers based their interpretation of findings on the

transformative learning theory (Mezirow, 1991) and intercultural competence frameworks (Bennett, 1986), they concluded that cognitive dissonance determines intercultural learning by compelling students to reconcile their pre-existing beliefs with new cultural experiences. From qualitative data of students' written reflections, the researchers identified different psychological strategies used to manage cognitive dissonance, including value modification, perception adjustment, rationalisation, self-affirmation, and rejection of host cultural norms (Mitchell & Paras, 2018). The findings indicated that students who actively engaged with dissonance through reflection and adaptation showed greater intercultural competence gains, when compared to those who rejected or rationalised their discomfort. These remained stagnant in their development.

Furthermore, the findings suggested that structured reflection opportunities, such as guided debriefs and journaling, greatly influenced students' ability to process cognitive dissonance constructively. Interestingly, even within a supportive educational framework, some students failed to progress, demonstrating that immersion alone does not guarantee intercultural learning. Mitchell and Paras (2018) concluded that cognitive dissonance must be deliberately incorporated into study-abroad curricula to maximise transformative learning and foster meaningful intercultural competence development. This study emphasises the role of cognitive dissonance in intercultural learning within study-abroad programmes whereas the present study focused on the relationship between academic performance and cognitive dissonance. The intersection between the two studies is cognitive dissonance.

Cognitive dissonance involves conflicts concerning attitudes and behaviour. Watson, Watson, Richardson, and Loizzo (2016) examined an instructor's use of social presence, teaching presence, and attitudinal dissonance and employed a qualitative case study within a Massive Open Online

Course designed for attitudinal change on the topic of human trafficking. The research was conducted in the United States which is a developed country. Watson and colleagues used the Community of Inquiry framework, originally articulated by Garrison, Anderson, and Archer. Watson et al. (2016) illustrated how social and teaching presences contributed to attitudinal change among learners in the Massive Open Online Course. The course attracted participants worldwide, permitting diverse interaction, which facilitated deeper exploration of attitudes toward human trafficking through structured dialogues. Findings showed that the instructor was able to use social presence by frequently engaging students by name, offering personalized feedback, and promoting a sense of community, which resulted in emotional learner engagement and attitudinal shifts. The instructor also strategically created situations which resulted in cognitive and behavioural dissonance, primarily through real-world examples and authentic personal narratives, with the intention of bringing about attitude change towards human trafficking.

Nevertheless, the study recorded challenges associated with facilitating meaningful interaction and discourse among the large and diverse group of Massive Open Online Course participants. Watson et al. (2016) concluded that effective facilitation of Massive Open Online Courses leading to attitudinal change is anchored on deliberate instructional design and active instructor participation. Watson et al. (2016) stressed the critical role of structured instructor interventions to facilitate attitude change effectively in online learning environments. Unlike this study which focused on attitudinal change through affective, cognitive and behavioural strategies, the present study largely emphasised the role of perceived choice in attitudinal change.

A number of studies which employed the Cognitive dissonance theory in the educational setting have revealed different findings. Balaman (2020) conducted a study which was guided by

Festinger's cognitive dissonance theory among undergraduate students at Houston University in Texas. The essence of the study was to understand thematic trends in dissonance-arousing topics, specifically within the university classroom context. The study employed a within-stage mixed model design in which surveys and semi-structured interviews were used to collect data. The study revealed diverse triggers of dissonance mainly related to controversial class discussions, perceived biased instruction, and interactions with peers and instructors. Classroom settings were considered as environments where cognitive dissonance was experienced regularly, particularly when students encountered course content or instructor behaviours that conflicted strongly with their pre-existing beliefs or values. Negative affective responses included anxiety, frustration, and a sense of personal discomfort, often leading students to behavioural reactions such as withdrawal, disengagement, or superficial compliance with classroom activities (Balaman, 2020). Strangely, the study highlighted that negative cognitive and affective reactions were intensified when students perceived the instructor's conduct as biased or disrespectful towards differing viewpoints.

Balaman (2020) suggested that cognitive dissonance, when managed poorly in educational settings, can lead to maladaptive responses, hindering effective learning and critical engagement. Therefore, the study emphasises the need for educators to adopt inclusive teaching practices that minimise unnecessary dissonance while constructively guiding students through discomforting educational experiences. The findings indicated maladaptive responses to cognitive dissonance experienced in the classroom. Furthermore, this study demonstrated that college classroom dissonance encounters have the potential to lead to disengagement from classroom material. Hence, hinder learning in the short-term. Unlike this study, the present study focused on the relationship between academic achievement and perceived choice of academic subjects.

Williams (2021) investigated the extent to which religiosity, cognitive dissonance, and stress predict academic performance. The study was conducted among online undergraduate students in the United States. The study employed a quantitative correlational study and utilised survey data from a sample of 103 online students recruited through SurveyMonkey. The research was guided by the General Model of Student Learning (Biggs, 1978), which conceptualises academic performance as the product of personal and situational presages influencing cognitive and emotional processes. Using multiple linear regression analysis, the study found a significant predictive relationship between religiosity, cognitive dissonance, stress, and academic performance (Williams, 2021). There was a negative relationship between religiosity and academic performance, indicating that students with higher levels of religious engagement scored lower GPA scores. Conversely, findings revealed that cognitive dissonance and stress were not significant predictors of academic performance, challenging previous research suggesting that dissonance-induced discomfort negatively impacts learning outcomes. The findings indicated that while religiosity may introduce conflicting cognitive demands that interfere with academic engagement, stress and cognitive dissonance do not necessarily translate into diminished performance in online learning environments.

Furthermore, Williams (2021) proposed that the negative relationship between religiosity and GPA may be attributed to time constraints, as highly religious students allocate significant portions of their time to faith-based activities, potentially reducing their study hours. Additionally, findings revealed that stress, as measured by the Perceived Stress Scale (PSS-10), was not a significant predictor of academic performance. This study focused on the extent to which religiosity, cognitive

dissonance, and stress predict academic performance while the present study emphasised the relationship among cognitive dissonance, perceived choice and academic achievement.

Cognitive dissonance among learners should be managed to enhance learning. Youssef, Ham and Okada (2016) explored the role of persuasive agents in helping students overcome cognitive dissonance in science learning, particularly in situations where students experience conflict between pre-existing beliefs and new information. The study investigates whether different persuasive sources a human instructor, a robotic agent, or a tablet-based system differentially influence students' willingness to reattempt difficult exercises after experiencing failure. Grounded in Cognitive Dissonance Theory (Festinger, 1957) and Social Agency Theory, the study examined how students with different cognitive profiles, relational (emotion-driven) and tough-minded (logic-driven) responded to various persuasive interventions (Youssef et al., 2016). Findings indicated that relational students, who base their decision-making on emotions and social norms, are more susceptible to persuasion than tough-minded students, who exhibit lower cognitive dissonance and are less likely to alter their attitudes. Additionally, the study reveals that robotic agents were more effective than tablet-based systems in promoting cognitive closure, but human instructors remained the most persuasive source overall. Therefore, this study highlights the importance of incorporating robotic teaching assistants into educational settings to enhance students' resilience in problem-solving, provided that their design aligns with students' cognitive profiles.

Furthermore, Youssef et al. (2016) found that relational students benefit more from human persuasion, as they are more likely to accept encouragement from social figures than from robotic or digital sources. Conversely, tough-minded students showed greater cognitive engagement when

interacting with a robotic agent rather than a human, suggesting that they may be more receptive to neutral, systematic feedback over emotionally driven persuasion. Additionally, the study also highlighted the importance of persuasive message design, showing that strategies such as narrative framing and incremental encouragement were particularly effective in reducing cognitive dissonance. Youssef et al. (2016) explored the role of persuasive agents in helping students overcome cognitive dissonance in science learning whereas the present study focused on the association between cognitive dissonance and academic performance.

The degree of cognitive dissonance explains how learners view academic subjects. Sewar et al., (2017) investigated the relationship among students' academic achievement and students' evaluation of teachers as well as students' course evaluation. This study was based on cognitive dissonance theory. The findings revealed that students rated high the teachers and courses in which they got higher scores. The cognitive dissonance framework explained how students provided rationalisations to their inconsistent behaviour in the educational setting (Sewar et al., 2017). This study is similar to the present study because they are both based on cognitive dissonance theory. Sewar et al. (2017) focused on evaluation of teachers while the present study focused on the relationship between cognitive dissonance and academic performance.

Studies conducted on the regulation of cognitive dissonance in the educational setting have revealed interesting findings. Khalaj and Savoji (2018) investigated the effectiveness of cognitive self-regulatory education on academic burnout, cognitive dissonance and academic performance of elementary students in Iran which a developing country. Findings indicated that students who received training in cognitive self-regulation showed a significant reduction in dissonance-related distress, making it possible for them to engage more effectively with learning materials. The

researchers found that students in the intervention group implemented self-reflective practices that helped them resolve conflicting thoughts about their academic abilities, reducing anxiety and enhancing concentration (Khalaj & Savoji, 2018). On the other hand, students in the control group continued to display higher levels of cognitive dissonance and burnout, signifying that unregulated cognitive conflicts lead to academic disengagement. The study also identified a strong relationship between self-regulation and increased academic resilience, as students who adopted self-regulatory strategies were better equipped to handle challenging tasks and setbacks. Simlary, Khalaj and Savoji (2018) theorised that cognitive self-regulation enhances intrinsic motivation by enabling students to set realistic academic goals, monitor their progress, and adjust their strategies accordingly. These findings were in line with existing literature indicating that self-regulation is necessary to reduce the negative psychological effects of cognitive dissonance in educational settings.

Furthermore, Khalaj and Savoji (2018) noted that cultural factors determine the effectiveness of self-regulation interventions, particularly in contexts where rigid educational structures limit students' autonomy. Finally, this study contributes to the growing literature on self-regulated learning, indicating its potential as a powerful tool for improving academic outcomes and psychological well-being in students. The data analysis showed that the cognitive self-regulatory education causes reduction in student academic burnout and cognitive dissonance. Consequently, leads to improvement in students' academic performance. Khalaj and Savoji (2018) focused on elementary students whereas the present study was based on learners in secondary school.

The relationship between emotional regulation and academic achievement has received a lot of attention in the educational sector. Karagiannopoulou, Milienos, and Rentzios (2020) explored the

interplay between learning approaches, emotional factors, and academic performance among undergraduate students in Greece, a developing. The study used a quantitative research design with cluster analysis, MANOVA, and decision tree modelling to classify students based on their learning strategies, emotional regulation, and sense of coherence. The researchers classified students into four different student profiles which included: deep-organised students, surface-unorganised students, high-dissonant students with low sense of coherence, and moderate-dissonant students with low need for cognition (Karagiannopoulou et al., 2020). The study revealed that deep-organised students showed high academic success, self-efficacy, and emotional stability, while surface-unorganised students had challenges with emotional distress and academic failures. High-dissonant students demonstrated heightened emotional and cognitive engagement but reported difficulties in maintaining a coherent sense of direction in their studies, leading to increased academic stress. Conversely, moderate-dissonant students maintained a balanced approach to learning, with moderate levels of emotional engagement and resilience. Findings showed that cognitive dissonance plays an important role in academic experiences, particularly in how students manage conflicting cognitive and emotional demands.

Additionally, the research supported previous findings that positive emotions and adaptive learning strategies determine academic achievement, while negative emotions can either hinder or, in some cases, enhance learning motivation. Similarly, Karagiannopoulou et al. (2020) found that personalised academic interventions should address both cognitive and emotional factors to enhance student learning outcomes. Karagiannopoulou et al. (2020) focused on the interplay between emotional factors and academic performance while the present study focused on the association between perceived choice and academic performance.

A number of studies have focused on the performance of learners in Mathematics. Kaya and Shimimol (2017) investigated the relationship between cognitive dissonance and achievement in Mathematics. The research design used was a survey with a sample of hundred students in India. The findings revealed that there was a positive relationship between cognitive dissonance and achievement in Mathematics. In this study, cognitive dissonance referred to an individual's perception of the difference intensity involving a variable between what has been already perceived or learnt and new information. This type of cognitive dissonance is likened to cognitive processes of accommodation and assimilation which are key to knowledge development. According to Piaget (1929), accommodation occurs when a learner encounters new knowledge which seem different from prior knowledge. An individual requires expansion or modification of existing schemas to integrate the new knowledge. The present study focused on cognitive dissonance arising from inconsistency among, beliefs, attitudes and behaviour.

Learners who find school work challenging may be expected to dislike schooling or experience high level of cognitive dissonance. Ahmad and Khasawneh (2021) investigated the level of cognitive dissonance among learners with learning difficulties in English Language in Jordan and particularly Irbid city. It was a qualitative study with the sample of thirty male and thirty female teachers who supported learners with learning difficulties in English Language. The results of the study revealed that the level of cognitive dissonance among learners was average from the perspective of teachers. According to Ahmad and Khasawneh (2021), the average levels of cognitive dissonance can be accredited to teachers' efforts in implementing training programmes about events, attitudes and personality traits that could help them to strive towards cognitive consistency which made their cognitive levels to drop to medium levels. Unlike this study, the

present study employed quantitative methods to analyse data. Similarly, Thaer and Ghbari (2016) conducted a study which aimed at identifying the cognitive dissonance level and its relationship with social responsibility among Hashemite University students. The results indicated that cognitive dissonance and social responsibility were moderate. However, there were no significant statistical differences regarding cognitive dissonance and social responsibility in relation to gender. Furthermore, there was a negative correlation between the total score of cognitive dissonance and social responsibility. Unlike this study, the present study focused on the relationship between academic performance and cognitive dissonance.

The level of cognitive dissonance may vary from one individual to another. Al Otaibi (2012) conducted a study among female university students at Umm Al-Qura University in Saudi Arabia on the relationship among five big factor model of personality, cognitive dissonance and academic performance. The sample comprised two hundred and fifty-three female students. An experimental research design was used in this study. The findings indicated that 16.2% of the research participants experienced high cognitive dissonance while 83.8% experienced low dissonance. The findings also revealed that learners who experienced low level of cognitive dissonance had higher Grade Point Average (GPA) than those who experienced high level of cognitive dissonance. This study differs from the present study which focuses not only on the relationship between academic performance and cognitive dissonance but also the relationship between academic achievement and perceived choice of subjects. Additionally, the present study focuses on secondary school learners and the sample for Al Otaibi (2012) comprised female University students. Furthermore, research evidence indicates that cognitive dissonance or psychological tension may hamper good academic achievement, especially when a person encounters several options related to curriculum

division or whether one has enough time to study all parts of the curriculum which depends on testing (Yousef et al., 2016).

Home-school dissonance may interfere with learning. Tyler (2015) examined the relationship between middle school student's reports of perceived home-school dissonance and their reports of academic efficacy, mastery goal orientation, performance avoidance and academic cheating. The findings indicated that home-school dissonance and academic cheating variables were below the scale midpoints on average. However, regression analyses revealed that home-school dissonance significantly predicted academic efficacy, mastery goal orientation, performance avoidance and academic cheating. Additionally, path analyses revealed that academic efficacy, performance avoidance, goal orientation variables were significant mediators of the relationship between home-school dissonance and academic cheating. This study focuses on academic cheating and home-school dissonance. On the other hand, the present study focused on academic performance and cognitive dissonance.

Cognitive dissonance strategies have been used in the Education sector. Similarly, Wadarti, Permanasari, Mulyani and Rokhim (2021) investigated how multiple representation-based learning through cognitive dissonance strategy could reduce student misconceptions in volumetric analysis, a component in Chemistry. This was a mixed method research with an imbedded experimental design involving sixty-six sophomore students enrolled in the Basics course of Analytical Chemistry. In this study, the questioning was intended to cause cognitive dissonance (conflict) which in turn motivated students to try to understand and find solutions to questions. As a result, there was a change in students' concepts towards a complete understanding. The findings showed that the multiple representation based learning through cognitive dissonance strategy

based lecture programme on volumetric analysis material applied to the experimental class, improved concept mastery when compared to the control class. This further suggests that lectures on volumetric analysis based on multiple representation based learning through cognitive dissonance strategies enhance discovery of concepts and connection of new concepts to existing knowledge (Wadarti et al., 2021). Wadarti et al (2021) focused on reduction of student misconceptions in volumetric analysis using multiple representation-based learning through cognitive dissonance strategy-based learning while the present study focused on the relationship between cognitive dissonance and academic achievement.

Widarti, Permanasari, and Mulyani (2016) conducted a descriptive study examining misconceptions among students enrolled in analytical chemistry with particular focus on redox titration concepts. They employed a case study design and identified misconceptions through the Certainty of Response Index (CRI), an innovative assessment technique that measures students' confidence in their answers. The initial findings revealed that 34.30% of participating students exhibited misconceptions primarily related to concentration calculations, species identification, and understanding the fundamental characteristics of redox titrations. To address these misconceptions, Widarti et al. (2016) employed cognitive dissonance strategies alongside multiple representation methods, which facilitated the cognitive restructuring of students' incorrect understandings. After these targeted instructional interventions, misconceptions notably decreased to 28.17%, indicating a measurable but incomplete success in correcting conceptual errors. Misconceptions were still observed in topics involving microscopic and symbolic representations of chemical processes. The persistent misconceptions originated from factors such as inadequate prior education, limited mathematical literacy, and insufficient capability to interpret abstract

chemical representations. They stressed the importance of instructional methods that incorporate multiple representations and cognitive conflict to effectively address deeply rooted misconceptions. Widarti et al. (2016) concluded that targeted pedagogical interventions are not enough to reduce misconceptions but a multidimensional educational approach is required to fully eliminate them.

Similarly, Widarti et al. (2016) advocated for frequent formative assessments and remedial instruction as effective supplementary strategies to lessen misconceptions comprehensively. The researchers support continuous monitoring of student conceptual development to ensure misconceptions are addressed promptly and effectively. Their findings advocated for integration of both cognitive and pedagogical innovations to promote conceptual clarity and reduce misconceptions in complex scientific subjects. Unlike this study, the present study focused on cognitive dissonance experienced by learners as a result of doing academic subjects which do not align with their intended career pathways.

Multiple representations in Chemistry tend to enhance conceptual understanding. Permatasari, Rahayu, and Dasna (2022) conducted a meta-analysis which explored the role of multiple representations in chemistry education. The study synthesised existing research on how various representational methods enhance students' understanding of chemistry concepts since many students struggle with conceptual learning, leading to misconceptions and difficulties in problem-solving. The research was motivated by the need to provide a comprehensive review of multiple representations in chemistry learning, helping educators implement effective teaching models that integrate macroscopic, sub microscopic, and symbolic representations. This study differs from the present study because it stresses the importance of multiple representations in conceptual

understanding of Chemistry concepts thereby reducing conflict between what the learners already know and new information. While the present study focused on the relationship between cognitive dissonance and academic performance. The connection between the two studies is that they deal with conflicting information.

Physics is a challenging subject. Therefore, the subject has attracted a lot of research. Anchor and Abuli (2020) investigated how to improve academic performance in Thermal Physics using cognitive conflict or cognitive dissonance strategy and conceptual change pedagogy among two hundred and ninety-four learners drawn from six schools using multi-stage sampling technique in Kogi state, Nigeria. The study adopted quasi-experimental design, particularly pre-test, post-test non - equivalent control type. Cognitive conflict instruction strategy involves identifying student current knowledge and confronting students with contradictory knowledge which guide debate among students. The findings indicated that cognitive dissonance instructional strategy enhances academic performance more than conceptual pedagogy and traditional instructional strategy. This study investigated how cognitive dissonance strategy enhances academic performance whereas the present study centred on the relationship between cognitive dissonance and academic achievement.

Widarti, Permanasari, and Mulyani (2017) explored undergraduate students' misconceptions regarding acid-base and argentometric titrations in analytical chemistry courses at the State University of Malang in Indonesia, a developing country categorized within the Third World. The researchers used a descriptive research method to assess misconceptions using a multiple-choice diagnostic test combined with open-ended responses and the Certainty of Response Index. At the onset of the study, the researchers discovered that 28.6% of students displayed misconceptions related to calculation procedures, identification of species in reactions, and the interpretation of

titration curves. Widarti and colleagues identified significant student misconceptions, such as incorrect assumptions about the species present at various stages of titration and errors in calculating pH values before reaching the equivalence point. Then they introduced a learning model utilizing multiple representations integrated with a cognitive dissonance strategy, aimed at provoking cognitive conflicts that would encourage conceptual clarification. After applying this pedagogical intervention, misconceptions significantly decreased from 28.6% to approximately 9.5% for acid-base titration and 9.4% for argentometric titration topics (Widarti et al., 2017). Despite this improvement, complete elimination of misconceptions proved challenging, particularly for abstract concepts represented symbolically or microscopically. The researchers attributed the persistent misconceptions to deep-rooted cognitive issues and stressed the need for continuous pedagogical support and assessment adjustments to lessen the problem. This study was conducted in Indonesia, classified as a developing country and part of the Third World, highlighting specific contextual educational challenges in resource-constrained environments (Widarti et al., 2017). Unlike this study, the present study focuses on the relationship between cognitive dissonance and academic performance

It is important to consider how much students value their school subjects and whether they like them or not. This has a bearing on their academic outcomes (Bailey, 2015). Any form of conflict results in the development of cognitive dissonance (Festinger, 1957). Learners want to be competent and in control of their actions (Harmon-Jones, 2015). Students who have higher self-concept or who believe that they have the ability to do well in subjects like Mathematics, are more likely to obtain better grades than their peers with low self-concept (Khan, 2023). Cognitive

dissonance results from conflicts in learners' beliefs, attitudes and perceptions they hold about academic subjects.

Learners' perceptions about academic subjects may have a great impact on their academic achievement. Fekumo and Omeka, (2022) investigated the influence of students' perception of Mathematics on academic performance among Junior Secondary school students in River State, Nigeria. It was a quantitative study. The findings indicated that students in River State had negative perceptions towards Mathematics and this had a great impact on their academic performance. The findings also revealed that gender and age do not contribute to students' perceptions of Mathematics. However, language and background were found to be predictors of academic performance. Additionally, the research findings revealed that there was a significant weak inverse relationship between the students' perception of Mathematics and academic performance in Mathematics. This study focused on one subject while the present study focused on both compulsory and optional subjects.

Learners usually do well in academic subjects they consider interesting. Similarly, Remali, Zulkhepli, Selavathy, Sanusi and Aris (2015) examined the students' perception of learning, focusing on the content, whether it was interesting or challenging and lesson delivery. The sample comprised three hundred and thirty-one students pursuing Bachelor of Accounting in Malaysian Private and Public Institutions. The findings indicated no significant relationship between students' perceptions of learning (whether the subject was interesting or challenging) and academic performance. However, research findings revealed that there was a significant relationship between lecture delivery and academic performance. Unlike this study which focuses on perceptions of accounting students, the present study is based on secondary school learners.

Learners perceive education differently. Correspondingly, Dulosa, Inocian, Bokeron and Moneva (2019) investigated the perceptions of high school students towards education in Philippines. The sample comprised two hundred and twenty-nine pupils. It was a quantitative study with a survey design. The findings indicated that there is a relationship between students' attitudes about education in terms of knowledge, skills, values and students' attitudes about their goals in terms of self-esteem, demand for work and wealth. Unlike this study, the present study focused on cognitive dissonance and academic performance.

Moreover, Jansen, Schroeders, Lüdtke, and Marsh (2015) investigated how the interplay between different subjects influences students' perceptions of their academic abilities. The findings indicated that while achievement in mathematics positively predicted self-concept in physics and chemistry, it negatively influenced self-concept in German, supporting the hypothesis that contrast and assimilation effects are subject-dependent (Jansen et al., 2015). The study contributed to the verbal-mathematical continuum theory by positioning the sciences within this spectrum, revealing that physics and chemistry aligned more closely with mathematics, while biology occupied an intermediate position. This research result suggests that students perceive different sciences differently, with physics and chemistry reinforcing mathematical self-concept, on the other hand, biology remains distinct. Additionally, the study showed the implications of these self-concept patterns on students' academic choices, with those excelling in mathematics more likely to pursue physics or chemistry-related fields. Conversely, students who performed well in German but poorly in mathematics showed lower self-concepts in science subjects, potentially discouraging them from STEM pathways. Jansen et al. (2015) argued that educational policymakers should consider these psychological effects when designing curricula, ensuring that students are

encouraged to develop balanced competencies across multiple domains. The study also pointed out that academic self-concept is not entirely, determined by performance but also by students' subjective perceptions and social comparisons, further complicating how they assess their strengths and weaknesses. Jansen et al. (2015) focused on how the interplay between different subjects determine the students' perceptions of their academic abilities whereas the present study focused on the relationship between perceived choice of academic subjects and academic achievement.

Secondary school learners usually find Science subjects challenging. Therefore, a number of studies have been conducted in the Science domain. Dah (2022) examined the learners' perceptions of the Physics Teachers' classroom practices. The study was based on eight senior high schools in the Volta Region of Ghana. The study employed a descriptive study design and the sample comprised two hundred high school students. The findings indicated that Physics teachers do not always motivate students and make them appreciate that Physics is relevant in real life situations. The present study focused on academic performance of learners in optional and compulsory subjects unlike this study which focused on Physics.

Subject interest is one of the factors that may have impact on academic achievement. Lagasov (2018) investigated the effect of individual subject interest on academic performance at New York University. The findings indicated that subject interest might help contribute to motivation and increase academic achievement but does not guarantee success. Unlike this study, the present study focuses on academic performance and cognitive dissonance. Additionally, Tezer, Ozden and Elci (2016) examined the relationship between academic achievement and attitudes towards Technology and Design lessons among ninety-eight grade eight students in North Cyprus. The

findings indicated no significant relationship between attitudes and academic performance in Technology and Design courses. Additionally, there was no significant difference in academic performance according to students' gender, attitudes, family, income and parents' education level. Unlike this study, the present study focused on cognitive dissonance and academic performance. However, the two studies are similar because they are based on attitudes. Cognitive dissonance occurs when there is a conflict between attitudes and behaviour.

Learners' attitude towards academic subjects may affect their input. Vossen et al., (2018) conducted a study in Netherlands which revealed that academic success of students depends on their attitude towards a subject. Similarly, Kumar et al (2018) conducted a study on the relationship between attitudes and academic performance. The findings indicated a very low negative relationship which is not statistically significant. There are differences in terms of findings regarding the relationship between attitudes and academic performance. Additionally, Dagnew (2017) investigated the relationship between attitudes towards school values of education, achievement motivation and academic achievement. A correlational design was employed in this study and the sample comprised three hundred and sixty-two students from Gondar in Ethiopia. The results indicated that students' attitudes towards school values of education, achievement motivation and values of education were significant predictors of academic performance. Unlike this study, the present study focused on perceived choice of subjects and academic performance as well as cognitive dissonance.

Attitudes are an integral part of cognitive dissonance. Similarly, Nor and Smith (2018) investigated the workers' attitudes towards training and their relationship to the wellbeing of workers in the United Kingdom. The attitudes towards learning included: motivation to learn, transfer intention

and cognitive dissonance. The results revealed that negative psychosocial characteristics such as negative coping and negativity toward work correlated with negative training attitudes (cognitive dissonance) and negative wellbeing. Additionally, Oduh (2016) examined the dimensions of cognitive dissonance and the extent to which cognitive dissonance influenced the level of job satisfaction among guidance counsellors in public secondary schools in Delta and Edo states in Nigeria. The findings indicated that Nigerian counsellors experienced different levels of cognitive dissonance and that the dimensions of cognitive dissonance were significantly related to the level of job satisfaction. Hence, the need to allow learners to pursue career pathways which are in line with their aspirations to foster their job satisfaction.

Learners who have good attitude towards Mathematics usually excel in the subject. Langat (2015) conducted a study on the effects of students' attitudes on learning and achievement in Mathematics in Kenya, particularly Kiambu County. The sample comprised seven public secondary schools and a descriptive survey design was employed in this study. The findings revealed that most of the students had a positive attitude towards Mathematics and that they perceived Mathematics as an important and manageable subject although this did not translate into good grades. The findings also indicated that perceptions and beliefs, perceived learning abilities as well as prior performance of students in Mathematics affected their motivation and their performance. Unlike this study, the present study focused on academic performance and cognitive dissonance.

2.6. Summary

Most of the studies on cognitive dissonance have been done in high income countries and the prevailing situation in the education sector is quite different from Zambia which is a low-income country. In the United States of America, for example, learners are given an opportunity to choose

subjects which align with their aspirations, interests and abilities (Isaacson, 1985). However, in Zambia the situation is different. Learners in senior secondary school are allocated subjects depending on their performance in Junior secondary school leaving examination (Educating our Future, 1996) and school administrators choose career pathways for them (Mwila, 2022). According to research evidence, administrators are more inclined towards academic subjects than practical subjects because of lack of infrastructure and high cost of buying equipment (Mwila, 2022). Similarly, each Senior Secondary School has been restricted to two options under vocational Career Pathway and two under academic career pathway (Ministry of Education-Zambia Curriculum Framework, 2013). This makes it impossible for schools to cater for all career aspirations of learners. Additionally, cognitive dissonance is influenced by culture, Zambia has a different culture which is predominately collectivistic in nature (Kaani & Machila, 2022). Therefore, the findings from western countries should be generalized with caution to the Zambian context. In the literature which informed this study, there is no empirical study that presented data on the degree of cognitive dissonance among learners in Lusaka District and also on the relationship between cognitive dissonance and academic achievement as well as the association between perceived choice of academic subjects and academic performance in the selected schools of Lusaka District. Hence, the need for this study to fill this gap.

CHAPTER 3

METHODOLOGY

3.1. Introduction

This chapter presents methodology that was used in this study. According to Kasonde-Ng'andu (2013), methodology indicates how data was collected, from where and whom, what research instruments were used, how data was analysed and interpreted. The following elements of research methodology have been highlighted: research design, target population, description of the sample and sampling procedures, research instruments, psychometric properties of the scales that were used in this study, data collection procedures, and lastly techniques and methods that were used for data analysis.

3.2. Theoretical Underpinning of Research on Cognitive Dissonance

This study was guided by positivistic worldview. The positivistic epistemology is that of objectivism. According to Crotty (1998), positivists impartially discover the absolute knowledge about an objective reality. Additionally, they explain relationships, identify causes which influence outcomes, follow deductive approach and employ random sampling (Creswell, 2009). Ontology refers to nature of reality. Positivism maintains that reality exists independently of human perception. In this study factors such as perceived autonomy in subject selection and academic performance are objective phenomena which can be measured and analysed quantitatively. Similarly, Epistemology refers to nature of knowledge. Under positivism, knowledge is derived from observable and measurable facts. This study sought to establish objective relationships between variables by collecting empirical data on students' perceptions of their academic choices and cognitive dissonance variables and their corresponding performance grades.

This study employed quantitative methods to test hypothesis and identify patterns. This aligns with positivistic principles. This involved collection of numerical data through structured instruments and analysing it using statistical techniques to establish relationships. Festinger (1957) posits that individuals experience psychological discomfort when their actions conflict with their beliefs. This discomfort motivates people to reduce inconsistency often through attitude or behaviour changes. Perceived choice leads to reduction in cognitive dissonance and in turn improvement in academic performance. High level of cognitive dissonance results in academic disengagement, increased emotional stress as well as low academic achievement (Zaiedy et al., 2019; Balaman, 2020).

3.3. Research Design

A research design shows the scheme of this study. Quantitative research methods guided this research because of the nature of research objectives which required collection of numerical data. In view of this, Msabila and Nalaila (2013) argue that objectives facilitate development of research methodology, determine the collection, analysis and interpretation of data. A cross-sectional survey was employed to collect data. The rationale for choosing a cross-sectional survey is that it permits quantitative analysis of data. In the light of this Creswell (2009) argue that a survey design provides a quantitative description of trends, attitudes or opinions of population by studying a sample of that population. Similarly, a cross-sectional survey was chosen because of the economy of the design, data was collected from a lot of people at once. Additionally, in a cross-sectional survey data is collected using questionnaires (Msabila & Nalaila, 2013). Similarly, in this study, self-report questionnaires were used and they facilitated quantitative analysis of data.

3.4. Target Population

In this study, the target population comprised Grade Eleven pupils in the two selected secondary schools of Lusaka District, Zambia. The schools from which participants were drawn included one STEM and one regular school. The rationale for choosing a STEM school and a regular school was to capture the different career pathways pursued by these schools and also because of the difference in academic performance between the two schools. Learners enrolled at a STEM school usually score high marks and are expected to perform better. They are also expected to have lower levels cognitive dissonance compared to learners at a regular school. Both schools offered co-education. However, a STEM school was a boarding school while a regular school was a day school. It is common for learners to perform better at a boarding school as compared to a day school. The rationale for choosing these schools with different characteristics was based on the difference in academic performance because of the prevailing situation in the two schools. Similarly, it was expected that there would be differences in level of cognitive dissonance. High level of cognitive dissonance is associated with low academic achievement (Balaman, 2020).

3.5. Study Sample

In this study, the sample comprised two hundred learners who were selected from two secondary schools in Lusaka Province. These schools were chosen because of difference in academic performance, one school was a STEM school while the other was just a regular school. Learners enrolled at a STEM school usually score high marks and are expected to perform better. They are also expected to have lower levels cognitive dissonance compared to learners at a regular school. This was the rationale for choosing the schools with different admission criteria. According to Burns (2006), students who place great value on attainment of high marks are affected less by

conflicts in beliefs even attitudes because the high scores obtained are enough to reduce cognitive dissonance. Therefore, a difference in the level of cognitive dissonance was expected between the two schools.

The sample of two hundred learners was enough to permit quantitative analysis of data (Pallant, 2011). This study was based on Grade eleven students. The rationale for choosing learners in the eleventh grade was that, these learners had already settled down after transition from the tenth grade and they were able to provide reliable information. The sample consisted of 36.5% girls and 63.5% boys, with the higher number of boys due to a difference in response rate. The ages of the learners ranged from 13 to 21 years, with a mean age of 16.03 (SD = 1.14).

3.6. Sampling Procedure

In this study, stratified random sampling was employed to select participants. This was done to have equal representation of participants with regard to gender and type of school (STEM and regular school). Thereby capturing the different career pathways offered at these schools. The rationale for using stratified random sampling is that stratified random sampling ensures that subgroups in the population are represented in a sample (Cohen, Manion, & Morrison, 2007). Additionally, bias is minimised because representatives from all strata or distinct groups of the population are included in the sample (Crotty, 1998).

3.7. Data Collection Instruments

Data collection instruments are used to collect data. For example, questionnaires. Creswell (2009) argues that data collection instruments are gears the researcher engages to undertake a research project. This study adopted already made research instruments to achieve the objectives of this study. The items in these scales have been used both in developing and developed countries

(Otaibi, 2012; Cassel, Chow & Reiger, 2001; Sheldon & Doci, 1993). The instruments have been tested among university and secondary school students. They have been found to be without cultural bias. Therefore, these instruments were not piloted. These instruments included the Cognitive Dissonance Scale (DISS) and Perceived Choice Sub Scale. Academic performance was determined by a common examination that was administered to assess academic performance. The English language used in the instruments was simple for learners to understand the questions. The Cognitive Dissonance scale was based on what is generally accepted to be right or wrong in the world. For example, parents are expected to take care of their children. For each statement which indicated cognitive dissonance, a score of four was allocated to respondent. For the Perceived Choice Sub Scale, the questions were simple and learners were supposed rate the responses in terms of perceived autonomy. Instructions were explained clearly to prevent any form of bias.

3.7.1 Cognitive Dissonance Scale (DISS)

The cognitive dissonance Scale measures the level of cognitive dissonance in an individual (Cassel, Chow & Reiger, 2001). It is based on Festinger (1957) theory of cognitive dissonance. This measure covers two areas of a person's life: the internal personal domain and the external personal domain. It comprises 200 True/False type of items which are divided into eight sub scales. Each sub scale has twenty-five items. The eight sub scales are unidimensional (Chow, 2001). The cognitive dissonance scale also constitutes a lie scale consisting of twenty-one pairs of true or false test items which determine the truthfulness of a test taker. The creators of the test did this to ensure that questions were correctly understood and answered (Chow, 2001). The total score of lie scale ranges from 0-21. Any respondent who scored above fifteen was excluded from the study.

DISS was tested among high school and university students to ascertain its usefulness and validity and it has been used in both low as well as high income countries (Chow, 2001; Otaibi, 2012). The test poses a series of questions about a person's life and indicates dissonance depending on how the responses reflect what is expected to occur in reality. An individual has beliefs about the ideal life. For example, a mother should be caring to her children. The response may reflect the ideal picture of society. For example, "I am a member of a happy family" and the answer is "true."

The scale operates on the assumption that the test taker shares society's views of normalcy and expectations. For example, honesty is virtuous. By reviewing the responses to the true or false questions, it can be deduced if the individual's reality reflects the ideal picture of society presented as normal. If a person comes from an unhappy home where parents are ever fighting, that person is likely to experience dissonance. This is due to the discrepancy between the reality in the home and set standards of society. Each response to DISS question which indicates cognitive dissonance scores four points. The higher the score, the higher the presence of cognitive dissonance in a person's life (Chow, 2001).

The first part of Cognitive Dissonance Test is based on the internal or personal domain. It covers questions based on home and family, emotional control, personal adjustment as well as health and well-being. Questions include: My family encouraged and supported my interests, I lack a sense of responsibility, I tend to think of myself as worthless, I am often troubled by the problem of self-confidence.

The second part of DISS focuses on school and learning, socialisation, perpetuance (survival and power) as well as dominance/subservience. The questions include: I have trouble with Mathematics and numbers, I am overly cautious about making mistakes.

3. 7.2. Perceived Choice sub-Scale

Perceived choice scale is a sub scale of Perceived Choice and Awareness of Self-Scale (PCASS). PCASS was formerly called Self-Determination Scale (Sheldon & Doci, 1993). Perceived choice sub scale assesses individual differences in perceived choice. Perceived choice shows a sense of choice with respect to one's behaviour. It is a five-item sub scale. It contains questions like: I do what I do because it interests me.

3.7.3 Academic Performance

Good academic performance is an important aspect of the educational system. It is a yardstick of quality education. Das Kumar et al (2018) describe academic achievement as the student's academic accomplishment which is represented by grades or percentages. A common examination covering optional and compulsory subjects was used to determine academic performance. The essence of the common examination was to facilitate comparison among learners from different schools. The tests were based on topics learners from the STEM and regular school had already covered. The common examination was prepared by teachers with different fields of specialisation. Most of the teachers are also Grade Twelve examiners. The grading was based on best six subjects just like Examination Council of Zambia does the grading. The subjects were English, Mathematics, Physical Science, Additional Mathematics, Biology, Civic Education, Geography and Technical Drawing. Learners were examined on different days and they were given enough time in which to answer the questions. Thereafter, teachers with appropriate expertise marked the papers. Additionally, learners were given the timetable in advance so that they could prepare for the examination adequately. Similarly, the learners were monitored as they wrote the examination to prevent copying. A comparison was also made between the scores learners obtained in the

common examination and the recorded results in the report cards for the whole academic year. There was a correlation between the documented results and the common examination results.

3.7.4. Reliability of Data collection instruments

Cognitive Dissonance Scale was originally administered to high school and university students to determine its usefulness and validity and it has been used both in high income countries and developing countries (Cassel, Chow & Reiger, 2001; Otaibi, 2012). The Cronbach's alpha coefficient of the entire cognitive dissonance test was 0.960. Table 3.1 shows the Cronbach's alpha coefficients of the sub-scales of the Cognitive Dissonance Scale.

Table 3.1: Alpha Coefficient of Internal Consistency Reliability for Student Sample

Sub-scale	Cronbach's alpha Coefficient
Home and family	0.844
Emotional control	0.843
Personal Adjustment	0.795
Health and Wellbeing	0.841
School and learning	0.767
Socialisation	0.762
Perpetuance	0.754
Dominance	0.788

The Cronbach's alpha coefficients of PCASS was 0.92 (Sheldon, 1993). The standardized alpha coefficient of 0.657 is considered substantial (Burns, 1997) and the alpha coefficients of the two instruments were above this figure. Therefore, these instruments were not pilot tested.

3.8. Data Collection Procedure

Systematic collection of data is of great importance when conducting a research. The researcher first obtained ethical clearance and an introductory letter from Directorate of Research and Graduate Studies to visit the research site. Additionally, permission was sought from the school

administration, participants' parents, and finally participants' consent was sought to conduct this study. The three major instruments included: Cognitive Dissonance Scale, common examination and Perceived Choice Sub Scale. The Cognitive Dissonance Scale and Perceived Choice Sub Scale was administered first followed by the common examination. This was done on different days. Examination for different subjects was done on different days. The researcher distributed the questionnaires to the learners after lessons and the common examination was written after lessons so that learners could have enough time to answer questions.

3.9. Limitations of the Study

The first limitation of this study was based on the cross-sectional survey design. A longitudinal study would have provided more reliable data. Secondly, the findings were based on a small sample of two secondary schools in Lusaka District. Therefore, the results should be generalised with caution to the whole population in Zambia. Thirdly, this study relied mostly on literature from western and Asian countries to interpret the research findings because of little research in Africa and Zambia on cognitive dissonance. As a result, caution should be taken on the applicability of foreign literature to Zambia due to cultural differences. Another limitation was a low response rate from the girls. Therefore, the sample was not balanced in terms of gender. The researcher encouraged female students to participate in the study. However, only few participated in the study.

3.10. Data Analysis

Data analysis means gathering, categorizing, summarising and ordering of data in meaningful terms to form some conclusions from a variety of raw data. Conclusions can be drawn using different methods like narrative and statistical strategies or both depending on the research design and method of data collection strategies (Cohen, Manion, & Morrison, 2007). Quantitative data

analysis was employed in this study. Quantitative data analysis provides the researcher with numerical figures regarding research conclusions, (Kombo and Tromp, 2006). Social Science Statistical Package (SPSS) version 23 was used for data analysis. Data analysis began with descriptive statistics followed by inferential statistics. Correlational analysis, particularly, Pearson product moment correlation was used to establish the relationship between cognitive dissonance and academic performance as well as the association between perceived choice of subjects and academic performance. Additionally, Multivariate Analysis of Variance (MANOVA) was used to determine if there was a significant difference among learners with regard to level of cognitive dissonance as well as to determine if there was a significant difference in academic performance among learners with high and low cognitive dissonance.

3.11. Ethical Considerations

An approval was obtained to conduct this research from Research Ethic Committee of the University of Zambia. The ethical clearance number is HSSREC IRB 00006464. Additionally, permission was sought from District Education Board Secretary. Furthermore, permission was obtained from schools where research was conducted. Consent was sought from parents of participants to allow their children participate in the research. Additionally, consent was sought from learners. Similarly, all the important stakeholders of this study were informed about the nature and purpose of the study. Participants were assured of high level of confidentiality and that information gathered was used purely for academic purposes.

3.12. Summary of the Chapter

This chapter discussed the methodology used in this study. It highlighted the research paradigm, research design, target population, sampling frame, sample, data collection instruments, data

collection procedure, limitations of the study, ethical considerations and finally data analysis which describes how data was analysed. The following chapter describes the presentation of research findings.

CHAPTER 4

PRESENTATION OF FINDINGS

4.1. Introduction

In the preceding chapter, methodology used in this study was presented including the justification for the choice for the methodology. This chapter presents the results of this study. The purpose of this study was to determine the extent of cognitive dissonance among learners as well as the differences in academic performance among learners with high and low cognitive dissonance, and to assess the relationship between academic performance and perceived choice of subjects, as well as the association between cognitive dissonance and academic performance among learners in the selected schools of Lusaka District. The first objective was to determine the extent of dissonance among learners in the selected schools of Lusaka District. The second objective was to determine the differences in the performance of learners with high and low cognitive dissonance. The third objective was to assess the relationship between perceived choice of subjects and academic performance. Lastly, the fourth objective was to identify the relationship between academic performance and cognitive dissonance.

4.2. Descriptive Statistics

Before using inferential statistics to evaluate the difference in academic performance between learners with low and high level of cognitive dissonance, the descriptive statistics of eight sub scales of cognitive dissonance were calculated. Data analysis began with finding the sum of the cognitive dissonance score for each sub scale, then the total score for the personal domain followed by external domain and lastly the total score of cognitive dissonance. The total score of each sub scale of cognitive dissonance is 100 while the total score of cognitive dissonance measuring either

personal or external domain is based on four sub scales representing a total score of 400 for each domain. The internal domain is based on the first four sub scales and the external domain is based on the last four sub scales indicated in Table 4.1. The total score of cognitive dissonance is 800, it is based on eight sub scales. A high score represents high level of cognitive dissonance (Cassel, Chow & Reiger, 2001). Then the descriptive statistics of the eight sub scales of cognitive dissonance scale were calculated. The means and standard deviations of the raw scores of each sub scale are displayed in Table 4.1.

Research findings indicated that the mean score of overall cognitive dissonance was 360.70 (*SD*, 92.38). The cognitive dissonance sub scales represented the personal domain and impersonal domain with means 173.20 (*SD*, 51.72) and 188.54 (*SD*, 52.85) respectively. The level of cognitive dissonance in the personal and external domain was slightly below the midpoint of each domain as indicated by the cognitive dissonance scale. Among the sub scales representing personal domain, family dissonance had the lowest rating with a mean of 27. 86 (*SD*, 15.45) while the subscale with the highest mean was personal adjustment (*M*, 50.12, *SD*, 50.15). The high mean score for personal adjustment implies difficulties in personal adjustment which may have a negative impact on academic performance. While a low mean score for family dissonance signifies a nurturing home environment. On the other hand, the lowest score for the impersonal domain, was based on school and learning. This means that learners had few challenges based on school and learning.

Table 4.1: Descriptive Statistics of Cognitive Dissonance Scale

Cognitive Dissonance sub scale	Mean	Standard Deviation
Family	27.86	15.45
Emotional control	46.08	17.20
Personal adjustment	50.12	15.60
Health and well being	49	17.63
School and learning	40.98	16.29
Socialisation	45.18	16.49
Perpetuance	53.26	17.08
Dominance	46.46	14.41
Personal Domain	173.20	51.72
Impersonal Domain	188.54	52.85
Dissonance Total Score	360.70	98.32

4.3. Level of Cognitive Dissonance among Learners

The threshold for learners who had high cognitive dissonance was the 50^{th} percentile. Proportions of learners at a STEM school and a regular school who scored above the 50th percentile were considered as having high level of cognitive dissonance. Overall cognitive dissonance results revealed that one hundred out of two hundred participants scored above the 50th percentile. Therefore, 50% of the participants experienced high level of cognitive dissonance. Among the girls, 53.42 percent experienced high level of cognitive dissonance. Among the boys, 48.03 percent experienced high level of cognitive dissonance. Table 4.2 indicates the percentages of learners with low and high cognitive dissonance.

Table 4.2: Percentages of learners with high and Low Cognitive Dissonance according to gender

		Cognitive Dissonance		
		Low	High	Total
Gender	Male	33	30.5	63.5
	Female	17	19.5	36.5
Total		50	50	100

4.4. Assumption Checking

Assumption checking analyses were conducted to establish how well sets of data met assumptions needed for inferential statistical analyses. In this study, intercorrelations between variables are relatively modest with none surpassing 0.80. The correlations met the standard stipulated by Cohen (1988). All the data sets approached normal distribution as signified by Q-Q plots of cognitive dissonance scores, perceived choice and academic performance scores. The two Multivariate analyses of variance (MANOVA) met the following assumptions. For the first MANOVA which evaluated the effects of school type, gender and their interaction effects on cognitive dissonance; results of evaluation assumptions of normality, homogeneity of covariance matrices [The box's M of 128.30 indicates that the homogeneity of covariance-matrices across groups is assumed (F (108, 53415) = 1.09, p = .24], linearity and multicollinearity were satisfactory. Additionally, homogeneity of variance assumption was satisfied based on the levene's F test results presented in Table 4.3 for seven measures of cognitive dissonance and these were not statistically significant ($p > 0.05$); except for the cognitive dissonance measure based on emotional control which was statistically significant ($p < 0.05$).

Table 4.3: Levene's Test of Equality of Means

Cognitive dissonance Sub scales	*F*	*Df*[1]	*Df*[2]	*P*
Family	1.75	3	196	.159
Emotional control	4.12	3	196	.007
Personal adjustment	1.31	3	196	.273
Health/wellbeing	.89	3	196	.445
School/learning	.96	3	196	.415
Socialisation	.81	3	196	.491
Perpetuance	.03	3	196	.993
Dominance	1.6	3	196	.186

For the second MANOVA, results of evaluation assumptions of normality, homogeneity of covariance matrices [The box's M of 26.61 indicates that the homogeneity of covariance-matrices across groups is assumed *F* [(42 23862.79) = .60, *p* = .98], linearity and multicollinearity were satisfactory. Additionally, all the three variables representing academic performance in the second MANOVA analyses were not statistically significant (p > 0.05) as indicated by levene's test results in Table 4.4. Therefore, the assumption of equality of variance was not violated.

Table 4.4: Levene's Test of Equality of Means

Variable	***F***	***Df*[1]**	***Df*[2]**	***P***
Overall performance	.97	7	192	.45
Compulsory subjects	1.18	7	192	.32
Options	.94	7	192	.48

4.5. Inferential Statistics

The first objective of the first inferential statistics was to answer the following questions: (a) Do the levels of cognitive dissonance differ significantly according to school type or does school have statistically significant main effect on the level of cognitive dissonance? (b) Does the level of cognitive dissonance differ according to gender?

4.5.1 Multivariate Analysis of Variance: Main and Interaction Effects

A 2x2 Multivariate analysis of variance (MANOVA) was conducted to evaluate the effects of school type (STEM school, regular school), gender (male, female), and their interaction effects on combined cognitive dissonance variables. The Pillai-Bartlett V test was used because the test is more robust in analysing data (Pallant, 2011) especially if one of the assumptions is violated. For example, the sample was not balanced. This happened because of low response rate among the girls.

Furthermore, with the use of Pillai-Bartlett V Test criterion, MANOVA results showed that gender and school type had statistically significant main effects on the combined cognitive dissonance variables, F (8, 189) = 3.82, $P < 0.05$, Pillai-Bartlett's V = 0.14: partial $\eta 2 = 0.14$ and F (8, 189) = 2.95, $p < 0.05$, Pillai-Bartlett's V = .11; partial $\eta 2 = 0.11$ respectively. Similarly, the interaction effect of gender and school type was significant, (8, 189) = 2.02, $p < 0.05$, Pillai=Bartlett's V = 0.08, Partial $\eta 2 = 0.08$. Results are displayed in Table 4.5. There is a statistically significant difference between males and females in the levels of cognitive dissonance. Additionally, there is also statistically significant differences in the levels of dissonance according to school type.

Table 4.5: Pillai-Bartlett's Test for MANOVA Effects

Effect	Value	*F*	Hyp. *Df*	Error df	*P*	Partial η2
School	.11	2.95	8	189	.004	.11
Gender	.14	3.82	8	189	.000	.14
School*gender	.08	2.02	8	189	.046	.14

When results for dependent variables were considered separately, the difference concerning cognitive dissonance variables to reach statistical significance between the two schools using a Bonferroni adjusted alpha level was based on personal adjustment, F (1, 196) = 7.90, p = 0.005 and socialisation F (1, 196) = 11.41, p = .001. The Bonferroni adjustment is employed to reduce the chance of type 1 error. It involves dividing the original alpha level, by the number of dependent variables (Pallant, 2011). Therefore, the Bonferroni adjusted alpha level was .00625. Furthermore, in this study, the significant difference between males and females using Bonferroni adjusted alpha level was based on personal adjustment as well as health and wellbeing, F (1, 96) = 8.91, p = 0.003 and F (1, 196) = 12.96, p = .000 respectively. Additionally, an inspection of mean scores indicated that girls recorded high cognitive dissonance than boys.

Additionally, a 2x2x2 multivariate analysis of variance (MANOVA) was conducted to evaluate the effects of school type (STEM school, regular school), gender (male, female) and level of cognitive dissonance (high dissonance, low dissonance) as well as their interaction effects on academic performance.

MANOVA results indicated that only the level of cognitive dissonance had a statistically significant main effect on the combined academic performance scores while school and gender did

not have a significant main effect on the combined academic performance scores, F (3, 190) = 4.39, $p < 0.05$; Pillai Bartlett's V = 0.07, partial η2 = 0.07; F (3,190) = .35 $p > 0.05$; Pillai Bartlett's V = 0.005, Partial η2 = 0.005 and F (3, 190) = 0.64, P > 0.05; Pillai Bartlett's V = 0.01, Partial η2 = 0.01 respectively. This means that there was a statistically significance difference in terms of academic performance according to the level of dissonance. However, there was no statistical difference between males and females according to academic performance. Additionally, there was no statistically significance difference between schools in terms of academic performance. The main effect of the interaction of gender and school; gender and level of cognitive dissonance, school and dissonance, then lastly, gender, school and level of dissonance were not statistically significance, F (3, 190) = .27, $p > 0.05$, Pillai Bartlett's V = 0.004, Partial η2 = 0.004; F (3, 190) = .13, $P > 0.05$; Pillai Bralette's V = 0.002, Partial η2 = 0.002; F (3,190) = 1.55, $P > 0.005$, Pillai Bartlett's V = 0.02, Partial η2 = 0.02; F (3 190) = 1.48, $p > 0.05$, Pillai Bartlett's V = 0.023, Partial η2 = 0.023. The results are indicated in Table 4.6.

When results for dependent variables were analysed separately, the significant difference in terms of academic performance using Bonferroni adjusted alpha level was based on overall academic performance, F (1,192) = 10.83, P = .001 and performance in compulsory subjects, F (1, 192) = 13.19, p = .00. Furthermore, an inspection of mean scores indicated that learners with low cognitive dissonance recorded higher academic performance than learners with high cognitive dissonance.

Table 4.6: Pillai-Bartlett's Test for MANOVA Effects

Effect	Value	F	Hyp Df	Error Df	P	Partial $\eta 2$
Level of dissonance	.07	4.39	3	190	.005	.07
School	.005	.35	3	190	.791	.005
Gender	.01	.64	3	190	.588	.01
Gender*school	.004	.27	3	190	.850	.004
Gender* dissonance	.002	.13	3	190	.942	.002
School *dissonance	.02	.55	3	190	.202	.02
Gender*school*dissonance	.023	1.48	3	190	.221	.023

4.6 Relationship between Cognitive Dissonance and Academic Achievement

The Pearson correlation test was employed to assess the direction and strength of associations among variables. Five Sub scales of cognitive dissonance correlated negatively with overall academic achievement except three which were not statistically significant. These included dissonance in the family, dissonance connected to socialization and dissonance based personal adjustment. Previous studies show contrary findings. For example, Yu, Wang et al. (2023) found that the quality of personal relationships correlated positively with academic performance and that among the three types of relationships: student parent relationship, student teacher relationship and student peer relationships, student peer relationship was found to be most closely associated with academic performance. Studies have been done on the relationship between personal adjustment and academic achievement and they have yielded different findings. Karaday (2017) reported a negative relationship between psychological adjustment and academic achievement while Ayele (2018) reported a positive relationship between adjustment and academic performance.

Dissonance based on emotional control had an inverse relationship with academic performance (r = - 0.20, $p < 0.01$). This means that when cognitive dissonance based on emotional control increases, academic performance goes down. Health and wellness based cognitive dissonance had a negative correlation with academic performance (r = -0.14, $p < 0.05$). Learners experiencing dissonance based on health and wellness may not perform well at school. As cognitive dissonance based on health increases their academic performance is likely to go down. There was a negative relationship between cognitive dissonance based on school and learning and academic performance (r = -0. 15, $p < 0.05$). Learners with high dissonance based on school and learning may not do well at school (Otaibi, 2012). As dissonance based on school increases, academic performance goes down. Cognitive dissonance based on perpetuance correlated negatively with academic achievement (r = -0.16, $p < 0.05$). Cognitive dissonance based on perpetuance focuses on self-sustenance, continuity or preservation. An inverse relationship entails diminishing academic performance as dissonance increases. Cognitive dissonance associated with dominance correlated negatively with academic achievement (r = -0.20, $p < 0.05$). Dominance refers to the tendency of being assertive or imposing one's will on others. An inverse relationship implies that when cognitive dissonance based on dominance increases, academic performance goes down. Table 4.7 shows the correlations between cognitive dissonance and academic performance.

4.7. The Relationship between Perceived Choice of Subjects and Academic Performance.

The mean score of the perceived choice scale was 3. 03 (*SD*, 1.14). The mean indicates a moderate level of perceived choice. The total score of the scale was 6. However, the relationship between perceived choice of subjects and overall academic achievement was not statistically significant (r = -0.01, $p > 0.05$). In other studies, perceived choice correlated positively with academic performance (Petall et al., 2010; Flowerday & Shraw, 2000). However, in the present study it did

not. This finding is in line with the study which revealed that student choice may have educational benefits but no convincing evidence was provided indicating that it improves academic performance among medical students in the United Kingdom (Murphy et at., 2013). Table 4.7 shows the correlations between perceived choice of subjects and academic performance.

Table 4.7: Correlations of Academic Achievement with Perceived Choice of Subjects and Cognitive Dissonance

No.	1	2	3	4	5	6	7	8	9
1 Academic Performance	-								
2 Perceived Choice	-0.01	-							
3 Family and Content Mode	-0.034	-0.078	-						
4 Emotional Control	-.197**	-.181*	.374**	-					
5 Personal Adjustment	-0.094	-0.013	.368**	.651**	-				
6 Health and Wellness	-.140*	-0.054	.402**	.544**	.603**	-			
7 School and Learning	-.149*	-.226**	.375**	.540**	.442**	.468**	-		
8 Socialization	-0.12	-.181*	.345**	.692**	.647**	.583**	.550**	-	
9 Perpetuance	-.155*	-0.012	.272**	.515**	.535**	.587**	.445**	.499**	-
10 Subervience/Dominance	-.196**	-0.122	.351**	.573**	.530**	.562**	.485**	.603**	.628**

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

4.8 Summary of the Chapter

This chapter highlighted research findings of this study. Data analysis began with finding the sum of the cognitive dissonance score for each sub scale, then the total score for the personal domain followed by the external domain and lastly the total score of the cognitive dissonance scale. This chapter has also presented the descriptive statistics of the eight sub scales of cognitive scale which include the mean and standard deviation for each sub scale. The overall mean score of the cognitive dissonance scale was 360.70 (*SD*, 98.32) and the total score for the instrument was 800. After that percentages of learners with high and low level of cognitive dissonance have been presented.

Findings indicated that 50% of learners experienced high level of cognitive dissonance. This chapter also highlights MANOVA results indicating the difference in the level of cognitive dissonance between the two schools. The findings indicated that there was a significant difference among learners from the two school in the level of cognitive dissonance. Similarly, MANOVA results indicating the difference in academic performance among learners with high and low cognitive dissonance have been presented in this chapter. Lastly, this chapter presents results of the Pearson correlation test. Findings indicating the correlations of academic achievement with cognitive dissonance variables as well as perceived choice of academic subjects have been presented in this chapter. Five sub scales of cognitive dissonance variables correlated negatively with academic achievement except three which were not statistically significant. The cognitive dissonance variables which correlated negatively with academic performance included: cognitive dissonance based on emotional control, health and wellbeing, cognitive dissonance based on perpetuance, dominance and cognitive dissonance based on school and learning. The other three cognitive dissonance sub scales which were not statistically significant included: socialisation based cognitive dissonance, dissonance in the family and cognitive dissonance based on personal adjustment. Additionally, the relationship between perceived choice of academic subjects and academic achievement was not statistically significant. The following chapter presents discussion of findings.

CHAPTER 5

DISCUSSION OF FINDINGS

5.1. Introduction

The previous chapter presented findings for this study. In this chapter discussion of research findings are presented. The first objective was to determine the extent of cognitive dissonance among learners in the selected schools of Lusaka District. The second objective was to determine the differences in performance between learners with high and low cognitive dissonance. The third objective was to assess the relationship between perceived choice of school subjects and academic performance. Lastly, the fourth objective was to identify the relationship between academic performance and cognitive dissonance.

5.2. Level of Cognitive Dissonance as Indicated by Descriptive Statistics

Research findings indicated that the mean score of overall cognitive dissonance was 360.70 (*SD* = 92.38) and the total score of the instrument was 800. The mean score of overall cognitive dissonance was slightly below the midpoint of the cognitive dissonance scale. Results also indicated that 50% of learners experienced high level of cognitive dissonance and the other 50% of learners had low dissonance. These findings are not in line with Al Otaibi (2012) who found that 16.2% of the research participants experienced high cognitive dissonance while 83.8% experienced low dissonance. On the contrary, the results of this study show a higher percentage of learners with high level of cognitive dissonance. This could be attributed to the fact that learners are allocated school subjects depending on their academic performance in Junior Secondary School Leaving Examination (Educating our Future, 1996). Additionally, each Senior Secondary School has been restricted to two options for either academic or vocational Career Pathway

(Ministry of Education-Zambia Curriculum Framework, 2013). Therefore, it is impossible for schools to cater for all career aspirations of learners. Consequently, learners are obliged to do subjects which are not in line with their intended future careers. On the other hand, not all learners like all subjects even if they align with their career pathways. They feel that they cannot excel in certain subjects as indicated by the study conducted by (Dulosa et al., 2019). This predisposes learners to heightened level of cognitive dissonance. Festinger posits that any conflict in beliefs, attitudes and behaviour results in cognitive dissonance. Therefore, leaners in Zambia were expected to experience high level of cognitive dissonance because of limited subject choice. In the United Kingdom and the United States of America, for example, learners are allowed to choose career pathways depending on their aspirations and abilities (Issacson, 1985; Savickas, 2013). This leads to reduction in cognitive dissonance. Additionally, perceived choice leads to reduction in the level of cognitive dissonance and in turn leads to development of favourable attitude towards the selected academic subjects (Festinger, 1957). If learners are given an opportunity to choose subjects which are in line their intended career pathways and strengths, this can lead to reduction in cognitive dissonance and also improvement in academic achievement.

The overall cognitive dissonance mean score was slightly below the midpoint of the cognitive dissonance scale. This finding is in with Thaer and Ghbari (2016) whose findings indicated that cognitive dissonance and social responsibility were moderate among Hashemite University students in the Middle East particularly Jordan. The cognitive dissonance sub scales representing the personal domain and impersonal domain with means 173.20 (*SD* = 51.72) and 188.54 *(SD* = 52.85) respectively indicated that cognitive dissonance was slightly below the midpoint of the cognitive dissonance scale. The total score for each domain is 400, each comprises four scales and

each scale has a total score of 100. The level of dissonance was different in the sub scales. Among the sub scales representing personal domain, family dissonance had the lowest rating with a mean of 27. 86 (*SD* = 15.45) while the subscale with the highest mean was personal adjustment (*M* = 50.12; *SD* = 50.15). Even the sub scale with the highest mean score indicated moderate level of cognitive dissonance. These findings resonate with Ahmad and Khasawneh (2021) whose findings indicated moderate level of cognitive dissonance among learners in Jordan who had learning challenges in English Language. The moderate level of cognitive dissonance among learners was accredited to interventions implemented by teachers. The low level of cognitive dissonance based on family environment as indicated by the mean score can be attributed to a nurturing home environment.

The high mean score for personal adjustment implies difficulties in personal adjustment which may have a negative impact on academic performance. For the impersonal domain, dissonance based on school and learning had the lowest mean score (*M* = 40.98; *SD* = 16.29). On the other hand, dissonance based on perpetuance had the highest mean score (*M* = 53.26; *SD* = 17.08). The highest mean score of perpetuance also indicates moderate level of cognitive dissonance. This indicates that learners had challenges with perseverance. On the other hand, the mean scores of cognitive dissonance based on school and learning and family dissonance were below the scale midpoints. Therefore, these findings resonate with Tyler (2015) whose findings among the middle school students in the United States of America indicated cognitive dissonance level that was below midpoint of the cognitive dissonance scale.

The findings in this study seem to be in agreement with research results in America (Tyler, 2015) and, Ahmad and Khasawneh (2021) who conducted a study in Jordan regardless of the differences

in culture. In the United States of America, learners are given an opportunity to choose career pathways which are in line with their aspirations and abilities. Therefore, they are not expected to experience high cognitive dissonance. Learners with high cognitive dissonance in Zambia were expected to be few considering that Zambia has a collectivistic kind of culture. According to Triandis (1995), individuals from collectivistic cultures do not always experience dissonance when their private behaviour is inconsistent with their attitudes. This may explain why the overall mean score of cognitive dissonance in this study was slightly below the midpoint of the cognitive dissonance scale.

5.3. Level of Cognitive Dissonance According to School and Gender

The first objective of the first inferential statistics was to answer the following questions: (a) Do the levels of cognitive dissonance differ significantly according to school type or does school have statistically significant main effect on the level of cognitive dissonance? (b) Does students' level of cognitive dissonance differ according to gender?

A 2x2 Multivariate analysis of variance (MANOVA) was conducted to evaluate the effects of school type (STEM school, regular school), gender (male, female), and their interaction effects on cognitive dissonance. Furthermore, MANOVA results showed that gender and school type had statistically significant main effects on the combined cognitive dissonance variables. Similarly, the interaction effect of gender and school type was significant. There was a statistically significant difference between males and females in the levels of cognitive dissonance. Girls experienced high cognitive dissonance as indicated by mean scores. This could be due to low self- efficacy (Tiyuri et al. 2016). This finding is contrary to the findings by Ahmad and Khasawneh (2021) who found that there were no significant differences between boys and girls in level of cognitive dissonance.

Additionally, there was also a statistically significant difference in the levels of cognitive dissonance according to school type. This finding is in line with the cognitive dissonance theory. It was expected that learners from the regular school would have higher cognitive dissonance. This could be due to low self-efficacy (Sarwar et al., 2017) since the regular school enrolled learners with lower grades as compared to the STEM school. Higher cognitive dissonance could have resulted from the conflicting beliefs and attitudes towards their academic subjects as well as low self-efficacy (Festinger, 1957; Sarwar et al., 2017; Tiyuri et al., 2016) especially for the regular school. According to Festinger (1957), conflicting beliefs, attitudes towards academic subjects result in psychological discomfort which is referred to as cognitive dissonance. According to the study done by Mwila (2022) in six schools of Lusaka Province, school administrators chose the career pathways for their respective schools and learners were not given an opportunity to choose subjects which align with their aspirations (Mwila, 2022). Similarly, Burns (2006) found that students who place great value on attainment of high marks are affected less by conflicts in beliefs even attitudes because the high scores obtained are enough to reduce cognitive dissonance.

5.4. Academic Performance of Learners with High and Low Cognitive Dissonance

The second research objective was to determine whether there was a significant difference in academic performance among learners with high and low cognitive dissonance. MANOVA results indicated that there was a significant difference in academic performance among learners with high and low cognitive dissonance. This finding is in line with Karagiannopoulou (2020) who found that learners with high cognitive dissonance demonstrated heightened emotional distress and academic failure. These findings are also in line with Balaman (2020) who found that students with high level of home-school dissonance had lower Grade Point Average (GPA) as compared to

those with low home-school dissonance. Similarly, Brown-Wright et al. (2016) found that home-school dissonance predicted both amotivation and classroom disruptive behaviour among high school juniors and seniors in the United States of America. In view of these findings, a learner who is not motivated to learn and engages in disruptive behaviour is likely to have low grades in school. High cognitive dissonance may arise because of negative attitudes and beliefs towards academic subjects and negative perceptions towards subjects leading to low academic achievement (Fekumo & Omeka, 2022). Low self- efficacy in the subjects learners were allocated might have also led to high cognitive dissonance among learners with low academic achievement (Tiyuri et al., 2016; Matovu, 2020). Cognitive dissonance has been associated with low academic achievement (Zaiedy et al., 2019; Balaman, 2020).

According to the conceptual framework which guided this study, perceived choice would enable learners choose subjects which are in line with their intended career pathways and abilities. This in turn would boost the pupils' motivation to learn and lead to reduction of cognitive dissonance. Thereby enhancing academic performance. The findings in this study resonate with the conceptual framework because learners with low cognitive dissonance had better grades than learners with high level of cognitive dissonance.

5.5. Relationship between Perceived Choice of Subjects and Academic Performance

The mean score of perceived choice scale indicated moderate level of perceived choice. However, the relationship between perceived choice of subjects and academic performance was not statistically significant. This finding is in line with Murphy et al. (2013) who investigated the impact of choice on academic performance among 301 medical students. The research results showed that there was no association between allocated preferences and student selected

component grade. The findings also indicated that student choice may have educational benefits and that student choice plays an important role in undergraduate curriculum in many contemporary medical schools. However, there was no convincing evidence that choice improves academic performance.

Other studies indicate different findings regarding the relationship between choice and academic performance. According to the study done by Beymer and Thompson (2015), intrinsic motivation arises when a person possesses natural interest in a subject and children are more likely to experience intrinsic motivation from choice than adults. Perceived choice among learners also enhances academic performance. Huéscar Hernández et al., (2020) found that autonomy-supportive teaching strategies create an environment that enhances students' perseverance, leading to improved academic outcomes. In view of this, Flowerday and Schraw (2000) found that choice encourages and enhances learning and motivation. Similarly, Petall, et al. (2010) conducted a study in which students were given a choice between different homework assignments. The findings revealed that learners developed more interest in homework when they were given choice between two homework assignments. Their test results improved as well as grade point average (GPA) and they completed their assignments. The research findings of this study are contrary to the cognitive dissonance theory, particularly the free choice paradigm. According to this paradigm, it was expected that perceived choice would lead to development of positive attitude resulting in the improvement of academic performance. Therefore, a positive relationship between perceived choice of academic subjects and academic performance was expected. However, in this study it was not statistically significant.

The relationship between academic performance and perceived choice was not significant. This could be attributed to cross-cultural differences regarding choice. The ideal self-concept for individualistic societies regarding decision making is based on the need to make choices independently (Michail et al., 2014). Collectivistic cultures incorporate and reflect the desires and preferences of the group members. Zambia and many other African countries have predominately collectivistic culture. Therefore, perceived choice of academic subjects could have been considered less important. Hence, the relationship between perceived choice of subjects and academic performance was not significant.

Additionally, the relationship between perceived choice and academic performance was not significant because learners are usually allocated subjects in Zambian schools depending on their performance (Ministry of Education-Educating our Future, 1996). Hence, and they did not see it as an entitlement. Similarly, Mwila (2022) conducted a study on the implementation of career pathways among learners in secondary schools in Zambia. The findings indicated that there was information gap on career choice among learners in secondary schools. The learners did not know the meaning of the concept career choice and they were not guided on the two career pathways which include academic and vocational career pathway. All the learners in the six schools which formed the sample, confessed that they were not given information on career choice related to vocational pathway and no school offered Music. Since learners were not aware of the relationship between academic subjects and their prospective careers, they did not value the choice of subjects.

5.6. The Relationship between Cognitive Dissonance and Academic Performance

In this study, academic performance correlated negatively with five sub scales of cognitive dissonance. These findings are in line with AL Otaibi (2012) who found a negative relationship

among all sub scales of cognitive dissonance and academic performance. However, in this study three sub scales of cognitive dissonance did not have a statistically significant relationship with academic performance. These include: cognitive dissonance based on the family, dissonance connected to socialization and personal adjustment dissonance.

Previous studies show varied results. Bagum et al. (2022) found that socialisation level has a great value for academic related purposes and that most of the respondents agreed that socialization build confidence and good communication abilities. Similarly, Yu et al. (2023) found a significant positive relationship between academic performance and personal relationships. Additionally, the research findings indicated that among the three types of relationships: student parent relationships, student teacher relationships, student peer relationships correlated most closely with academic performance among the fourth and eighth graders in a Chinese city called Qingdao.

Family environment has a great impact on the development of a child and can either enhance academic performance or cause a child to perform poorly at school. According to the study conducted by Arora and Singh (2017) in India on factors affecting academic performance of college students, the fifth factor was conducive family environment for studying, encouragement from parents and parents' involvement in the academic performance of a child. Similarly, Li et al. (2022) conducted a study among Chinese students to explore the effects of parent student relationships on academic performance as well as the chain mediating the roles of gratitude and psychological capital. The results revealed that parent student relationships correlated positively with academic performance of college students. These findings do not align with the present study because there was no statistically significant relationship between academic achievement and family dissonance. This could be due to the fact that learners do not value the family support in

relation to academic performance. In view of this, Taseer et al. (2023) found that parents did not know how to support their children academically and they seemed to be uninterested in their children's academic performance. After being guided, parents realised that their input was valuable and they knew how to support their children academically.

Furthermore, students felt that the input from parents was not important at the beginning of the study. After the researchers explained to the parents how they can support their children academically, the students changed their perceptions regarding the input of parents in their academic performance. Then learners began to appreciate their parents' input. Consequently, students were motivated to collaborate with their families regarding school work. The researchers trained families how to provide accurate feedback that would help learners improve academically. Additionally, Taseer et al. (2023) found that family involvement is one of the major factors affecting academic performance leading to improvement in grades, attendance and motivation to learn. Research findings also indicated that parents who were more involved in their children's education were also able to provide academic resources, guidance, create supportive home environment and were also likely to establish high academic expectations (Taseer, 2022). Harris et al (2020) also found a positive relationship between family environment and school engagement among Turkish youths during middle school years.

Regarding personal adjustment, Ayele (2018) found a positive relationship between psychological adjustment and academic performance. This is contrary to the findings in this study because the relationship between academic performance and personal adjustment was not statistically significant. This could be due to the fact that learners did not regard it as an important factor determining academic performance. Most of the studies indicate a positive relationship between

academic performance and personal adjustment (Fateel. 2019; Msedin, Fauzee, & Kaur, 2017). Conversely, Koradag (2017) found that psychological adjustment had a negative impact on academic performance.

In this study, there was a statistically significant negative relationship between academic performance and cognitive dissonance based on emotional control. Cognitive dissonance based on emotional control may imply failing to control emotions. For example, some people may say I love while in the actual fact they do not mean what they are saying. This finding is in agreement with a meta-analysis which revealed a negative correlation between anxiety and academic performance among University students (Tang & He, 2023). On the other hand, Tao et al. (2021) found that positive academic emotions promoted learning. The research findings further indicated that academic anger had a statistically higher learning ratio than sad emotions whereas confusion and boredom were found to be negatively correlated with learning gains.

Cognitive dissonance based on health and wellness correlated negatively with academic performance. Ailing health impacts negatively on academic performance. This finding aligns with Shaw, et al. (2015) who found that unhealthy children are more likely to experience school failure and dropout. For example, learners who are sickly may not consistently attend classes and that may affect their performance at school negatively. Health includes both mental health and physical health. Agnafors et al. (2020) conducted a study which revealed that lack of good mental health in early childhood and adolescence results in higher risk of poor academic performance showing the need for early intervention in terms of awareness and treatment to foster academic performance. There was a significant inverse relationship between cognitive dissonance based on school and learning and academic performance in this study. Cognitive dissonance based on school and

learning implies academic challenges. Arora and Singh (2017) conducted a study in India on factors affecting academic performance of college students. The findings indicated that academic achievement is an interplay of various factors. The significant predictors of academic performance included teaching effectiveness which was perceived as the most important factor with the highest variance of 17.99%. It centres on teachers' expertise regarding the subject matter. It also includes updated knowledge relevant to the subject, open discussion and teaching skills.

Dominance refers to tendency of being assertive or confident. There was an inverse relationship between dissonance based on dominance and academic performance. Cognitive dissonance based on dominance is the opposite of being assertive or confident. As dissonance based on dominance goes up, academic performance goes down. Similarly, perpetuance refers to self-sustenance and preservation. While cognitive dissonance based on perpetuance means the opposite. There was also a negative relationship between cognitive dissonance based on perpetuance and academic performance. In view of these findings, Tiyuri et al. (2016) found that self-efficacy is one of the main factors influencing academic performance.

The findings also indicated a significant relationship between research efficacy and successful execution of research. Self-efficacy was defined by Bandura as belief in one's abilities in performing tasks successfully, and it also focuses on the ability to cope with life (Bandura, 1977; Dumbauld, 2014). An inverse relationship between dissonance based on dominance with academic performance aligns with the study by Tiyuri et al. (2016) as well as the inverse relationship between perpetuance and academic performance.

The inverse relationship between academic performance and the five scales of cognitive dissonance align with the conceptual framework as well the cognitive dissonance theory. It was

expected that that cognitive dissonance could be associated with low academic achievement. This is due to conflicting beliefs and attitudes towards academic subjects allocated to learners which do not align with their intended careers. Similarly, learners may not have high self-efficacy to pursue knowledge in those subjects.

5.7 Summary of the Chapter

This chapter presented discussion of findings for this chapter. The level of cognitive dissonance is high among learners. Fifty percent of learners experienced high level of cognitive dissonance. This can be attributed to a number of factors such as the negative attitude and beliefs learners have towards the academic subjects they are doing. Additionally, an inspection of mean scores indicated that girls recorded higher cognitive dissonance than boys. This could have resulted from the negative beliefs and attitudes girls may have concerning education which are rooted in culture (Nakamba & Kaani, 2023). Similarly, there was a significant difference in the level of cognitive dissonance among learners with high and low cognitive dissonance. Learners with low cognitive dissonance performed better as indicated by mean scores. This is line with Zaiedy et al. (2019) who found that cognitive dissonance hinders learning and causes heightened emotional stress among learners. Furthermore, there was an inverse relationship between cognitive dissonance and academic performance. This is in line with prior findings (Khalaj & Savoji, 2018). However, the relationship between perceived choice of academic subjects and academic performance was not statistically significant. Previous findings indicate conflicting results (Murphy et al. 2013, Beymer and Thompson, 2015). The following chapter presents the conclusion and recommendations based on this study.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1. Introduction

The previous chapter discussed the findings of this study. This chapter presents summary of research findings, conclusions, recommendations, limitations of the study and suggestions for further research.

6.2. Summary of Research Findings

The most significant research findings of this study are presented below regarding the extent of cognitive dissonance among learners in selected schools of Lusaka District. Furthermore, the findings on academic performance of learners with high and low cognitive dissonance have been presented, including results on the association between academic achievement and perceived choice of academic subjects as well as the relationship between cognitive dissonance and academic performance.

The overall mean rating of cognitive dissonance among learners indicated moderate level of cognitive dissonance. However, fifty percent of learners recorded high cognitive dissonance and the other fifty percent of learners recorded low dissonance. The level of cognitive dissonance was analysed in the personal and impersonal domain. For the personal domain, the sub scale of cognitive dissonance with the highest score was based on personal adjustment while dissonance connected to family had the lowest rating. For impersonal domain, cognitive dissonance based on perpetuance had the highest rating whereas cognitive dissonance based on school and learning had the lowest mean rating. Even the sub scales with the highest mean rating indicated moderate cognitive dissonance which was slightly below the midpoint of the cognitive dissonance scale.

The level of cognitive dissonance was compared between the two schools. The results indicated a significant difference between the two schools according to the level of cognitive dissonance. There was also a significant difference in the level of cognitive dissonance among learners according to gender. When results for dependent variables were considered separately, the only difference concerning cognitive dissonance variables to reach statistical significance between the two schools, using a Bonferroni adjusted alpha level was based on personal adjustment, and socialisation. Furthermore, in this study the only significant difference between males and females using Bonferroni adjusted alpha level was based on personal adjustment as well as health and wellbeing.

Additionally, there was a statistically significance difference in terms of academic performance according to the level of dissonance between the two schools. However, there was no statistical difference between boys and girls according to academic performance. Furthermore, there was no statistically significance difference between schools in terms of academic performance. An inspection of mean scores indicated that learners with low cognitive dissonance recorded higher academic performance than learners with high cognitive dissonance. When results for dependent variables were analysed separately, the only significant difference in terms of academic performance using Bonferroni adjusted alpha level was based on overall academic performance, and performance in compulsory subjects.

Perceived choice of academic subjects among learners was rated moderate as indicated by the mean score. However, the relationship between perceived choice of subjects and academic performance was not statistically significant. This could be attributed to the effect of culture on perceived choice. Collectivistic cultures value group norms whereas individualism promotes

personal aspirations. Zambia and many other African countries have predominantly collectivistic culture. Therefore, the interests of the group come first. This may explain why perceived choice of academic subjects was not significant. Learners might have not considered independent choice of academic subjects as important.

The Pearson correlation test was employed to assess the direction and strength of associations among variables represented by the cognitive dissonance scale and academic achievement. Five Sub scales of cognitive dissonance correlated negatively with overall academic achievement except three which were not statistically significant. These included dissonance in the family, dissonance connected to socialization and dissonance based on personal adjustment. Previous studies show contrary findings. For example, Yu, et al. (2023) found that the quality of personal relationships correlated positively with academic performance and that among the three types of relationships: student parent relationship, student teacher relationship and student peer relationships, student peer relationship was found to be most closely associated with academic performance. Additionally, Ayele (2018) conducted a study in Ethiopia among first year students and the findings indicated a positive relationship between psychological adjustment and academic performance.

The five sub scales of cognitive dissonance which had an inverse relationship with overall academic achievement included: cognitive dissonance based on emotional control, dissonance based on health and wellness, cognitive dissonance based on school and learning, dissonance based on perpetuance which focuses on self-sustenance, continuity or preservation, and lastly cognitive dissonance based on dominance or tendency of being assertive.

6.3. Conclusion

In Zambia, there is a dearth of studies focusing on the degree of cognitive dissonance among learners in secondary schools. Even if this study had a small sample of Grade Eleven secondary school learners in Lusaka District, this study has revealed that the percentage of learners with high cognitive dissonance is high. It provides preliminary findings indicating the magnitude of cognitive dissonance in secondary schools. This study has revealed that there is a significant difference in terms of academic performance among learners with high and low cognitive dissonance. Research results have also showed that learners with low cognitive dissonance perform better than those with high dissonance. Furthermore, this study has indicated a significant difference in the level of cognitive dissonance among learners according to gender. Additionally, an inspection of mean scores indicated that girls recorded high cognitive dissonance than boys. Similarly, research results indicate that perceived choice of school subjects does not have a statistically significant relationship with academic performance. Finally, research findings have revealed that there is an inverse relationship between academic performance and cognitive dissonance as indicated by five sub scales of cognitive dissonance. This means that as level of cognitive dissonance goes down, learners are likely to perform better at school.

6.4. Recommendations

Based on the findings of this study, the following recommendations have been made:

6.4.1 Considering the extent of cognitive dissonance among learners in secondary schools, school administrators and counselling and guidance teachers need to help learners starting Grade eight and Grade ten by giving them an allowance of one month to learn subjects allocated to them. Thereafter, allow learners who would like to change optional subjects to match their

future career aspirations as indicated in the 2013 Zambian Curriculum Framework. Ministry of Education-Zambia Curriculum Framework (2013, p. 52) states, "When placing learners in different career pathways, schools shall assess learners after the first month in school. However, learners' interests need to be considered and also notwithstanding the availability of teachers." This is not done in schools as indicated by the study done by Mwila (2022) in Lusaka Province.

6.4.2 Learners are allocated subjects in senior secondary school based on the marks they obtained in Junior secondary school Leaving Examination (Ministry of Education-Educating our future, 1996). Similarly, the two options of career pathways for either academic or vocational career pathway given to each senior secondary school may not meet the aspirations of all learners. In some schools, school administrators prefer academic subjects to vocational subjects because of the expense involved in the purchase of equipment thereby disadvantaging learners with the inclination towards vocational career pathway (Mwila, 2022). Therefore, there is need for the Government to invest in the purchase of equipment to cater for the needs of all the learners. Similarly, there is need to employ more teachers and improve infrastructure in schools so that more optional subjects can be offered to cater for the needs of the learners.

6.4.3 Considering the percentage of learners with high level of cognitive dissonance, there is need for guidance and counselling teachers to educate learners starting Grade 8 and Grade 10 on the career pathways offered at a particular school and there is also need to explain to learners the importance of learning certain subjects so that learners can develop positive attitude towards the subjects they may not like. According to the Ministry of Education-Zambian

Curriculum Framework (2013), each secondary school is allowed to have two options of either academic or vocational career pathways at senior secondary school level. With the introduction of the 2023 Curriculum Framework, the number of career pathways has increased. However, there is need to consider the interests of learners when allocating them career pathways.

6.4.3 Considering the inverse relationship that exists between cognitive dissonance and academic performance, there is need for Guidance and counselling teachers, subject teachers and parents to help learners develop good attitudes towards academic subjects to improve academic performance. Learners may not like all academic subjects.

6.5. Contribution of this Study to the Body of Knowledge

The findings of this study have extended the current understanding of cognitive dissonance among learners who have limited freedom to choose academic subjects which align with their intended career pathways. Choice and cognitive dissonance are inseparable. Once a learner, chooses a particular school subject, the likelihood of developing a positive attitude towards that subject is high. This leads to improvement in academic achievement. Cognitive dissonance results from conflict among attitudes, beliefs, feelings and behaviour. Students who are assigned academic subjects which do not align with their intended careers may develop cognitive dissonance. This may affect their performance at school negatively. Most of the studies on cognitive dissonance have been done in western countries where learners freely choose academic subjects which are in line with their abilities and aspirations. The findings from western countries, with individualistic culture which emphasise independent decision making should be generalised to Zambia with caution. Zambia is also a low-income country with a predominately collectivistic type of culture.

This may explain why the relationship between perceived choice of academic subjects and academic performance was not significant in this study. Most of the studies on cognitive dissonance indicate an inverse relationship between cognitive dissonance and academic performance. However, in the Zambian context, the relationship of three sub scales of cognitive dissonance with academic performance was not significant. This could be due to cultural differences.

6.6. Suggestions for Future Research

Being a rare study to investigate the relationship between cognitive dissonance and academic performance in Zambia, this study has revealed a number of findings which require further investigation in future research. According to the perceived choice paradigm of cognitive dissonance theory, perceived choice leads to favourable development of attitudes. This may in turn result in improvement in academic performance. Previous studies indicate a positive relationship between perceived choice and academic performance (Beymer, 2015; Petall et al., 2010)). However, in this study, the relationship between perceived choice of academic subjects and academic performance was not significant. Hence, the need for in-depth study of the relationship between perceived choice of school subjects and academic performance. Similarly, future research should focus on the sub scales of cognitive dissonance which did not have a statistically significant relationship with academic performance. These include cognitive dissonance based on family, cognitive dissonance connected to socialisation and cognitive dissonance based on personal adjustment. An in-depth study is required to explore the why these forms of dissonance did not have a statistically significant relationship with academic performance an indicated by prior findings. Additionally, future studies should be based on interventions that can be used to

effectively reduce the level of cognitive dissonance among learners in the Zambian context. These should be longitudinal studies. Finally, future studies should have a large sample that is representative of the population in Zambia.

REFERENCES

Acharya, A., Blackwell, M., & Sen, M. (2018). Explaining Preferences from Behaviour: A Cognitive Dissonance Approach. *The Journal of Politics, 80*(2), 400-411. https://doi.org/10.1086/694541

Achor, E. & Abuli, Y. P. (2020). Fostering students' academic performance in Physics using cognitive conflict instructional strategy and conceptual change pedagogy. *International Journal of Education and Learning, 2*(1) 42-57

African Charter on the Rights and Welfare of the Child (1990), OAU, CAB/LEG/24. 9/49

Agnafors, S., Barmark, M., & Sydsjo, G. (2020). Mental health and academic performance: a study on selection and causation effects from childhood to early adulthood. *Social Psychiatric and Psychiatric Epistemology, 56*, 857- 866

Al-Adamat, O. A., & Atoum, A. Y. (2022). Cognitive dissonance and its relationship to emotional intelligence. Cognition, Brain, Behavior: *An Interdisciplinary Journal, 26*(4), 215-229. https://doi.org/10.24193/cbb.2022.26.12

Ahmad, M. & Khasawneh, S. (2021). The level of cognitive dissonance among students with learning disabilities in English from point of view of teachers. *Science and Education Journal, 2*(11) 577-591

Al-Khani, A. M., Sarhandi, M. I., Zaghloul, M. S., Ewid, M., & Saquib, N. (2019). A cross-sectional survey on sleep quality, mental health, and academic performance among medical students in Saudi Arabia. *BMC Research Notes,* 12, 665. https://doi.org/10.1186/s13104-019-4713-2

Al Otaibi, S. M.B. (2012). The relationship between cognitive dissonance and the big 5-factor model of personality and academic achievement in a sample of female students at the University of Umm Al Qura. *Education, 132*(3) 607-624

Aronson, E. (1992). The return of the repressed: Dissonance theory makes a comeback. *Psychological Inquiry, 3*, 303–311.

Arora, N, & Singh (2017). Factors affecting academic performance of the college students. *Journal of Educational Technology, 14*(1), 47-53

Arthur N, Collins S. (2011). Infusing culture in career counselling. *Journal of Employment Counselling. 48*(4):147–149.doi: 10.1002/j.2161-1920.201

Arunkumar, R., Midgley, C., & Urdan, T. (1999). Perceiving high or low home-school dissonance: Longitudinal effects on adolescent emotional and academic well-being. *Journal of Research on Adolescence*, *9*(4), 441–466.

Ayele, A. (2018). Assessing Major Adjustment Problems of First Year Students in Ethiopia, Wolaita Sodo University. *American Journal of Educational Research, 6*(9), 1326-1332. https://doi.org/10.12691/education-6-9-13

Bagum, M., Khan, R. K., & Tehsain, M. J. (2022). Students' socialisation level and academic performance at secondary level. *Review of Applied Management of Social Sciences, 5*(4), 677-685

Bailey, T. H., & Phillips, L. J. (2015). The influence of motivation and adaptation on students' subjective well-being, meaning in life, and academic performance. *Higher Education Research & Development.* https://doi.org/10.1080/07294360.2015.1087474

Balaman, A. (2020). Cognitive Dissonance in College: Focusing on the Classroom Experience (Doctoral dissertation, University of Houston, USA). Retrieved from https://uh-ir.tdl.org/handle/10657/7925

Bandura A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. Psychology Rev. 84, 191–215. [PubMed][Google Scholar] doi: 10.1186/1472- 6920-13-26

Bandura, A., Barbaranelli, C., Caprara, G.V. Pastorelli, C. (2001). Self-efficacy beliefs as shapers of children's aspirations and career trajectories. *Child Development*, 72,187-206

Bantjes, J., Saal, W., Gericke, F. Lockner, B., Roos, L., & Auerbach, B. (2021). Mental health and academic failure among first-year university students in South Africa. *South African Journal of Psychology*, *51*(3):396-408. doi:10.1177/0081246320963204

Basharpoor, S., Heidari, F., Narimani, M., & Barahmand, U. (2020). School Adjustment, Engagement and self-concept, family, child and school factors, *Journal of Psychologists and Counsellors in Schools, 32*(1), 23-38

Bashkireva, A., Bashkireva, T., Morozov, A., Evdokimova, A., & Tsvetkov, S. (2021). The psychological safety of students in the context of digitalization as a factor of social health. E3S Web of Conferences, 295, 05001. https://doi.org/10.1051/e3sconf/202129505001

Behm Cross, S., Tosmur-Bayazit, N., & Dunn, A. H. (2018). Whiteness as a Dissonant State: Exploring One White Male Student Teacher's Experiences in Urban Contexts. *Journal of Teacher Education, 69*(3), 1-13. https://doi.org/10.1177/0022487118774038.

Beymer, P. N. & Thompson, M.M. (2015). The effects of choice in a classroom: Is there too little or too much choice? *Support for Learning, 30*(2) 106-120

Bhugra, D., Sauerteig, S.-O., Bland, D., Lloyd-Kendall, A., Wijesuriya, J., Singh, G., Kochhar, A., Molodynski, A., & Ventriglio, A. (2019). A descriptive study of mental health and wellbeing of doctors and medical students in the UK. *International Review of Psychiatry*. https://doi.org/10.1080/09540261.2019.1648621

Biswal, D. Sahu, S., & Sahoo, S. (2021). Adjustment of new boarders in boys' and girls' hostel of Gangadhara Meher University. *Journal of Arts, Science and Humanities. 8*(3) 37-44

Brehm, J.W. (1956). Post-decision changes in the desirability alternatives. *Journal pf Abnormal and Social Psychology, 52,* 384-389.

Brown-Wright, L., Tyler, K. M., Graves, S. L., Thomas, D., Stevens-Watkins, D. & Mulder, S. (2016). Examining the association among home-school dissonance, amotivation, and classroom disruptive behaviour for urban high school students. *Education and Urban Society-Sage Journals, 45*(1), 142-162

Burns, C. P. (2006): Cognitive Dissonance Theory & the Induced-Compliance Paradigm: Concerns for Teaching Religious Studies. *Teaching Theology & Religious Studies. 9*(1), 3-8.

Camacho-Morles, J., Slemp, G. R., Pekrun, R., Loderer, K., Hou, H., & Oades, L. G. (2021). Activity achievement emotions and academic performance: A meta-analysis. *Educational Psychology Review, 33*(3), 1131–1156. https://doi.org/10.1007/s10648-020-09585-3

Cancino-Montecinos, S. (2020). New Perspectives on Cognitive Dissonance Theory. PhD in Psychology, University of Stockholm, Sweden.

Cancino-Montecinos, S., Björklund, F., & Lindholm, T. (2018). Dissonance reduction as emotion regulation: Attitude change is related to positive emotions in the induced compliance paradigm. *13*(12), e0209012. https://doi.org/10.1371/journal.pone.0209012

Cassel, R. N., Chow, P. & Reiger, R. C. (2001). *The cognitive dissonance test (DISS)*. Chula Vista, California, Project Innovation.

Chow, P. (2001). The Psychometric properties of cognitive dissonance test. *Education*, *122* (1), 10-23. http://doiorg/bd8wbb.

Chow, S. L., Fu, K. W., & Ng, Y. L. (2020). Development of the Hong Kong identity scale: Differentiation between Hong Kong 'Locals' and Mainland Chinese in cultural and civic domains. *Journal of Contemporary China, 29*(124), 568– 584. https:// doi. org/ 10. 1080/ 10670 564. 2019. 16773 65

Chung, C. M., & Darke, P. (2006). The consumer as an advocate: Self-relevance, culture, and word-of-mouth. *Market Lett*. *17,* 269- 279

Cohen, J. (1988). *Statistical Power Analysis for the Behavioural Sciences (2nd ed)*. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Cohen, L., Manion, L. & Morris, K. (2007). *Research Methods in Education*. London: Routledge.

Creswell, J.W. (2009). *Research Design: Qualitative and Mixed Methods Approaches*. London: Sage.

Crotty, M. (1989). *The Foundations of Sewall Research*. London: Sage

Dajani, T., Bryant, V., Sackett, D., & Allgood, J. (2021). Your wellness program is interfering with my well-being: Reducing the unintended consequences of wellness initiatives in undergraduate *medical education. MedEdPublish, 10*(146). https://doi.org/10.15694/mep.2021.000146.1

Dagnew, A. (2017). The relationship between students' attitudes towards school, values of education, achievement motivation, and academic achievement in Gondar secondary schools, Ethiopia. *Research in Pedagogy, 7* (1) 30-42 doi:10 17810/2015-46

Dah, M. (2022). Students' perceptions of their Physics teachers' classroom practices. *Asian Journal of Research and Reviews in Physics*. *6* (2) 16-24

Das Kumar, S., Mishra, B., Mishra, B. & Halder, K. L. (2018). Study on the relationship between attitude towards education and academic achievement in the secondary level minority students. *Indian Streams Research Journal, 4*(10) 1-8.

Deci, E. L., Vallerand, R. J., Pelletier, L. G. and Ryan, R. M. (1991) Motivation education: the self-determination perspective. *Educational Psychology*, 26, 3, 325–346.

Deighton, J., Humphrey, N., Belsky, J., Boehnke, J., Vostanis, P., & Patalay, P. (2017). Longitudinal pathways between mental health difficulties and academic performance during middle childhood and early adolescence. *British Journal of Developmental Psychology, 35*(1), 82–99. https://doi.org/10.1111/bjdp.12218

DeLay, D., Zhang, L., Hanish, L. D., Miller, C. F., Fabes, R. A., Martin, C. L., Kochel, K. P., & Updegraff, K. A. (2016). Peer influence on academic performance: A social network analysis of social-emotional intervention effects. Prevention Science. https://doi.org/10.1007/s11121-016-0678-8

De Vries, J. M. A., Byrne, M., & Kehoe, E. (2014). Cognitive dissonance induction in everyday life: An fMRI study. *Social neuroscience*, *10*(3), 268-281.

DiNapoli, J. (2019). Persevering Toward What? Investigating the Relationship Between Ninth-Grade Students' Achievement Goals and Perseverant Actions on an Algebraic Task. *International Electronic Journal of Mathematics Education, 14*(3), 435-453. https://doi.org/10.29333/iejme/5747.

DiNapoli, J. (2023). Distinguishing Between Grit, Persistence, and Perseverance for Learning Mathematics with Understanding. *Education Sciences, 13*(4), 402. https://doi.org/10.3390/educsci13040402.

DiNapoli, J., & Miller, E. K. (2020). Recognizing and Supporting Perseverance in Mathematical Problem-Solving via Conceptual Thinking Scaffolds. ICLS 2020 Proceedings. Retrieved from https://doi.org/10.29333/iejme/5747.

Dogan, U. (2015). Student engagement, academic self-efficacy, and academic motivation as predictors of academic performance. *Anthropologist, 20*(3), 553–561.

Duckworth, A. L., Taxer, J. L., Eskreis-Winkler, L., Galla, B. M., & Gross, J. J. (2019). Self-control and academic achievement. *Annual Review of Psychology, 70*, 373–399. https://doi.org/10.1146/annurev-psych-010418-103230

Dulosa, S. S., Inocian.R. E., Bokeron, M. R., & Moneva, I. (2019). Perceptions of students towards education. *International Journal of Novel Research in Education and Learning, 6*(1), 35-45

Dumbauld J., Black, M. Depp C.A., Daly, R. Curran, M.A., Winegarden, B., (2014). Association of learning styles with research self-efficacy: Study of short-term research training programme for medical students. *Clinton Translation Science*. *7*, 489–92.

Elliot, A., & Devine, P. (1994). On the motivational nature of cognitive dissonance. Dissonance as psychological discomfort. *Journal of personality and Social Psychology, 67*, 382-394.

Examinations Council of Zambia (ECZ) 2022 School Certificate Examination Performance Review Report. Retrieved from: http://www.exams-council.org.zm/.

Falck O, Heblich S, Luedemann E (2010). Identity and entrepreneurship: Do school peers shape entrepreneurial intentions? *Small Business Economics*. Advance online publication.

Farooq, M., Chaudhry, A., Shafuq, M., & Berhanu, G. (2011). Factors Affecting Students Quality of Academic Performance: A Case of Secondary School Level, *Journal of Quality and Technology Management, 11*(11), 1-14.

Fateel, M. J. (2019). Impact of psychological adjustment on private university students' achievement: Case study. *International Journal of Higher Education, 8*(6), 184-190.

Federation of Youth Groups. (2019). *Improving the effectiveness of career and life planning education*. https://yrc.hkfyg.org.hk/en/2019/01/30/improving-the- effectiveness-of-career-and-life-planning-education-2/

Fekumo, B. & Omeka, F. O. (2022). Influence of Students' Perception of Mathematics on Junior Secondary School Students' Academic Performance in Yala Local Government Area of Cross River State, Nigeria. *Village Maths Educational Review (VER), 3*(1), 53-7 https://ngsme.villagemath.net/journals/ver/v3i1/fekumo-omeka

Fernández-Alonso, R., Álvarez-Díaz, M., Woitschach, P., Suárez-Álvarez, J., & Cuesta, M. (2017). Parental involvement and academic performance: Less control and more communication. *Psicothema, 29*(4), 453-461. https://doi.org/10.7334/psicothema2017.181

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.

Festinger. L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology, 58*, 203-210

Filade, B. A., Bello, A. A., Uwaoma, C. O., Anwanane, B. B., & Nwangburuka, K. (2019). Peer group influence on academic performance of undergraduate students in Babcock University, Ogun State. *African Educational Research Journal, 7*(2), 81-87.

Flowerday, T., and Schraw, G. (2000) Teacher beliefs about instructional choice: a phenomenological study. *Journal of Educational Psychology*, *92*(4) 634–645.

Francisco, C. D. C., & Celon, L. C. (2020). Teachers' instructional practices and their effects on students' academic performance. *International Journal of Scientific Research in Multidisciplinary Studies, 6*(7), 64–71

Garibaldi, M., & Josias, L. (2015). Designing schools to support socialisation processes of students. *Procedia Manufacturing*, *3*, 1587–1594.

Garwronski, B. (2015). Back to theory: cognitive consistency as a core motive. *Social Cognition, 30,* 652-668.

Gbollie, C., & Keamu, H. P. (2017). Student academic performance: The role of motivation, strategies, and perceived factors hindering Liberian junior and senior high school students' learning. *Education Research International, 2*(7), 1–11

Grunschel, C., Schwinger, M., Steinmayr, R., & Fries, S. (2016). Effects of using motivational regulation strategies on students' academic procrastination, academic performance, and well-being. *Learning and Individual Differences, 49*, 162–170.

Guerra, P. L., & Wubbena, Z. C. (2017). Teacher beliefs and classroom practices: Cognitive dissonance in high stakes test-influenced environments. *Issues in Teacher Education, 26(*1), 35-51. Retrieved from https://files.eric.ed.gov/fulltext/EJ1139327.pdf

Harmones-Jones, E., Harmones-Jones, C., & Levy, N. (2015). An Action-Based model of cognitive dissonance processes. *Psychological science journal, 24*(3), 184-189.

Halperin, O., & Eldar Regev, O. (2021). Predicting academic success based on perseverance and passion for long-term goals (grit) among nursing students: Is there a cultural context? *Nurse Education Today*, 100, 104844. https://doi.org/10.1016/j.nedt.2021.104844

Harris, C., Vazsorry, A. T., Ozdemir, Y. & Saakal, A. S. (2020). Family environment and school engagement: An investigation of cross-lagged effects. *Journal of Adolescence, 84*, 171-179

Heine, S. J., & Lehman, D. R. (1997). Culture, dissonance, and self-affirmation. *Personality and Social Psychology Bulletin*, *23*, 389-400.

Howard, C.M. (1989), *Contemporary Culture***.** Essex**:** Prentice Hall.

Hoshino-Browne, E., Zanna, A. S., Spencer, S. J., Zanna, M. P., Kitayama, S., & Lackenbauer, S. (2005). On the Cultural Guises of Cognitive Dissonance: The Case of Easterners and Westerners. *Journal of Personality and Social Psychology, 89(3)*, 294-310.

Huéscar Hernández, E., Moreno-Murcia, J. A., Cid, L., Monteiro, D., & Rodrigues, F. (2020). Passion or perseverance? The effect of perceived autonomy support and grit on academic performance in college students. *International Journal of Environmental Research and Public Health, 17(*6), 2143.

Hwang, M. H., Choi, H. C., Lee, A., Culver, J. D., & Hutchison, B. (2015). The relationship between self-efficacy and academic achievement: A 5-year panel analysis. *Asia-Pacific Education Researcher, 24*(4), 655–667

International Youth Foundation (2014). *A cross-sector analysis of youth in Zambia*. Baltimore: International Youth Foundation.

Iyengar, S. S. and Lepper, M. R. (1999) Rethinking the value of choice: a cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology, 76*(3), 349–366.

Isaacson, L.E. (1985). *Basics of career counselling*. Boston: Allyn and Bacon

Jachimowicz, J. M., Wihler, A., Bailey, E. R., & Galinsky, A. D. (2018). Why grit requires perseverance and passion to positively predict performance. *Proceedings of the National Academy of Sciences, 115*(40), 9980–9985.

Jansen, M., Schroeders, U., Lüdtke, O., & Marsh, H. W. (2015). Contrast and assimilation effects of dimensional comparisons in five subjects: An extension of the I/E model. *Journal of Educational Psychology, 107*(4), 1086-1101. https://doi.org/10.1037/edu0000021

Kaani, B., & Machila, N. (2022). Conceptualisations of Intelligence among the Tonga people of Southern Zambia: A parental perspective. *International Journal of Research and Innovation in Social Sciences, 6*(11) 754-760

Kakupa, P. (2017). The vocalisation policy in Zambia's secondary education sector: A critical analysis. *International Journal of vocational Technical Education, 9*(4), 31-39

Kanene, K.M. (2011). *The role of Environmental Education in sustaining a sharing meaning of the Lwiindi Gonde Ceremony of Southern Province.* [Masters Dissertation, University of Zambia]

Karadağ E. (2017). *The Effect of Social Adjustment on Student Achievement. In: Karadag E. (eds) The Factors Effecting Student Achievement*, Springer: Cham.

Karagiannopoulou, E., Milienos, F. S., & Rentzios, C. (2020). Grouping learning approaches and emotional factors to predict students' academic progress. *International Journal of School & Educational Psychology.* https://doi.org/10.1080/21683603.2020.1832941

Kasoma, F. (2012). *The Influence of Broken Homes on Pupil Academic Performance in Selected Schools of in Mbala District: Lessons for School Managers.* [Masters Dissertation, University of Zambia]

Khan, M. (2023). Academic self-efficacy, coping, and academic performance in college. *International Journal of Undergraduate Research and Creative Activities, 5*(1), 3, 20-28

Khasawneh, E., Gosling, C., & Williams, B. (2021). What impact does maths anxiety have on university students' academic achievement? *BioMed Central Psychology, 9,* 37, 1-9

Kivirinta, S. (2014). Reducing Persisting Cognitive Dissonance and Drop-out Rates in Computer Science 1 Using Visual Debugger Aid (Master's thesis). Aalto University, Espoo, Finland. Available at: https://aaltodoc.aalto.fi/handle/123456789/14444

Kokkoris, M. D. Kühnen, U. (2013). Choice and dissonance in a European cultural context: the case of Western and Eastern Europeans. *International Journal Psychology*. *48* (6):1260-6. doi: 10.1080/00207594.2013.766746.

Kolai, E., & Savoji, A. P. (2018). The effectiveness of cognitive self-regulating education on academic burnout, cognitive dissonance and academic achievement of elementary students. *Students World Family Medicine. 16* (1) 225-231.

Kombo, D.K., & Tromp, L. A. (2006). *Proposal and Thesis Writing*. Nairobi: Pauline.

Köpeczi-Bócz, T. (2025). Cognitive-Dissonance-Based Educational Methodological Innovation for a Conceptual Change to Increase Institutional Confidence and Learning Motivation. *Education Sciences, 15*(3), 378. https://doi.org/10.3390/educsci15030378.

Krauss, S., Orth, U., & Robins, R. W. (2020). Family environment and self-esteem development: A longitudinal study from age 10 to 16. *Journal of Personality and Social Psychology,* 119, 457–478. doi: 10.1037/pspp0000263

Kumar, R. (2006). Students' experiences of homeschool dissonance: The role of school academic culture and perceptions of classroom goal structures. *Contemporary Educational Psychology, 31*(3), 253–279.

Lagasov, M. (2018). *Effect of subject interest on academic performance in New York University*. York University: Toronto.

Lakhani, P. K., Jain, K., & Chandel, P. K. (2017). School adjustment, motivation and academic achievement among students. *International Journal of Research in Social Sciences, 7*(10) 333-348

Li, M., Jia, H., & Wang, H. (2023). Maximizing tendency predicts university adjustment and academic performance. *Frontiers in Psychology, 14*, 1188410. https://doi.org/10.3389/fpsyg.2023.1188410

Low K.S.D., Yoon, M., Roberts, B.W., & Rounds, J. (2005). The stability of vocational interests from early adolescence to middle adulthood: A quantitative review of longitudinal studies. *Psychological Bulletin, 131,* 713-737.

Markus, H., & Kitayama, S. (1990). Culture and the self: Implications for Cognition, Emotion, and Motivation. *Psychological Review, 98*(2), 224-253.

Mason, H. D. (2018). Grit and academic performance among first-year university students: A brief report. *Journal of Psychology in Africa, 28*(1), 66–68.

Matovu, M. (2020). Academic self-efficacy and academic performance among university undergraduate students: An antecedent to academic success. *European Journal of Education Studies, 7*(3), 135–149

McConville, J., McAleer, R., & Hahne, A. (2016). Mindfulness training for health profession students: The effect of mindfulness training on psychological well-being, learning and clinical performance of health professional students—A systematic review of randomised and non-randomised controlled trials. *The Journal of Science and Healing*. https://doi.org/10.1016/j.explore.2016.10.002

Mia Treacy & Aisling Leavy (2023) Student voice and its role in creating cognitive dissonance: the neglected narrative in teacher professional development, *Professional Development in Education*, 49:3, 458-477, DOI: 10.1080/19415257.2021.1876147

Michail, D., & Kokkoris, U. K. (2014). Choice and dissonance in European cultural context: The case of western and eastern Europeans. *International journal of Psychology, 48*(6) 1260-1266

Miklosvic, J.C. (2010). Cognitive dissonance: Effects of perceived choice on attitude change. *Modern Psychological Studies, 15*(2) 16-22.

Ministry of Education. (1996). *Educating Our Future: National Policy on Education*. Lusaka: Zambia Education Publishing House.

Ministry of Education, Science, Vocational Training and Early Education (2013). *Zambian Education Curriculum Framework*. Lusaka: Curriculum Development Centre

Mitchell, L., & Paras, A. (2018). When difference creates dissonance: Understanding the 'engine' of intercultural learning in study abroad. *Intercultural Education, 29*(4), 1–16. https://doi.org/10.1080/14675986.2018.1436361

Msabila, T. D., & Nalaila, S. T. (2013). *Research proposal and dissertation writing*. Dares salaam: Nyambari Nyaugwine publishers.

Mohajerani, P. (2018). The influence of socialisation agents and individual factors on healthy lifestyle behaviours of Generation Y. Doctoral thesis, Swinburne University of Technology, Australia.

Moroz, W. (1996). A Study of Teacher and Student Attitude toward Social Studies in the Middle and Upper Grades of Government Primary Schools in Western Australia. Doctoral Dissertation, Curtain University of Technology, Perth, Western Australia.

Murphy, M. J., Seneviratne, R. D., Cochrane, L., Davies, M. H., & Mires, G. J. (2013). Impact of student choice on academic performance: Cross-sectional and longitudinal observations of a student Cohort. *Medical Education, 13*(26) 1-5

Mwila, M. (2022). Career pathway in secondary schools of Zambia: A reflection of continuity of Musical Education accessed at: http://dspace.chau.ac.zm:8080 xmlui /handle/ 123456789/205

Naudé, L. (2015). On (Un)common Ground: Transforming from dissonance to commitment in a service-learning class. *Journal of College Student Development, 56*(1), 84-102. https://doi.org/10.1353/csd.2015.0002

Namaste, N. B. (2017). Designing and evaluating students' transformative learning. *The Canadian Journal for the Scholarship of Teaching and Learning, 8*(3) 1-5. Retrieved from http://ir.lib.uwo.ca/cjsotl_rcacea

Nor, N. I. Z. & Smith, A. P. (2018). Attitudes to training and relation to well-being of workers. *Journal of Education, Society and Behavioural Science. 27*(2) 1-19

Oduh, W.A. (2016). Dimensions of cognitive dissonance and the level of job satisfaction among counsellors in Delta and Edo states, Nigeria. *Journal of Education and Practice, 7*(21) 20-29.

O'Malley, M., Voight, A., Renshaw, T. L., & Eklund, K. (2015). School climate, family structure, and academic achievement: A study of moderation effects. *School Psychology Quarterly, 30*(1), 142-157.

Owens, J., Kottwitz, C., Tiedt, J., & Ramirez, J. (2018). Strategies to attain faculty work-life balance. *Building Healthy Academic Communities Journal, 2*(2), 59–73. https://doi.org/10.1080/xxxxxxx

Pallant, J, (2011). *SPSS survival manual: A step by step guide to data analysis using SPSS.* Crows Nest: Allen & Unwin

Patall, E. A., Dent, A. L, Oyer, M. and Wynn, S. R. (2013). Student autonomy and course value: the unique and cumulative roles of various teacher practices. *Motivation and Emotion, 37*(1), 14–32.

Patall, E. A., Cooper, H., & Wynn, S. R. (2010). The effectiveness and relative importance of choice in the classroom. *Journal of Educational Psychology,* 102, *4*, 896–915

. Permatasari, M. B., Rahayu, S., & Dasna, I. W. (2022). Chemistry Learning Using Multiple Representations: A Systematic Literature Review. *Journal of Science Learning, 5*(2), 334-341. https://doi.org/10.17509/jsl.v5i2.42656

Patterson, A. F. (2018). It was really tough: Exploring the feelings of isolation and cultural dissonance with Black American males at a predominantly White institution. *Journal of College Student Retention: Research, Theory & Practice.* https://doi.org/10.1177/1521025118796633

Proulx, T., Inzlincht, M., & Harmon-Jones, E. (2012). Understanding all inconsistency compensation as a palliative response to violated expectations. *Trends in cognitive sciences*. *16,* 285-291

Raskind, I. G., Haardörfer, R., & Berg, C. J. (2019). Food insecurity, psychosocial health, and academic performance among college and university students in Georgia, USA. *Public Health Nutrition, 22*(3), 476–485. https://doi.org/10.1017/S1368980018003439

Remali, A. M., Zulkhepli, F. Z., Selavathy, J., Sanus, N. S. & Nris, N. M. (2015). Understanding the impact of students' perception in learning toward academic performance. *National Conference Symposium and Exhibition on Business and Accounting*.

Rietsche, R., Duss, K., Persch, J. M., & Söllner, M. (2018). Design and evaluation of an IT-based formative feedback tool to foster student performance. Thirty-Ninth International Conference on Information Systems, San Francisco 2018, 1-16.

Rimfeld, K., Ayorech, Z., Dale, P. S., Kovas, Y., & Plomin, R. (2016). Genetics affects choice of academic subjects as well as achievement. *Scientific Reports, 6,* 26373. https://doi.org/10.1038/srep26373

Ronfeldt, M., Farmer, S. O., McQueen, K., & Grissom, J. A. (2015). Teacher collaboration in instructional teams and student achievement. *American Educational Research Journal, 52*(3), 475–514. https://doi.org/10.3102/0002831215585562

Rodríguez-Izquierdo, R. M. (2021). Does service learning affect the development of intercultural sensitivity? A study comparing students' progress in two different methodologies. *International Journal of Intercultural Relations, 82*, 99–108. https://doi.org/10.1016/j.ijintrel.2021.03.005

Roksa, J., & Kinsley, P. (2018). The role of family support in facilitating academic success of low-income students. *Research in Higher Education, 59*(4), 534-555

Ryan, R. M., & Deci, E. L. (2000b) Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55* (1) 68–78.

Sadler, J., & A. Reisenberger. (1997). On Course for Next Steps: Careers Education and Guidance for Students in FEDA. London.

Sánchez-García, M. Á., Lucas-Molina, B., Fonseca-Pedrero, E., Pérez-Albéniz, A., & Paino, M. (2018). Emotional and behavioural difficulties in adolescence: Relationship with emotional well-being, affect, and academic performance. *Annals of Psychology, 34*(3), 482–489. https://doi.org/10.6018/analesps.34.3.296631

Sakirudeen, A. O., & Sanni, K. B. (2017). Study Habits and Academic Performance of Secondary School students in Mathematics; A Case Study of selected schools in Oyo local Education council. *Research in Pedagogy, 7*(2), 283-297

Salameh, A. (2018) Cognitive dissonance and social responsibility among the students of Hashemite University in the light of some variables. *The Journal of Educational Sciences, 14*(2) 36-47

Salili F., Chiu C.Y., Hong Y.Y. (2001). *Student motivation: The culture and context of learning.* Plenum Press.

Sarwar, M., Dildar, M., Ahmad, A., & Hussain, S. (2017). Relationship among students' academic achievement, student evaluation of teacher and students' evaluation Courses. *The Dialogue, 7(*1) 50-58

Sattin-Bajaj, C., Jennings, J. L., Corcoran, S. P., Baker-Smith, E. C., & Hailey, C. (2018). Surviving at the street level: How counselors' implementation of school choice policy shapes students' high school destinations. *Sociology of Education, 91*(1), 46–71. https://doi.org/10.1177/0038040717751443

Shaffer, L. F., & Edward J. S. (1956). *The Psychology of Adjustment* Houghton: Mifflin Co.

Shaw, S, R., Gomes, P., Polotskaia, A., Jankowska, A. M. (2015). The relationship between student health and academic performance, implications for school psychologists. *School Psychology International*. *36*(2) 115-134

Sheldon, K., & Doci, E. (1993). *The self-determination scale*. Unpublished Manuscript, University of Rochester, Rochester, NY.

Shimimol, P. S., & Kaya, M. P. (2017). The relationship between cognitive dissonance and achievement in Mathematics among higher secondary school students. Scholarly Research *Journal for interdisciplinary Studies, 4*(36) 664-6645

Showers, A. H. (2021). Cognitive Dissonance and Special Education Teachers: Examining Instructional Decisions in a High-Stakes Testing Era. Doctoral dissertation, Georgia State University. Available at: https://doi.org/10.57709/22213429.

Skinner. B. F. (1958). Reinforcement today. *American Psychology. 13*, 94-99

Streamer, Lindsey M. (2007) "Individualism, collectivism, and dissonance: a within-culture comparison, *Modern Psychological Studies. 13(1*), 4. Available at: https://scholar.utc.edu/mps/vol13/iss1/4

Srisupawong, Y., Koul, R., Neanchaleay, J., Murphy, E., & Jean Francois, E. (2017). The relationship between sources of self-efficacy in classroom environments and the strength of computer self-efficacy beliefs. *Education and Information Technologies, 22*(3), 1237–1255. https://doi.org/10.1007/s10639-017-9630-1.

Sue, S., & Okazaki, S. (1990). Asian-American educational achievements: A phenomenon in search of an explanation. *American Psychologist, 45*(8), 913–920. https://doi.org/10.1037/1948-1985.S.1.45

Talsma, K., Schüz, B., Schwarzer, R., & Norris, K. (2018). I believe, therefore I achieve (and vice versa): A meta-analytic cross-lagged panel analysis of self-efficacy and academic performance. *Learning and Individual Differences, 61*, 136–150.

Tadese, M., Yeshaneh, A., & Mulu, G. B. (2022). Determinants of good academic performance among University students in Ethiopia. A cross-sectional study. *BMC Medical Education Centre*, 323-393. https://doi.org/10.1186/s12909-022-03461-o

Tang Y. X. and He W. G. (2023) Meta-analysis of the relationship between university students' anxiety and academic performance during the coronavirus disease 2019 pandemic. *Frontiers of Psychology,* 14:1018558 doi:10.3389/fpsyg.2023.101

Taseer, N. A., Khan, S. A., Yasir, W., Kishwer, R., & Iqbal, K. (2023). Impact of Family Involvement on Academic Achievement at Higher Secondary Level. *Journal of Social Sciences Review, 3*(2), 1–10. https://doi.org/10.54183/jssr.v3i2.231

Tezer, M., Ozden, C. & Elci, M. (2016). Examining the relationship between academic achievement and attitudes of the middle school students. Cypriot Journal of Educational Science.*11* (4), 203-212

Thaer, S., & Ghbari, T. (2016) Cognitive level and its relationship with social responsibility among Hashemite University students in the light of variables of gender and college. *Education 1*(12) 31-43

Thomas, C. L., & Allen, K. (2020). Driving engagement: Investigating the influence of emotional intelligence and academic buoyancy on student engagement. *Journal of Further and Higher Education*. https://doi.org/10.1080/0309877X.2020.1741520

Thomas, C. L., Cassady, J. C., & Heller, M. L. (2017). The influence of emotional intelligence, cognitive test anxiety, and coping strategies on undergraduate academic performance. *Learning and Individual Differences, 55*, 40–48.

Tiyuri A, Saberi B, Miri M, Shahrestanaki E, Bayat B., & Salehiniya H. (2016) Research self-efficacy and its relationship with academic performance in postgraduate students of Tehran University of Medical Sciences in 2016. *Education Health Promotion*. doi: 10.4103/jehp.jehp_43_17.

Trigueros, R., Aguilar-Parra, J. M., Cangas, A. J., Bermejo, R., Ferrandiz, C., & López-Liria, R. (2019). Influence of emotional intelligence, motivation, and resilience on academic performance and the adoption of healthy lifestyle habits among adolescents. *International Journal of Environmental Research and Public Health, 16*(16), 28-36.

Triandis, H. C. (1995). *Individualism and collectivism.* Boulder, CO: Westview Press.

Tyler, K. M. (2015). Examining cognitive dissonance predictors of academic cheating among urban middle school students: The role of home-school-dissonance. *Middle Grades Research Journal, 10*(3) 77

Tyler, K. M., Brown-W right, L., Gadson, N., Mulder, S., Roan-Belle, C., Smith, L., & Stevens, R. (2010). Linking home-school dissonance to school-based outcomes for African American high school students. *Journal of Black Psychology*, *36*(4), 410–425.

Tyler, K. M., Burris, J. L., & Coleman, S. T. (2016). Investigating the association between home-school dissonance and disruptive classroom behaviours for urban middle school students. *Journal of Early Adolescence, 36*(1), 1–24. https://doi.org/10.1177/0272431616678987

Tyler, K. M., Stevens-Morgan, R., & Brown-Wright, L. (2016) Home-School Dissonance and Student-Teacher Interaction as Predictors of School Attachment among Urban Middle Level Students. *Research in Middle Level Education, 39*(7), 1-22.

United Nations Convention on the Rights of the Child (1981) Available at: https://www.unicef.org.uk/what-we-do/un-convention-child-rights/

Van Rooij, E. C. M., Jansen, E. P. W. A., & Van de Grift, W. J. C. M. (2017). First-year university students' academic success: The importance of academic adjustment. *European Journal of Psychology of Education*. https://doi.org/10.1007/s10212-017-0347-8

Van Veen, V., Krug, M. K., Schooler, J. W., & Carter, C. S. (2009). Neural activity predicts attitude change in cognitive dissonance. *Nature neuroscience, 12*(11), 1469-1474.

Vossen, T. E., Henze, I., Rippe, R. C. A. Van Driel, J. H., De Vrie, M. J. (2018). Attitudes of Secondary school students towards research and design activities. *International Journal of Science Education. 40* (13), 1629-1652.

Wachs, S., Görzig, A., Wright, M. F., Schubarth, W., & Bilz, L. (2020). Associations among adolescents' relationships with parents, peers, and teachers, self-efficacy, and willingness to intervene in bullying: A social cognitive approach. *International Journal of Environmental Research and Public Health, 17*(2), 420. https://doi.org/10.3390/ijerph17020420.

Wagner, R., & Williams, P. (2022). Healthcare disparities involving African American women. Master's Thesis, California State University, Northridge.

Watson, S. L., Watson, W. R., Richardson, J., & Loizzo, J. (2016). Instructor's Use of Social Presence, Teaching Presence, and Attitudinal Dissonance: A Case Study of an Attitudinal Change MOOC. *International Review of Research in Open and Distributed Learning, 17*(3), 54-74. https://doi.org/10.19173/irrodl.v17i3.2379

Weiss, G. (2017). Problem-oriented learning in geography education: Construction of motivating problems. *Journal of Geography*. https://doi.org/10.1080/00221341.2016.1272622

Widarti, H. R., Permanasari, A., & Mulyani, S. (2016). Student Misconception on Redox Titration (A Challenge on the Course Implementation through Cognitive Dissonance Based on the Multiple Representations). *Journal Pendidikan IPA Indonesia, 5*(1), 56-62. https://doi.org/10.15294/jpii.v5i1.5790

Widarti, H. R., Permanasari, A., & Mulyani, S. (2017). Undergraduate students' misconception on acid-base and argentometric titrations: A challenge to implement multiple representation learning model with cognitive dissonance strategy. *International Journal of Education, 9*(2), 105-112. https://doi.org/10.17509/ije.v9i2.5464

Widarti, H. R., Permanasari, A., Mulyani, S. (2021). Multiple representation-based learning through cognitive dissonance strategy to reduce students' misconceptions in volumetric analysis. *TEM Journal, 10* (3) 1263-1273

Wilder, S. (2014). Effects of parental involvement on academic achievement: A meta synthesis. *Education Review. 66,* 377–397. doi:10.1080/00131911.2013. 780009

Wilkin, C. L. (2017). Enhancing critical thinking: Accounting students' perceptions. *Education and Training, 59*(1), 15–30. https://doi.org/10.1108/ET-01-2015-0007

Wilkins, S., Butt, M. M., & Heffernan, T. (2017). International brand alliances and co-branding: Antecedents of cognitive dissonance and student satisfaction with co-branded higher education programmes. *Journal of Marketing for Higher Education.* https://doi.org/10.1080/08841241.2017.1393785

Williams, K. L. (2021). A correlational study of religiosity, cognitive dissonance, stress, and academic performance for online students. Doctoral Dissertation, Grand Canyon University, Phoenix, Arizona. Available at: https://doi.org/10.5281/zenodo.1234567

Wolters, C. A., & Hussain, M. (2014). Investigating grit and its relations with college students' self-regulated learning and academic achievement. *Metacognition and Learning, 9*(3), 291–307. https://doi.org/10.1007/s11409-014-9128-9

Wong, L.P.W. Chen, G. Yuen, M. (2022). Investigating career-related teacher support for Chinese secondary school students in Hong Kong. *International Journal Educational Vocation Guide*. *10*, 1-22. doi: 10.1007/s10775-022-09525-3.

Yousefi, F., Abu Talib, M., Mansor, M., Juhari, R., & Marof Redzuan, M. (2010): The Relationship between Test-Anxiety and Academic Achievement among Iranian Adolescents. *Asian Social Science, 6*(5), 100-105

Youssef, K., Ham, J., & Okada, M. (2016). Investigating the Effects of the Persuasive Source's Social Agency Level and the Student's Profile to Overcome Cognitive Dissonance. Proceedings of ICSR 2016, Lecture Notes in Artificial Intelligence, 9979, 115–125. https://doi.org/10.1007/978-3-319-47437-3_12.

Yoo, H. C., Miller, M. J., & Yip, P. (2015). Validation of the Internalization of the Model Minority Myth Measure (IM-4) and its link to academic performance and psychological adjustment among Asian American adolescents. *Cultural Diversity and Ethnic Minority Psychology, 21*(2), 237–246. https://doi.org/10.1037/a0037648

Yuan, S., Weiser, D. A., & Fischer, J. L. (2016). Self-efficacy, parent–child relationships, and academic performance: A comparison of European American and Asian American college students. *Social Psychology of Education, 19(*4), 817–834

Yuen, C. Y. M., Cheung, A. C. K., Leung, S., & Tang, H. (2020). *Transition from secondary to post-secondary education: Access, obstacles, and success factors of immigrant, minority and low-income youth in Hong Kong* https://www.eduhk.hk/zht/major-projects/transition-from-secondary-to-post-secondary-education-access-obstacles-and-success-factors-of-immigrant-minority-and-low-income-youth-in-hong-kong

Yu, X., Wang, X., Zheng, H., Zhen, X., Shao, M., Wang, H. & Zhou, X. (2023) Academic achievement is more closely associated with student-peer relationships than with student parent relationships or student-teacher relationships. *Frontiers of Psychology*, 14:1012701. doi: 10.3389/fpsyg.2023.1012701

Zhao L and Zhao W (2022) Impacts of family environment on adolescents' academic achievement: The role of peer interaction quality and educational expectation gap. *Frontiers of Psychology* 13:911959. doi:10.3389/fpsyg.2022.911959

Zaiedy Nor, N. I., & Smith, A. P. (2019). Psychosocial characteristics, training attitudes and well-being of students: A longitudinal study. *Journal of Education, Society and Behavioural Science, 29(*1), 1–26. https://doi.org/10.9734/JESBS/2019/v29i130100

APPENDICES

Appendix A: Ethical Clearance

THE UNIVERSITY OF ZAMBIA
DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Great East Road Campus | P.O. Box 32379 | Lusaka10101 | Tel: +260-211-290 258/291 777 **Fax**: (+260)-211-290 258/253 952 | E-**mail**: director.drgs@unza.zm | Website: www.unza.zm

APPROVAL OF STUDY

IORG No. 0005376
HSSREC IRB No. 00006464

5th December, 2022

REF NO. HSSREC:-2022-NOV.022

Ms. Ruth Nakamba,
School of Education,
P.O.BOX 32379,
LUSAKA.

Dear Ms. Ruth Nakamba,

RE: "COGNITIVE DISSONANCE: THE RELATIONSHIP BETWEEN PERCEIVED CHOICE OF SUBJECTS AND ACADEMIC PERFORMANCE IN THE SELECTED SECONDARY SCHOOLS OF LUSAKA DISTRICT"

Reference is made to your submission of the protocol captioned above. The HSSREC resolved to approve this study and your participation as Principal Investigator for a period of one year.

REVIEW TYPE	ORDINARY REVIEW	APPROVAL NO. HSSREC:-2022-NOV-022
Approval and Expiry Date	Approval Date: 5th December, 2022	Expiry Date: 4th December, 2023
Protocol Version and Date	Version - Nil.	4th December, 2023
Information Sheet, Consent Forms and Dates	□ English.	To be provided
Consent form ID and Date	Version - Nil	To be provided
Recruitment Materials	Nil	Nil
Other Study Documents	Questionnaire.	
Number of Participants Approved for Study		

Specific conditions will apply to this approval. As Principal Investigator it is your responsibility to ensure that the contents of this letter are adhered to. If these are not adhered to, the approval may be suspended. Should the study be suspended, study sponsors and other regulatory authorities will be informed.

CONDITIONS OF APPROVAL

- No participant may be involved in any study procedure prior to the study approval or after the expiration date.
- All unanticipated or Serious Adverse Events (SAEs) must be reported to HSSREC within 5 days.
- All protocol modifications must be approved by HSSREC prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address.
- All protocol deviations must be reported to HSSREC within 5 working days.
- All recruitment materials must be approved by HSSREC prior to being used.
- Principal investigators are responsible for initiating Continuing Review proceedings. HSSREC will only approve a study for a period of 12 months.
- It is the responsibility of the PI to renew his/her ethics approval through a renewal application to HSSREC.

- Where the PI desires to extend the study after expiry of the study period, documents for study extension must be received by HSSREC at least 30 days before the expiry date. This is for the purpose of facilitating the review process. Documents received within 30 days after expiry will be labelled "late submissions" and will incur a penalty fee of K500.00. No study shall be renewed whose documents are submitted for renewal 30 days after expiry of the certificate.

- Every 6 (six) months a progress report form supplied by The University of Zambia Humanities and Social Sciences Research Ethics Committee as an IRB must be Filled in and submitted to us. There is a penalty of K500.00 for failure to submit the report.

- When closing a project, the PI is responsible for notifying, in writing or using the Research Ethics and Management Online (REMO), both HSSREC and the National Health Research Authority (NHRA) when ethics certification is no longer required for a project.

- In order to close an approved study, a Closing Report must be submitted in writing or through the REMO system. A Closing Report should be filed when data collection has ended and the study team will no longer be using human participants or animals or secondary data or have any direct or indirect contact with the research participants or animals for the study.

- Filing a closing report (rather than just letting your approval lapse) is important as it assists HSSREC in efficiently tracking and reporting on projects. Note that some funding agencies and sponsors require a notice of closure from the IRB which had approved the study and can only be generated after the Closing Report has been filed.

- A reprint of this letter shall be done at a fee.

- All protocol modifications must be approved by HSSREC by way of an application for an amendment prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address or methodology and methods. Many modifications entail minimal risk adjustments to a protocol and/or consent form and can be made on an Expedited basis (via the IRB Chair). Some examples are: format changes, correcting spelling errors, adding key personnel, minor changes to questionnaires, recruiting and changes, and so forth. Other, more substantive changes, especially those that may alter the risk-benefit ratio, may require Full Board review. In all cases, except where noted above regarding subject safety, any changes to any protocol document or procedure must first be approved by HSSREC before they can be implemented.

Should you have any questions regarding anything indicated in this letter, please do not hesitate to get in touch with us at the above indicated address.

On behalf of HSSREC, we would like to wish you all the success as you carry out your study.

Yours faithfully,

Dr. J.I. Ziwa

DR. J. I. Ziwa

ACTING CHAIRPERSON
THE UNIVERSITY OF ZAMBIA HUMANITIES AND
SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE - IRB

CC: Director, Directorate of Research and Graduate Studies
Assistant Director (Research), Directorate of Research and Graduate Studies
Assistant Registrar (Research), Directorate of Research and Graduate Studies

Appendix B: Consent Form

HSSREC FORM 1B

THE UNIVERSITY OF ZAMBIA

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE

Telephone: +260-211-290258/353080 P O Box 32379
Fax: +260-211-290258/293937 Lusaka,
Zambia
E-mail director.drgs@unza.zm

PARTICIPANT INFORMATION SHEET

[Informed Consent Form for Grade Eleven learners in Secondary schools of Lusaka Province.]

This informed consent form is for secondary school pupils who are in Grade Eleven in Lusaka Province and who I am inviting to participate in the research titled, "Cognitive Dissonance: The Relationship between perceived choice of Subjects and Academic Performance in Selected Schools of Lusaka District"

[Name of Principal Investigator]
Ruth Nakamba
[Name of Organization]
University of Zambia
[Name of Sponsor]
Self

This Informed Consent Form has two parts:

- **Information Sheet (to share information about the study with you)**
- **Certificate of Consent (for signatures if you choose to participate)**

You will be given a copy of the full Informed Consent Form

Part I: Information Sheet

Introduction

I am Ruth Nakamba, a postgraduate student pursuing a doctorate Degree in Educational Psychology at the University of Zambia. My study is based on the academic subjects that you are doing. I would like to find out if you like the subjects that you are doing and also if you were given an opportunity to choose the subjects that you are doing. I would like to find out also your academic performance in optional and compulsory subjects. I am going to give you information about this study and you are free to ask questions as you decide to participate in this study. You do not have to decide today whether or not you will participate in the study. Before you make a decision, you can talk to anyone you feel comfortable with about the research. This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain.

The Purpose of the study

In public secondary schools, learners are given subjects according to the marks they have scored. We want to know if learners like the subjects they have been given. We also want to find out the performance of learners in optional and compulsory subjects. We also want to know if you have been given an opportunity to choose subjects which are in line with your future career ambitions and interests. This knowledge will help us come up with workable solutions to improve academic performance.

Type of Research Intervention

This research will involve answering questions in a questionnaire which will take about one hour and twenty minutes.

Participant Selection

You are being invited to take part in this research because we feel that your experiences as a pupil can contribute to our understanding and knowledge relating to subject preference and how this is linked to academic performance.

- *Do you know why we are asking you to take part in this study?*
- *Do you know what the study is about?*

Voluntary Participation

Your participation in this research is voluntary. It is your choice to participate or not. If you choose not to participate, the way you are treated at this school will not change in any way

- *If you decide not to take part in this study, do you know what your options are?*
- *Do you know that you do not have to take part in this research study, if you do not wish to?*
- *Do you have any questions?*

Procedures

A. Format of the research study

We are asking if you can give us information on the subjects that you are doing. We want to learn more about the subjects you do not like and the ones you like as well as your performance in these subjects. We also want to know if you are given an opportunity to choose subjects. We are inviting you to take part in this research project. If you accept, you will be asked to fill in a questionnaire which I am going to distribute to everyone participating in the research. You may answer the questions yourself. You may also ask if you need more explanation on some questions. The information you provide will be regarded as confidential, meaning no one else will see it. Your name will not be written on the questionnaire but only a number will be used as a form of identification.

Type of questions to be expected

The questionnaire covers questions based on choice of subjects, your attitude towards those subjects, do you like them or not, and academic performance.

You will be required to fill the questionnaire yourself, or it can be read to you. I will distribute the questionnaires. After you have answered the questions, I will collect the questionnaires. The information collected is confidential. Your name will not be written on the questionnaire, only a number will be used to identify you. No one else will have access to the information.

Duration

Answering the questionnaire may take about one hour twenty minutes. The questionnaires will be distributed in your classrooms during pre-time.

- *If you decide to take part in the study, do you know how much time filling in the questionnaire will take?*
- *Where will it take place?*

-Uses of information

There will be no direct benefits to you, but your participation is going to help us making decisions on how we can improve academic performance.

Risks

The information is about yourself, choice of subjects and your attitude towards compulsory and optional subjects. There is a risk that you may share some personal and confidential information. However, no else will see that information. The information provided will be kept confidential. You don't have to take part in the survey if you feel the questions are too personal.

Benefits

There will be no direct benefits to you, but your participation is going to help us find out the attitudes of learners towards compulsory subjects and optional subjects. Additionally, information on how perceived choice of subjects relate to academic performance will be collected. This information will help us to come up with workable solutions on how to improve academic performance.

Reimbursements

There are no incentives to take part in this research. This research will be done during prep- time.

- *Can you tell me if you have understood correctly the benefits that you will have if you take part in the study?*

- *Do you have any other questions?*

Confidentiality

The research being done may draw the attention of other students and if you participate in this study, you may be asked questions by other people in school. We will not share information. The information we collect from you will be kept private. It will be difficult to link the information to you since you will provide information on the form without your name on it. Additionally, it will be kept under lock and key.

- *Did you understand the procedures that I will be using to make sure that any information that I collect about you will remain confidential?*

Sharing the Results

The research findings will be shared more broadly, for example through publications and conferences and no names will be mentioned because we are not getting your names. This will be done to allow other interested people learn from the research.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so, and choosing to participate will not affect the way you are treated at this school.

- Do you know that you do not have to take part in this study if you do not wish to? You can say No if you wish to?
- Do you know that you can ask me questions later, if you wish to?
- Do you know that I have given the contact details of the person who can give you more information about the study?
- You can ask me any more questions about any part of the research study, if you wish to. Do you have any questions?

Who to Contact

If you have any questions, you can ask now or later. If you wish to ask later, you can contact the principal investigator whose details are provided below.

This proposal or protocol has been reviewed and approved by HSSREC which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find about more about the IRB, contact:

Chairperson, Humanities and Social Sciences, Research Ethics Committee,

University of Zambia

P O Box 32379

LUSAKA

OR

Director, Directorate of Research and Graduate Studies

University of Zambia

P O Box 32379

LUSAKA

Approval to conduct this research has been provided by the University of Zambia, in accordance with its ethics review and approval procedures. Any person considering participation in this research project, or agreeing to participate, may raise any questions or issues with the researchers at any time.

In addition, if you are/ or any person is not satisfied with the response of researchers may raise ethics issues or concerns, and may make any complaints about this research project by contacting the HSSREC on the address sated above.

All research participants are entitled to retain a copy of any Participant Information Form and/or Participant Consent Form relating to this research project."

Part II: Certificate of Informed Consent

I have been invited to participate in research about choice of subjects, attitude toward the subjects and academic performance.

(This section is mandatory)

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any question I have asked has been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant_____

Signature of Participant _____

Date _____

Day/month/year

If illiterate

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness_____ **Thumb print of participant**

Signature of witness _____

Date _____

Day/month/year

If vulnerable or incapacitated like pregnant women, children, people with mental illness, people with disabilities, prisoners and minority groups form instance, the investigator must ensure that there is a well-educated and motivated surrogate or proxy decision maker. When comprehension is an issue the research plan should include means of testing the participants' understanding of the important information prior to enrolment.

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant. Name: _____

Name of Researcher_____

Signature of Researcher /person taking the consent_____

Date _____

Day/month/year

CONTACT FOR QUESTIONS (Names, addresses and phone numbers of the following):

1. **Principal Investigator (Must be a local person and a Zambian).**
   Names: Ruth Nakamba

   Phone: 0977923443

   E mail: ruthnakamba@yahoo.co.uk

   Physical address: Libala South, Plot 40481, Lusaka.

Appendix C: Data Collection Instruments

RESPONDENT NUMBER: ___ SCHOOL IDENTIFICATION NUMBER: _____

THE COGNITIVE DISSONANCE TEST

The Cognitive Dissonance Test is composed of 200 true/false items. Please read each item carefully, and if it is **more true than false circle the letter "T"** for true**.** If it is **more false than true, then circle the letter "F"** for false. The words not, don't, and cannot are underlined to remind you of negatively-worded statements.

1. One or both of my parents were not easy to get along with.	T	F
2. I blame one or both of my parents for some of my present problems.	T	F
3. I tend to quarrel with close family members.	T	F
4. One or both of my parents was divorced at least once.	T	F
5. Some close family members don't really seem to like me.	T	F
6. There is very little love in my family as compared to other homes.	T	F
7. My family encouraged or supported my interests.	T	F
8. One or both of my parents seldom acknowledged my accomplishments.	T	F
9. I have given up hope on my family.	T	F
10. My family frequently found fault with me when I lived with them.	T	F
11. I wish that my family had passed on some important moral values to me.	T	F
12. I seldom had my own time because I had to look after my younger siblings.	T	F
13. I have good reasons not to trust at least one close member of my family.	T	F
14. One or both of my parents are proud of me.	T	F
15. I am embarrassed by certain things that close members of my family continue to do, or are involved in.	T	F
16. I am a member of a happy family.	T	F
17. I never hold grudges against my parents.	T	F
18. One or both of my parents kept tight control on the child(ren) in our home.	T	F
19. I couldn't wait to move out of my family home to obtain some peace of mind.	T	F
20. I enjoy harmony with close family members.	T	F
21. There is a lot of jealousy in our home.	T	F
22. My parents were often not on speaking terms.	T	F
23. There were occasions of abuse in my family.	T	F
24. One or more of my close relatives was not welcome in our home.	T	F
25. I feel that neither of my parents understood me well.	T	F
26. I am angrier than I am willing to admit.	T	F
27. I tend to be tolerant and understanding.	T	F
28. I am easily upset by changes.	T	F
29. I tend to think of myself as worthless.	T	F
30. I feel that I would be a much better person if I could gain more understanding of myself.	T	F
31. I find it hard to take no for an answer.	T	F
32. I lack a sense of responsibility.	T	F
33. After I have finished something, I often come away feeling I could have done better.	T	F
34. I always stand up for my rights when I am mistreated.	T	F
35. I am free from racial or religious prejudice.	T	F
36. I feel disillusioned about life.	T	F

37. I have a deep respect for all human beings. T F
38. I tend to be jealous of others. T F
39. I am often troubled by a lack of self-confidence. T F
40. I often feel discouraged because of a sense of inferiority. T F

41. I am inclined to be shy and withdrawn. T F
42. I feel self-conscious because of my personal appearance. T F
43. I do not always tell the truth for fear of exposing too much of myself. T F
44. So far my life has been quite meaningful. T F
45. I worry about dying. T F

46. I feel warm and happy towards myself. T F
47. I put up a bold front, but it is only a bluff. T F
48. Often I am judgmental of others. T F
49. I feel that something important is missing in my life. T F
50. I often despise myself for what I think or do. T F

51. I boil inside, but I don't show it. T F
52. I tend to harbor grudges that I don't tell anyone about. T F
53. I seldom speak up even when there is cause to be angry. T F
54. I am easily irritated. T F
55. I wish I were a child again. T F

56. I am easily upset when things go wrong. T F
57. I am easily bothered by noise or confusion. T F
58. I prefer to accept an unfair situation rather than complain. T F
59. I am easily embarrassed. T F
60. I am generally very easy-going. T F

61. I can become so emotional as to be unable to think or act logically. T F
62. I tend to keep feelings "bottled up inside". T F
63. I find it hard to accept criticism or blame. T F
64. I often feel depressed by memories of past experiences. T F
65. I maintain self-control even when frustrated. T F

66. I can adapt to changes easily. T F
67. I wish I were not so shy. T F
68. I have difficulty saying or doing the right thing at the right time. T F
69. I often dwell on past misfortunes. T F
70. It devastates me when a friend moves away. T F

71. I learn from my own mistakes. T F
72. I often have to consume substances or beverages with caffeine to stay awake. T F
73. I am inclined to using drugs to feel good. T F
74. When I have a fight with a friend, it takes me a long time to get over it. T F
75. I feel at ease no matter where I am living. T F

76. I have headaches quite often. T F
77. I worry about things I should not have said or done. T F
78. I don't have regular bowel movements. T F
79. I have trouble relaxing. T F
80. I am tense most of the time. T F

81. I have trouble falling asleep during bed time. T F

82. I usually feel tired and burned out. T F
83. I really feel that I need a good break or a vacation. T F
84. I am often troubled by aches and pains. T F
85. I am always concerned about getting hurt in sports. T F

86. I seldom seem to have time to enjoy life. T F
87. I find it necessary to watch my health carefully. T F
88. I am quite free from anxieties or tensions. T F
89. I don't exercise much even though I know it is important for my health. T F
90. I can become nervous easily. T F

91. I tend to allow tension to build up to the point of feeling "ready to explode". T F
92. I use medication or drugs to aid in relaxation or getting to sleep. T F
93. I seek release from tension by excessive smoking, eating, or drinking. T F
94. I have had more than my share of things to worry about. T F
95. I am frightened easily. T F

96. I am so busy that I don't have time to relax. T F
97. I believe I am under watchful eyes all the time. T F
98. I tend to be low in spirit. T F
99. Sometimes, I just feel miserable for no good reason. T F
100. I have to keep secret some of the things I have done in the past. T F

101. I feel ashamed of my lack of good school achievement. T F
102. I was once assigned to a `slow learner' group in school. T F
103. Because I did poorly in school I have given up trying to get ahead in life. T F
104. Often I was not given recognition for doing good work. T F
105. I have trouble with math and numbers. T F

106. I tend to give up on school work that is difficult. T F
107. I am/was motivated to do well in school. T F
108. I have forgotten many things I once knew well. T F
109. I learn things very slowly. T F
110. I have difficulty concentrating while reading or studying. T F

111. I could seldom bring myself to care much about school. T F
112. I'd rather watch my favorite TV program than study for an important exam tomorrow. T F
113. I failed one or more grades in school. T F
114. I left school at least once without graduating. T F
115. I failed one or more subjects in school. T F

116. So far, my school life has been very satisfactory. T F
117. People often help me with things I don't understand. T F
118. I am overly cautious about making mistakes. T F
119. I wish I could speak more languages. T F
120. I think it is imperative to have a career plan in place prior to graduation from high school. T F

121. I have not obtained any meaningful moral value in my schooling. T F
122. My school performance did not reflect my true abilities. T F
123. I should have tried harder in school. T F
124. I wish my parents had been more involved in my education. T F
125. I prefer play to study even though I know that this will affect my education negatively. T F

126. I usually find it difficult to talk to strangers. T F

127. I enjoy being the center of attention. T F
128. I hunger for recognition. T F
129. Most people seem to like me. T F
130. I would like to have more friends. T F

131. My friends are important to me. T F
132. I make and keep friends easily. T F
133. I am not interested in being with other people. T F
134. I wish I had more time to spend with close friends. T F
135. I hunger for approval. T F

136. I cannot trust even some of my close friends. T F
137. I tend to be ready to confront people I don't like. T F
138. I think that my friends have little confidence in me. T F
139. I often hold a grudge against people for a long time. T F
140. I feel lonesome even when I am with people. T F

141. No one seems to understand me. T F
142. I dislike being told what to do and what not to do. T F
143. I like social gatherings. T F
144. I am self-conscious and concerned about what others might think of me. T F
145. I am often embarrassed because of my lack of experience in social situation. T F

146. I am easily taken advantage of by others. T F
147. Only those who share my beliefs are my friends. T F
148. I often feel left out or unwanted. T F
149. I often wish that I had someone else's life. T F
150. I always treat people equally, regardless of race, sex, or color. T F
151. I have to bring my work home over weekend. T F
152. I worry about the increasing responsibilities of my work. T F
153. Often I am expected to do more work than I can handle. T F
154. I wish I had more help to deal with the demands placed upon me. T F
155. I have trouble meeting deadlines. T F

156. I don't like to be in financial debt but I have no choice. T F
157. I work under too much tension. T F
158. I have a phobia or a disturbing fear of some objects, places, or situations. T F
159. I buy a lot of things on credit. T F
160. I tend to be suspicious of people's motives or actions. T F

161. I find it hard to break a bad habit. T F
162. I wish I could abandon my current life and start a new life. T F
163. I argue loud and clear when prices are too high. T F
164. Often I am unable to afford the things I would like to have. T F
165. I am afraid to be alone in the dark. T F

166. I sometimes pretend to know more than I really do. T F
167. I would lie to get ahead. T F
168. Sometimes I rather enjoy going against the rules and doing things I'm not supposed to. T F
169. I don't like things to be uncertain or unpredictable. T F
170. I don't mind breaking the law to get what I want. T F

171. I could hardly live on what I have now. T F
172. I often continue to work during my lunch hour or break. T F

173. I worry about being bullied by street gangs.	T	F
174. I worry about contracting AIDS or other diseases unknowingly.	T	F
175. It is unsafe to walk alone in the city streets at night.	T	F
176. There are more people that I dislike than I like.	T	F
177. I am wary of people with authority.	T	F
178. I give in when a person insists on doing something another way.	T	F
179. I accept suggestions from others.	T	F
180. I am easily hurt when people find fault with me or my work.	T	F
181. I am concerned about the welfare of others.	T	F
182. I always try to convert someone to a particular point of view.	T	F
183. I am inclined to "tell people off."	T	F
184. I am bothered at times by feeling unappreciated or by the idea that "nobody cares."	T	F
185. I have the tendency to dominate people around me.	T	F
186. I envy those people who have things that I don't have.	T	F
187. I find it hard to ask others for help.	T	F
188. I like to have most things my way.	T	F
189. People often expect too much of me.	T	F
190. I generally wonder what hidden reason(s) another person may have for doing something nice to me.	T	F
191. Often I pretend to care about others.	T	F
192. I feel that I have often been punished without cause.	T	F
193. I tend to despise those people with inferior abilities.	T	F
194. I don't like rich people.	T	F
195. "An eye for an eye" is the way I deal with people.	T	F
196. I have the tendency wanting to punish other people getting into my way.	T	F
197. Sometimes I do things just to attract attention.	T	F
198. I tend to rely on others when there are decisions to be made.	T	F
199. I often "drag my feet" when requested to do something.	T	F
200. I am a good loser.	T	F

We would like to thank you for completing the preceding questionnaire. Please fill out this short survey (where applicable) and our data collection will be complete. Thank you so much.

1. Current age---_____
2. Age Started School_____
3. Gender--- **M** **F**
4. Total marks obtained in Junior Secondary School leaving Examination_____
5. Career Pathway _____ Intended Future Career _____
6. I have ____ siblings and I am the [circle one or fill in the blank] 1st, 2nd, 3rd, 4th, 5th, 6th, ___ child in the family.

7. Please circle the one number or option that corresponds to your current academic level:

   I am a grade 9 10 11 12 high school student.

Please respond to the following statements/questions by circling the choice most representative of your own experiences.

8. I grew up with: (a) two parents in one home. (b) two parents in separate homes. (c) one parent. (d) other (please specify) _____.

9. The area I grew up in was (a) rural. (b) urban. (c) other (please specify)_____.

10. How often did your parent(s)/guardian(s) help you with your homework when you were younger? (a) never (b) seldom (c) sometimes (d) often (e) always

11. How often did your parent(s)/guardian(s) reward your good performance at school? (a) never (b) seldom (c) sometimes (d) often (e) always

12. The **highest** academic level of my parents/guardians. (Choose from options below)
    Mother _____ Father _____
    (a) none or some elementary. (b) full elementary [up to and including grade 8].
    (c) some secondary. (d) high-school Diploma. (e) some college. (f) college Diploma.
    (g) some university. (h) Bachelor degree. (i) Masters or Doctorate degree.

13. On average, how many times do you attend church on a weekly basis? Please circle one of the following options: (a) Never/Seldom (b) 1 (c) 2 (d) 3 (e) 4 (f) 5 (g) 6 (h) 7 or more

14. How often do you use alcohol?
    (a) never (b) seldom (c) sometimes (d) often (e) always

15. Do you smoke? (a) Yes _ (b) No _

**** Thank you so much for your time ****

PERCEIVED CHOICE SUB SCALE

INSTRUCTIONS: Please read the pairs of statements, one pair at a time, and think about which statement within the pair seem more true to you at this point in your life. Indicate the degree to which statement A feels true, relative to the degree B feels true, on the **FIVE**-point scale shown after each pair of statements. If statement A feels completely true and statement B completely untrue, the appropriate response would be 1. If the two statements are equally true, the appropriate response would be 3. If only response B feels completely true and statement A completely untrue, the appropriate response would be 5.

1. A. I always feel like I chose the subjects that I do at school.

   B. Sometimes I feel that it is not really me who chose the subjects that I do at school

   Only A feels true 1 2 3 4 5 **Only B feels true**

2. A. I chose the subjects that I have to do at school.

   B. I do the compulsory subjects but I do not feel like it is my choice.

   Only A feels true 1 2 3 4 5 **Only B feels true**

3. A. I do all the subjects at school because they interest me.

   B. I do all the subjects at school because I have to.

   Only A feels true 1 2 3 4 5 **Only B feels true**

4. A. I am free to do the subjects that I decide to do.

   B. The subjects I have done at school are not often not what I would like to do.

   Only A feels true 1 2 3 4 5 **Only B feels true**

5. A. I feel pretty free to do the subjects that I choose to do.

   B. I do subjects that I have not chosen.

   Only A feels true 1 2 3 4 5 **Only B feels true**

Thank you for taking part in this study