

The Level of Cognitive Dissonance among Learners in the Selected Secondary Schools of Lusaka District, Zambia

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ABSTRACT

This study sought to determine the level of cognitive dissonance among learners in selected secondary schools of Lusaka District. The sample comprised 200 randomly selected pupils from two secondary schools of Lusaka District. This study employed a cross sectional survey research design. Cognitive dissonance scale was employed to determine the level of dissonance among learners. Overall cognitive dissonance results revealed that 50% of learners experienced high level of 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, cognitive dissonance based on school and learning had the lowest mean score while cognitive dissonance based on perpetuance had the highest mean score. Similarly, findings indicated significant difference in the level of cognitive dissonance among learners according to school and gender. In conclusion, the level of cognitive dissonance is high among learners in Zambia.

Keywords: cognitive dissonance level, personal, external domain

INTRODUCTION

Learners' conflicting beliefs and attitudes towards the school subjects and career pathways they are pursuing lead to the development of cognitive dissonance. Festinger (1957) defined cognitive dissonance as the discomfort individuals experience when engaging in behaviour that contradicts their private attitudes and beliefs. Inconsistencies between attitudes and behaviour create psychological discomfort, which individuals attempt to alleviate through various means, such as changing behaviour or cognition, justifying the behaviour or cognition by altering conflicting cognitions (Montecinos, 2020). Perceived choice also reduces cognitive dissonance and leads to development of favourable attitude towards a specific behaviour, especially if individuals believe they chose to engage in it voluntarily (Montecinos, 2020). Beymer and Thompson (2015) note that intrinsic motivation arises when individuals have a natural interest in a subject, and children are more likely to experience intrinsic motivation from choice compared to adults.

In Zambia, school subjects are assigned to learners at senior secondary school based on their scores in the Junior Secondary School leaving examination (Ministry of Education-Educating our Future, 1996). In addition, each school is provided with two options for either academic or vocational career pathway (Ministry of Education Zambia-Curriculum Framework, 2013). These may not align with the interests and career aspirations of all learners. As a result, many students end up studying academic subjects that are not in line with their intended future careers. Consequently, they may experience cognitive dissonance, which can interfere with their studies. Research evidence suggests that cognitive dissonance has the potential to hinder learning and lead to low academic achievement (Balaman, 2020; Yousef, Abu Talib, Mansor, Juhari, & Marof Redzuan, 2010), and learners with high cognitive dissonance tend to achieve lower marks (Al Otaibi, 2012; Burns, 2006).

Limited research has been conducted on cognitive dissonance in the educational setting worldwide (Al Otaibi, 2012). This research is grounded in the theory of cognitive dissonance. Shimimol and Kaya (2017) investigated the relationship between cognitive dissonance and academic performance in mathematics among

secondary school students in India, findings indicated a positive relationship. However, Khalaj and Savoiji (2018) found a negative relationship between academic achievement and cognitive dissonance. The overall research problem addressed in the present study is that despite the negative impact of cognitive dissonance among learners, in Zambia there is a lack of studies on cognitive dissonance, and little evidence indicating that the level of cognitive dissonance among secondary school learners has been studied.

Level of Cognitive Dissonance

According to Festinger (1957), cognitive dissonance arises when there is inconsistency between attitude, beliefs, and behaviour. The free choice paradigm of cognitive dissonance suggests that when individuals perceive themselves as having made a choice, it reduces cognitive dissonance and creates a positive attitude (Festinger, 1957; Montecinos, 2020). Furthermore, people tend to develop a preference for the option they have selected (Festinger, 1957; Montecinos, 2020). When students have the opportunity to choose subjects aligned with their career aspirations, they become motivated to learn, which can lead to improved academic performance.

In high income countries like America and United Kingdom, learners explore and choose career pathways based on their interests, goals and educational ambitions (Isaacson, 1985; Sadler, 1997). Therefore, they are likely to choose subjects which suit their interests and abilities. Tiyuri, Saberi, Miri, and Salehiniya (2016) found that self-efficacy is one of the main factors influencing academic performance. The findings also indicated that there is a significant relationship between students' research self-efficacy and accomplishment of research tasks. 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).

The level of cognitive dissonance is influenced by the idea of personal responsibility for negative outcomes (Harmon-Jones et al., 2015). Most individuals seek consistency and positivity while maintaining their self-image to appear competent, moral, and in control of their actions (Aronson, 1992). In light of this, learners are more likely to select subjects that they believe they can excel in. They evaluate their abilities and interests. If they feel that they are unlikely to pass a specific subject and lack enthusiasm for it, their performance in the final examination may suffer.

In 2022, out of the 125,075 candidates who took the examination in Zambia, 86,662 (69.29%) received school certificates. This signifies a 2.14% increase from 2021. Boys accounted for 69.31% of those who obtained school certificates, while girls accounted for 69.27%, resulting in a minor 0.04% difference in favour of boys (Examinations Council of Zambia Performance Review Report, 2022). The number of learners who do not obtain school certificates remains high, and it is a recurring trend (Examinations Council of Zambia Performance Review Report, 2022).

In a study of learners with difficulties in English language, Ahmad and Khasawneh (2021) found that teachers played a crucial role in helping the learners achieve cognitive consistency. And from teachers' perspective, learners had an average level of cognitive dissonance. Similar findings were reported by Thayer and Ghbari (2016), but added that there is a relatively strong relationship between cognitive dissonance and social responsibility (Ahmad & Khasawneh 2021). When learners experience high home-school dissonance, they tend resort to academic cheating, and vice versa (Tyler, 2015). Similarly, home-school dissonance was a significant predictor of academic efficacy, mastery goal orientation, performance avoidance, goal orientation, and academic cheating (Tyler, 2015; Nakamba & Kaani, 2023). Thus, learners with a high level of cognitive dissonance tend to have lower academic achievement (Arunkumar, Midgley, & Urda, 1999; Al Otaibi, 2012).

Cognitive Dissonance and Culture

Culture plays a significant role in shaping beliefs, values, and behaviours, and therefore, it is essential to understand how it influences cognitive dissonance. Previous research has shown that cognitive dissonance is constructed differently in individualistic and collectivistic cultures. Western cultures, characterised by individualism, tend to justify choices based on independent self-concepts, while Eastern cultures, more collectivistic in nature, justify choices based on interdependent self-concepts, they do not always experience

cognitive dissonance and they focus on the wellbeing of the whole community (Triandis,1995; Kaani & Machila, 2021).

This study was conducted in Zambia, which has a predominantly collectivistic culture. It is crucial to consider the unique social-cultural context of Africa and avoid generalising findings from Western countries, which represent individualistic cultures. By examining cognitive dissonance in individuals with different levels of individualism within the Zambian culture, we can gain a better understanding of cognitive dissonance in this specific context.

The Present Study

The purpose of this study was to assess the level of cognitive dissonance among learners and assess its influence on school achievement in selected secondary schools in Lusaka District. The first objective was to evaluate the levels of cognitive dissonance among these learners. The second objective aimed to identify any differences in cognitive dissonance levels between students in STEM (Science, Technology, Engineering, and Mathematics) schools and those in regular schools. The third and final objective was to explore whether there were gender-induced differences in cognitive dissonance among learners in the selected secondary schools of Lusaka District.

Two schools were chosen based on the perception that academic performance is generally higher in STEM schools than in regular schools. Given that research has shown an inverse correlation between cognitive dissonance and academic achievement (Al Otaibi, 2012; Arunkumar et al., 1999; Yousef et al., 2010), it was hypothesised that there would be a significant difference in the levels of cognitive dissonance among learners in the two types of schools.

METHODS

Research Design: The study utilised a cross-sectional quasi-experimental design, focusing on grade 11 students to capitalise on the existing status within schools (Creswell, 2009; Msabila & Nalaila, 2013). In Zambia, students are assigned to schools based on their achievements in grade 9; higher-achieving learners are placed in STEM schools, while others attend regular schools. This design was suitable for evaluating the impact of independent variables—school type (STEM vs regular) and gender—on the dependent variable of cognitive dissonance. Consequently, a 2 x 2 factorial design was implemented to assess the effects of school type (STEM school, regular school), gender (male, female), and their interactions on combined cognitive dissonance variables.

Sampling Method and Sample Size: The sample comprised 200 grade learners randomly selected from two secondary schools in the Lusaka District. It included 36.5% girls and 63.5% boys, with the higher proportion of boys attributed to a difference in response rates. The ages of the learners ranged from 13 to 21 years, with a mean age of 16.03 years ($SD = 1.14$). Learners in the 11th grade were selected because they had already made the transition to senior secondary school life. Stratified random sampling was employed to ensure equal representation of participants in terms of gender and type of school (STEM or regular). The rationale for using stratified random sampling is that it guarantees the inclusion of subgroups in the population within the sample (Cohen, Manion, & Morrison, 2007).

Measures: The Cognitive Dissonance Scale (Cassel, Chow & Reiger, 2001) was used to measure levels of cognitive dissonance. This scale consists of eight subscales, each measuring distinct component of cognitive dissonance. The first part of the scale focuses on personal domains, including home and family, emotional control, personal adjustment, and health and well-being. Sample questions include "Did your family support your interests?" and "Do you feel responsible for your actions?" The second part covers school and learning, socialization, perpetuance, and subservience or dominance. Example questions include "Do you struggle with mathematics?" and "Are you afraid of making mistakes?"

The Cognitive Dissonance Scale operates under the assumption that test-takers share society's views and expectations. Responses to the true or false questions are reviewed to assess alignment with societal norms. A

higher score on the scale indicates a greater presence of cognitive dissonance in an individual's life (Chow, 2001). The total scale score is 800, with each subscale having a maximum score of 100.

Data Collection Procedure: Participation was voluntary, and both participants and their parents provided consent. The questionnaires were distributed to learners after lessons, allowing them to have sufficient time to answer the questions within the school premises. The completed questionnaires were collected instantaneously.

Data Analysis: Quantitative data analysis in this study started with the descriptive statistics of eight sub scales of cognitive dissonance scale. Social Science Statistical Package (SPSS) version 23 was used for data analysis. A 2 x 2 MANOVA used to assess the effects of school type (STEM school, regular school), gender (male, female), and their interactions on combined cognitive dissonance variables.

RESULTS

Descriptive Statistics of Cognitive Dissonance Subscales: The research findings indicated that overall cognitive dissonance had a mean score of 360.70 ($SD = 92.38$), with a total instrument score of 800. The cognitive dissonance subscales were divided into the personal domain and impersonal domain, with mean scores of 173.20 ($SD = 51.72$) and 188.54 ($SD = 52.85$) respectively. Each domain had a total score of 400, consisting of four subscales, each with a total score of 100.

According to the cognitive dissonance scale, the level of cognitive dissonance in the personal and impersonal domains was slightly below the midpoint of each domain. Among the subscales representing the personal domain, family dissonance had the lowest rating with a mean of 27.86 ($SD = 15.45$), while personal adjustment had the highest mean score of 50.12 ($SD = 50.15$). The high mean score for personal adjustment suggests difficulties in personal adjustment, which could negatively affect academic performance. Conversely, the low mean score for family dissonance indicates a nurturing home environment. In the impersonal domain, the lowest score was observed for school and learning, suggesting that learners faced fewer challenges in this area. Table 1 presents the means and standard deviations of the subscales of the cognitive dissonance scale, along with the mean of the overall scale.

Table 1: Descriptive Statistics of Cognitive Dissonance Scale

Cognitive Dissonance sub scale	M	SD
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`

Level of Cognitive Dissonance among Learners

The threshold for learners with a high level of cognitive dissonance was set at the 50th percentile. Thus, learners who scored above the 50th percentile both at STEM and regular school were considered to have high cognitive dissonance. The overall results showed that out of 200 learners, 100 scored above the 50th percentile, indicating that 50% of the participants experienced high cognitive dissonance. Among girls, 53.42% experienced a high level of cognitive dissonance, while among boys, 48.03% experienced a high level of cognitive dissonance. Table 2 below presents the percentages of learners with low and high cognitive dissonance according to gender.

Table 2: Percentages of Learners with High and Low cognitive dissonance

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

Level of Cognitive Dissonance Based on School and Gender

The schools from which data was collected varied significantly in terms of academic performance. One school enrolled high-achieving students, as it was a STEM school, while another school enrolled students with lower marks. A 2 X 2 MANOVA was conducted to assess the impact of school type (STEM school, regular school), gender (male, female), and their interaction effect on cognitive dissonance. Additionally, using the Pillai Bartlett V Test criterion, the MANOVA results indicated 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 $V = 0.11$; partial $\eta^2 = 0.11$, respectively.

Table 3: Pillai-Bartlett's Test for MANOVA Effects

Effect	Value	F	Hyp. Df	Error df	P	Partial η^2
School	0.11	2.95	8	189	0.004	0.11
Gender	0.14	3.82	8	189	0.000	0.14
School*gender	0.08	2.02	8	189	0.046	0.14

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 $\eta^2 = 0.08$. The results are presented in Table 3. There is a statistically significant difference between males and females in terms of cognitive dissonance levels. Additionally, there is also a statistically significant difference in the levels of dissonance based on school type.

DISCUSSION AND CONCLUSIONS

Level of Cognitive Dissonance as Indicated by Descriptive Statistics

The research findings showed that the average score for cognitive dissonance was 360.70 ($SD = 92.38$) and the total score of the cognitive dissonance scale is 800. This implies that the level of cognitive dissonance fell slightly below the midpoint of the scale, indicating a moderate level of cognitive dissonance. This is consistent

with a study conducted by Thaer and Ghbari (2016), which found moderate levels of cognitive dissonance and social responsibility among students at Hashemite University in Jordan. Specifically, the level of cognitive dissonance in both the personal and impersonal domains was slightly below the midpoint of each domain. These results align with a study by Tyler (2015), who found that the level of home-school dissonance was below the midpoint of the scale.

Cognitive dissonance levels varied slightly between the subscales; family dissonance had the lowest rating in the personal domain, while personal adjustment had the highest mean score. Even the subscale with the highest mean score indicated a moderate level of cognitive dissonance when compared to the total score of the subscale. These findings are consistent with a study by Ahmad and Khasawneh (2021), which found a moderate level of cognitive dissonance among learners facing literacy challenges in Jordan. The high mean score for personal adjustment suggests difficulties in personal adaptation, which may negatively impact academic performance. Supporting this finding, Ayele (2018) found a positive relationship between psychological adjustment and academic performance among first-year students in Ethiopia.

On the other hand, the low mean score for family dissonance indicates a nurturing home environment. In the impersonal domain, the subscale related to school and learning had the lowest score, indicating that learners faced few challenges in this area. Similarly, in the external domain, the subscale related to perseverance had the highest mean score, suggesting that learners encountered challenges in terms of perseverance. Therefore, these results align with a study by Tyler (2015), which found that the level of home-school dissonance was below the midpoint of the scale.

This study aimed to determine the level of cognitive dissonance among learners in selected secondary schools in Lusaka District. Overall, the results revealed that 100 out of 200 participants scored above the 50th percentile, which was the threshold for high cognitive dissonance. Therefore, 50% of the participants experienced high cognitive dissonance. These findings contradict Al Otaibi's (2012) study, which found that only 16.2% of the participants experienced high levels of cognitive dissonance at Umm Al Qura University in Saudi Arabia, with 83.8% experiencing low dissonance. In contrast, the results of this study indicate a higher percentage of learners with a high level of cognitive dissonance. This finding is in agreement with the cognitive dissonance theory. According to Festinger (1957), inconsistency among beliefs, attitudes and behaviour result in cognitive dissonance. Learners were not allowed to choose career pathways compatible with their interests and abilities. Therefore, they were expected to experience high cognitive dissonance. School administrators choose career pathways for learners according to the study conducted by Mwila (2022) in six schools of Lusaka Province and they were allocated subjects according to their academic performance (Ministry of Education-Educating our Future, 1996). Conversely, in high income countries learners are given an opportunity to choose academic subjects which are in line with their abilities and interests (Isaacson 1985; Sadler, 1997). Therefore, they are expected to have lower level of cognitive dissonance.

Interestingly, the findings of this study align with research conducted in America (Tyler, 2015) and Jordan (Ahmad & Khasawneh, 2021), despite the cultural differences. It was expected that learners in Zambia, with its collectivistic culture, would have a lower percentage of learners with high cognitive dissonance (Kaani & Machila, 2022). According to Triandis (1995), individuals from collectivistic cultures do not always experience dissonance when their private behaviour is inconsistent with their attitudes.

Level of Cognitive Dissonance among Learners According to School and 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. 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 also a statistically significant difference between males and females in the levels of cognitive dissonance. These findings are contrary to the findings by Arunkumar (1999) who found that there were no significant differences between boys and girls in terms of cognitive dissonance. Additionally, there was also a statistically significant difference in the level of cognitive dissonance according to school type. Learners at a regular school were expected to have low self-efficacy in the allocated subjects leading to a

higher level of cognitive dissonance as compared to a STEM school (Tiyuri et al., 2016). This could have been one of the reasons for a significant difference in the level of cognitive dissonance among learners in the two schools. In view of this, 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.

Conclusion

Research results indicate that 50% percent of learners experienced high level of cognitive dissonance. This study, despite having a small sample of learners from two secondary schools in Lusaka District, provides preliminary results regarding the level of cognitive dissonance among secondary school learners in Zambia. Cognitive dissonance has been associated with low academic achievement (Al Otabi, 2012; Yousef et al., 2010). Hence, a nationwide study is needed to accurately determine the level of cognitive dissonance among learners in Zambia. A sample that is representative of Zambian population is needed to precisely determine the level of cognitive dissonance among learners in secondary schools. This study was based on a small sample of two secondary schools in Lusaka District. Therefore, findings should be generalized with caution. Finally, 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.

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