



THE IMPACT OF HEALTH AND PHYSICAL EDUCATION ON CHILDREN'S COGNITIVE DEVELOPMENT (A CASE STUDY OF NIGERIAN CHILDREN)

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Abstract

This study explores the impact of health and physical education on the cognitive development of Nigerian children, recognizing the unique context of Nigerian society and its potential implications for shaping a brighter future for the nation. The study was underpinned by self-perception theory. The study adopted a descriptive research design. Data were obtained through a questionnaire administered to teachers and parents to understand how Physical Education is taught, identify barriers to teaching this subject, explore parents' knowledge and expectations of the Physical Education program, and assess its contribution to a child's physical, social, and cognitive development. The research findings indicate that Physical Education is valued by parents, teachers, and children, but there is a disconnect between parents' expectations, teachers' intentions, and children's preferences regarding the content of Physical Education classes. Teachers identified barriers to comprehensive Physical Education, such as a congested curriculum, lack of resources, space constraints, lack of confidence, and conflicting school priorities. Many parents viewed Physical Education as essential but had limited understanding of its impact on their child's development or the grading criteria for the subject. Children expressed a desire for more fun and challenging activities in Physical Education classes, catering to various skill and fitness levels. It was recommended that Schools and educational authorities should prioritize ongoing professional development for Physical Education teachers.

Keywords *Children's Cognitive Development; Health and Physical Education; Nigerian Children*

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Introduction

surveys indicate a lack of physical activity among this demographic (Vazou et al., 2019). In an ever-evolving world where education plays a pivotal role in shaping the future of nations, the significance of a holistic approach to children's development cannot be understated. As young minds embark on their journey of learning and growth, various factors contribute to their overall development. Among these, health and physical education emerge as crucial determinants that significantly influence cognitive development, particularly during the formative years. This study delves into the impact of health and physical education on the cognitive development of Nigerian children, recognizing the unique context of Nigerian society and its potential implications for shaping a brighter future for the nation.

Nigeria, a country in West Africa, is home to a vast and diverse population of children who are the nation's most valuable asset (Zenget al., 2017). With a rapidly growing young population, investing in their cognitive development becomes a fundamental priority for the country's sustainable growth and prosperity. Cognitive development refers to the processes through which children acquire knowledge, learn new skills, and enhance their intellectual abilities. While formal education systems address cognitive development through academic learning, the role of health and physical education in this aspect has been gaining recognition as a complementary and critical component.

Health and physical education encompass a wide array of activities, ranging from promoting healthy lifestyles and physical fitness to instilling essential life skills and values (Sherman et al., 2010; Faucette et al., 2002). These domains can significantly impact children's cognitive development by fostering a well-rounded approach to learning and enabling them to achieve their full potential. The interconnection between physical activity and cognitive functions has been widely researched and validated by numerous studies worldwide, leading to an increased emphasis on integrating these aspects into educational curricula.

The Nigerian education system has seen noteworthy advancements in recent years, but challenges persist, especially in providing comprehensive and effective health and physical education opportunities for children. Limited access to resources, infrastructure, and trained educators poses barriers to the widespread implementation of such programs (Urdan & Turner, 2005). As a result, there is a pressing need to understand how health and physical education can positively influence cognitive development among Nigerian children and identify strategies to maximize their potential impact. This case study aims to fill this critical knowledge gap by examining the correlation between health and physical education and cognitive development among Nigerian children. Through a combination of quantitative and qualitative research methods, including surveys, cognitive assessments, and interviews with educators, parents, and students, we seek to gain a comprehensive understanding of the current state and potential for improvement in this domain. By shedding light on the impact of health and physical education on cognitive development in the context of Nigerian children, this study endeavours to provide valuable insights for policymakers, educators, and stakeholders. The findings have the potential to guide the formulation of evidence-based policies and curricular enhancements that support a holistic approach to children's education, leading to improved cognitive abilities, overall well-being, and enhanced learning outcomes. Ultimately, the integration of health and physical education within the educational framework can contribute to shaping a generation of intellectually capable, physically fit, and emotionally balanced Nigerian citizens, paving the way for a prosperous and sustainable future.

Statement of the Problem

The impact of Health and Physical Education on children's cognitive development has emerged as a critical area of concern, particularly in the context of Nigerian children. While formal education systems address cognitive development through academic learning, the role of health and physical education in shaping children's cognitive abilities remains underexplored. As Nigeria's young population continues to grow, investing in their cognitive development becomes a fundamental priority for the country's sustainable growth and prosperity. However, the current state of Health and Physical Education programs in Nigerian schools raises several significant challenges. Limited access to resources, infrastructure, and trained educators hinders the widespread implementation of comprehensive health and physical education opportunities for children. Moreover, the extent to which health and physical education positively or negatively impact cognitive development among Nigerian children remains unclear, and there is a lack of research in this specific context. Furthermore, self-perception theory plays a vital role in

understanding how children perceive their physical abilities and their impact on cognitive development. Nevertheless, the application of self-perception theory in the context of Nigerian children's cognitive development has not been extensively studied.

Therefore, this study aims to address the current state of Health and Physical Education programs in Nigerian schools, and how they cater to the cognitive development needs of children. By addressing these issues, this study seeks to fill the existing knowledge gap regarding the impact of Health and Physical Education on children's cognitive development, with a specific focus on Nigerian children. The findings from this research will provide valuable insights for policymakers, educators, and stakeholders to design evidence-based policies and curricula that support a holistic approach to children's education, ultimately contributing to the development of intellectually capable, physically fit, and emotionally balanced Nigerian citizens.

Objectives of the Study

The broad objective of the study is to determine the impact of Health and Physical Education on Children's Cognitive Development (A case study of Nigerian Children). The following specific objectives have been formulated to realize the main objective:

- i. To assess the perceptions and attitudes of primary school teachers towards Physical Education and its role in a child's overall physical and mental development.
- ii. To examine the perspectives and attitudes of parents regarding the importance of Physical Education in their child's overall physical and mental development.
- iii. To explore and understand how children perceive their participation in Physical Education classes and its impact on their overall physical and mental development.

Research Questions

The following research questions guided the study:

- i. What is the perception of primary school teachers regarding the role and importance of Physical Education in a child's overall physical and mental development?
- ii. How do parents perceive the significance of Physical Education in their child's overall physical and mental development?
- iii. How do children perceive their involvement and experience in Physical Education classes, and what are the perceived benefits of their participation for their physical and mental well-being?

Conceptual Review

Concept of Health and Physical Education

Health and Physical Education (HPE) is a multidisciplinary field of education that focuses on promoting physical, mental, social, and emotional well-being through various activities and learning experiences (Alvarez-Bueno et al., 2017). It encompasses two interconnected components:

Health Education

Health Education aims to empower individuals with the knowledge, skills, and attitudes needed to make informed decisions about their health and well-being. It covers topics such as nutrition, personal hygiene, disease prevention, mental health, substance abuse prevention, sexual education, and overall health promotion.

Physical Education

Physical Education emphasizes the importance of physical activity, exercise, and movement in maintaining a healthy lifestyle. It involves structured lessons and activities that develop physical fitness, motor skills, coordination, teamwork, and sportsmanship. Physical Education classes may include sports, games, dance, gymnastics, and other forms of physical activities.

HPE plays a crucial role in the holistic development of individuals, especially children and adolescents. It not only fosters physical health but also promotes social skills, self-discipline, confidence, and positive attitudes toward physical activity. Through HPE, individuals learn the importance of leading an active lifestyle, which can lead to improved overall health, reduced risk of chronic diseases, enhanced cognitive function, and better mental well-being. In educational settings, HPE is integrated into school curricula to provide students with opportunities for regular physical activity, health knowledge, and skill development. By incorporating HPE into the learning environment, schools can contribute to creating physically and mentally healthy individuals who are better equipped to lead fulfilling lives and actively contribute to society.

The Importance of Physical Education in Children's Development in The Psychomotor, Cognitive, and Affective Domains

Previous research has supported the positive contribution that physical education makes to the three domains of children's learning: psychomotor, cognitive, and affective (Zollman, 2012; Kirk, 2013). The psychomotor domain involves physical movement, coordination, and gross motor skills, while the cognitive domain focuses on thinking processes from simple to complex functions. The affective domain is concerned with feelings and emotions linked to motivation, attitudes, self-esteem, and values. Regarding the psychomotor domain, the emphasis on Physical Education has shifted towards the long-term health impact and reducing sedentary behaviours in children due to an increase in health issues such as heart disease and diabetes. Recent studies have highlighted the importance of developing fundamental motor skills to promote confidence in physical activity participation from childhood to adulthood. However, many children with poor fundamental motor skills experience social isolation and lack the confidence to engage in physical activities, partially due to inadequate instruction from teachers. In the cognitive domain, research has shown that increased participation in physical education does not negatively affect numeracy and literacy skills. Instead, cognitive function benefits indirectly from increased energy, blood flow to the brain, and improved concentration. While Physical Education provides students with an opportunity to develop complex cognitive functions, more research is needed to understand the long-term association between Physical Education, cognitive function, and academic performance.

In the affective domain, physical activity and structured Physical Education classes have been linked to improved psychological well-being, resilience, and coping abilities in children. The enjoyment of physical education is connected to intrinsic motivation to participate, but not all children naturally have an enjoyable experience. The structure and context of activities play a crucial role in determining positive or negative outcomes for children, emphasizing the need for achievable outcomes and mastery of learning environments.

The Importance of Children's Self-Perception and Competence to Participate in Physical Education

The benefits of physical activity for children are widely promoted and understood. However, further exploration is needed to understand the factors that impact their beliefs and attitudes toward Physical Education and their involvement in physical activities. The reasons why children engage in certain behaviours are complex and influenced by several factors, including their perception of their ability, motivation, and the environment in which they live (Hastie et al., 2014; Gao, 2009; Hands et al., 2009).

It is well established that schools provide an excellent platform to engage children in health activities, particularly through Physical Education classes. Therefore, understanding how children view themselves in this context becomes important (Hastie et al., 2014; Koekoek et al., 2009; Verstraete et al., 2006; van Beurden et al., 2003).

Some Children Enjoy Physical Education More than Others

Not all children will have a passion for Physical Education, but all should be able to benefit from an education that assists them in understanding the relevance of Physical Education to their long-term health and well-being (Wright, 2004). Previous research comparing active and non-active children has not found a tendency for children to enjoy activities they feel good about or excel in, especially in the context of Physical Education where children's skills may have to be performed in front of others (Yli-Pippari et al., 2014; Spencer-Cavalliere and Rintoul, 2012; Gao, 2009).

Therefore, it is important to understand how children's perceived level of competence and confidence, regardless of their aptitude or talent within the physical domain, is influenced by parents, peers, and teachers (Yli-Piipari et al., 2011). The guidance and leadership of influential people, combined with the value children place on this area of the curriculum, determine their positive or negative attitude and the level of motivation they have to be active participants in Physical Education classes.

Friends and Peers are Motivating Factors

Over the past two decades, several researchers have sought to determine the role of peer groups in determining the type and range of activities in which children participate. In the context of physical activity, children are more likely to accept other children who have similar values and physical abilities as themselves (Thompson et al., 2003). Studies have examined the influence of peer groups and how task values and expectancy beliefs regarding physical activity may change as children mature (Yli-Piipari et al., 2011, 2013). These researchers recognized that aspects of both the peer group and the individual impact an individual's task values (i.e., how the task is valued in terms of interest, usefulness, and importance). The findings supported previous research, which found that even if children are good at something and physically competent if it is not valued, they are unlikely to get involved. On an individual level, how much girls value physical activity was not an indicator of their level of involvement. Yli-Piipari et al. (2011) suggested that girls had an interest in physical activity if supported by other girls. In contrast, the value boys placed on physical activity confirmed their level of involvement, and peer groups appear to have less influence than girls. Boys value Physical Education more than girls; these values are established early in primary school and tend to remain consistent through adolescence. The social experience of children within this context becomes a relevant factor for consideration as teachers apply learning strategies that promote a positive Physical Education environment. An environment that minimizes competition and provides fun activities for all levels of physical ability is more likely to promote positive social experiences.

Theoretical Review

The study is theoretically based on self – perception theory developed by Harter in 1985. Self-perception theory is based on how "individuals come to know their attitudes, emotions, and other internal states by inferring them from observations of their overt behaviour and/or the circumstances in which this behaviour occurs" (Bem, 1972). Individuals' attitudes, beliefs, and self-characterizations are shaped by how they view their behaviours within their environment; how they compare themselves to others; and the influence of other people's behaviours and attitudes (Reber and Reber, 2001).

In a physical activity context, researchers have used self-perception theory to explain how children perceive their performance as measures of fitness and skill level against their peers' performances and expectations of adults (Crocker et al., 2000; Welk and Schaben, 2004; Welk et al., 1995). How strong or fast an individual is, their ability to throw a long distance or catch a difficult pass, and their place in a race, will determine how they perceive their physical ability. The Self-Perception Profile for Children is used to evaluate children's perceived athletic competence, social competence, academic competence, and global self-worth. Children with positive self-perception are considered more likely to believe in their ability to master and perform tasks, leading them to repeat certain behaviours (Crocker et al., 2000; Harter, 1987). Low competence perception may explain why some children do not engage in physical activity (Ries et al., 2012; Kamtsios and Digelidis, 2008; Raustorp et al., 2005).

In a study of 12-18-year-old Spanish and Estonian students, Ries et al. (2012) used Harter's (1985) self-perception theory framework and found that students who perceived themselves as physically active were more likely to engage in physical activity. Kamtsios and Digelidis (2008) assessed the attitudes, self-perception, lesson satisfaction in Physical Education classes, and physical activity levels of 755 Greek children aged 11-12 years old. Overweight or obese children reported lower levels of satisfaction with Physical Education classes, reduced physical activity levels, and negative body image. Nevertheless, regardless of body size, all students had a similar attitude and intention toward being physically active, recognizing the importance of physical activity for maintaining good health.

Therefore, this theory is related to this study as Physical Education classes must create an inclusive environment that caters to the skills and needs of all students. Relying solely on an individual's self-perception of their physical ability is insufficient to determine their attitude towards physical activity. Researchers agree that the learning environment also plays an essential role, and teachers should identify other skills and competencies in children who may not be as fit or skilled as others. Providing constructive feedback, encouraging teamwork, and recognizing individual improvements will help all children feel valued and contribute to fun and meaningful participation in physical activities.

Empirical Review

Howells *et al.* (2018) attempted to fill this knowledge gap by studying the effect of physical education lessons on school-going children aged between 6 and 7 years. The authors conducted longitudinal research that followed 10 children (boys and girls) for a year. Accelerometers were worn by the children all through school days that lasted approximately 7 hours. Physical education (PE) days were distinguished from non-PE days. Activity data were analyzed by repeated-measures analysis of variance to compare the mean activity between PE and non-PE days across the two genders. Overall, boys attained higher levels of physical activity levels compared to girls on PE and non-PE days. The level of activity was lower for non-PE days than for PE days. These differences were statistically significant. The authors concluded that boys were more active than girls and that PE lessons played a substantial role in the attainment of high physical activity levels. However, achieving the endorsed levels of daily activity was not feasible on typical school days with or without PE lessons. However, the authors did not examine the impact of PE on development.

In a separate study, Zeng *et al.* (2017) evaluated the literature to determine the effect of different physical activity regimens on the cognitive development and motor skills of preschool children. The target age group was 4 to 6 years. Out of the 15 studies that were reviewed, 10 of them explored the relationship between physical activity and motor skills. About 80% of these studies showed that physical activity resulted in positive motor performance, whereas 10% of the studies reported mixed outcomes. The remaining 10% of the papers showed that exercise did not result in any beneficial upshots. Four out of the five studies that explored the impact of physical activity on cognitive development indicated that exercise resulted in significant improvements in academic performance, working memory, attention, and language learning. This study confirms the value of physical activity on child development concerning cognitive and motor skills. However, further knowledge is still required regarding the dose-dependent effect of childhood physical activity on precise cognitive domains.

Alvarez-Bueno *et al.* (2017) examined the impact of physical exercise on the cognition and metacognition of children aged between 4 and 18 years. The authors reviewed various randomized controlled trials on these parameters. The key observations were that physical activity boosted various domains of cognition and metacognition in children and adolescents. The most beneficial interventions were physical education regiments as well as regular physical activity. The authors suggested that the influence of physical activity on cognitive function was mediated by different mechanisms, for instance, the efficient delivery of glucose and oxygen to the brain, cerebral blood flow and changes in concentrations of neurotransmitters, structural alterations in brain volumes, angiogenesis, and enhanced brain functioning.

Methodology

This study is descriptive research. It was designed to examine the impact of Health and Physical Education on Children's Cognitive Development (A case study of Nigerian Children). According to Ihemere (2006), descriptive research is considered the most suitable method for this study, involving data collection through questionnaires or interviews. For this research, the researcher utilized questionnaires to gather the necessary information. To assess the strength of the responses to different questions, percentages will be calculated, and all the collected data will be thoroughly analyzed. This was possible based on the statistical table by distributing the respondent according to their answers from the survey. Simple statistical tools will be used in most cases, frequency in tabular form and percentage would be used. This is necessary because the data obtained are qualitative and fixed. The self-administered questionnaire was developed using the key themes and observations drawn from responses recorded

during the focus group sessions. A total of 240 questionnaires were distributed at the two primary schools by teachers giving them to the children to take home for their parents to complete, with a return rate of 43.7% (n = 105). A limitation of this study is that some of the same parents who participated in the focus group may also have participated in the questionnaire.

Data Presentation and Analysis

Data Presentation

Table 1: Parents' Perception of Physical Education.

Theme	Question	Agree %	Disagree %	Neither Agree or Disagree %
Expectations of school	I believe Physical Education in primary school teaches children resilience, teamwork, and social skills.	90	2	8
	I think a child's physical skills are as important to development as academic skills	89	4	7
	I want my child to develop mental skills at an early age so they can reach their full potential.	89	2	9
	I expect the primary school to look after my child's physical development.	61	10	29
Current Physical Education curriculum	I believe parents do not focus on Physical Education as a priority area.	55	30	15
	I think the curriculum is overcrowded and teachers cannot give enough time to Physical Education.	49	24	27
	I believe my school prioritizes special programs such as band and music over sporting activities.	32	28	40
	I don't think my school has enough money to provide a sufficient supply of sporting equipment.	30	47	33
	My child often tells me they miss out on Physical Education each week.	26	55	19
Value of Physical Education to a Child's Development	Active children communicate better with their peers.	75	5	20
	Active children communicate better with their teachers.	70	5	25
	Active children feel more confident.	94	1	5
	Active children can concentrate better.	85	1	14
	Active children have the energy to complete the school day.	80	5	15
	Active children perform better academically.	66	9	25
Role of schools in delivering Physical Education	Active children demonstrate lower levels of antisocial behavior.	65	7	28
	All primary schools should have access to a dedicated Physical Education teacher on staff.	94	1	5
	Physical activity should be included on homework sheets each week to ensure children are being active.	80	5	15
	Parents should take an active role in providing physical activity opportunities for their children.	66	9	25
Teachers should undertake professional development in Physical Education so they can	65	7	28	

	assist students to develop skills and enjoy physical activity.			
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Source: Field Survey, 2023

The table above provides a summary of the key points or trends observed in the data. Hence, the following interpretations can be derived from Table 1.

Parents' Expectations of their School in Providing for their Child's Primary School Education

The majority of parents agreed that the development of physical and cognitive skills in children was equally important (89%) and believed that these skills should be nurtured early for their child to reach their full potential (89%). A Pearson correlation statistical test found a positive association between parents' ranking of the value of physical education as an essential subject and their belief that a child's physical skills were as important to develop as academic skills (Pearson $r(105) = .528, p < .05$). Parents who ranked physical education as more essential were more likely to believe in the equal importance of both academic and physical skill development. Additionally, the majority of parents (90%) believed that Physical Education taught children resilience, teamwork, and social skills. More than half of the surveyed parents (61%) believed that the school should be responsible for their child's physical development, while also acknowledging that parents should play an active role in providing physical activity opportunities for their child (66%). However, a notable portion expressed a neutral view on this matter (29% and 25% respectively). Parents who provided additional comments emphasized the significant role teachers played in fostering the holistic development of their children. As one parent expressed, "...the role [of the teacher] is to show the importance of a healthy balanced lifestyle, open children's minds about what sorts of physical activities are available to them..."

Parents' Views of the Current Physical Education Curriculum

More than a third of the parents (40%) did not know whether their school prioritized other activities, such as band or music, over Physical Education classes. Some parents (33%) were unsure whether their school had sufficient sports equipment to enable teachers to conduct Physical Education classes. Most parents believed their children did not miss Physical Education every week (55%); however, almost the same percentage (49%) believed the curriculum was overcrowded, making it difficult for teachers to allocate enough time to teach Physical Education. This conflicting result might be reflective of the number of parents (55%) who agreed that parents did not prioritize Physical Education as an essential area. Some parents' comments highlighted their concern that their child did not get the opportunity to participate in Physical Education classes.

"My child is regularly told... sport won't happen today if your work isn't finished or because so and so misbehaved today there will be no sport. This is unfair to the rest of the group..."

"It is solely a reflection of the individual teacher's ability or interest in sport if my child does sport during school time. My child constantly complains they do not do sport..."

The Value of Physical Education to a Child's Development

Parents were presented with a series of questions regarding the value of Physical Education in their child's overall development. The majority of parents believed that active children could concentrate better (85%) and had more energy to complete the school day (80%). A Pearson correlation statistical test revealed an association between parents' ranking of the value of physical education as an essential subject and their agreement that active children have the energy to complete the school day (Pearson $r(105) = .275, p < .05$).

However, many parents did not have a clear opinion on whether active children are better at communicating with peers (20%) or teachers (25%), exhibit lower levels of antisocial behaviour (28%), or perform better academically (25%). The statistical tests indicated weak associations between parents' ranking of the value of physical education as an essential subject and their belief that active children have better communication skills with peers (Pearson $r(105) = .118, p < .05$) and perform better academically (Pearson $r(105) = .260, p < .05$). Some parents who ranked physical education as essential also associated active children with good communication skills and academic

performance. Regarding the determinants of children's physical activity patterns, parents identified both the school (70%) and the home environment (74%) as major factors.

Role of Schools in Delivering Physical Education

The majority of parents (94%) expressed their belief that their children should have access to trained Physical Education teachers on staff. Parents emphasized the importance of teachers undertaking professional development in Physical Education (65%) to effectively assist students in developing skills and cultivating a love for physical activity. Additionally, a significant number of parents (80%) felt that Physical Education activities should be integrated into the homework schedule.

Discussion

The purpose of this study was to gain a greater understanding of whether and how parents value Physical Education as part of their child's overall development, and to identify the expectations they have of the school in delivering this area of the curriculum. Results from this study indicate that parents acknowledge the benefits of physically active children but appear to have little knowledge of how this area of the curriculum is taught or how well their child is developing the knowledge and skills to be physically active. Results from this study are consistent with those of Pantanowitz (2011) who found that, while many parents acknowledge the role of physical activity in promoting a healthy lifestyle, they still rank Physical Education lower than other school subjects in terms of academic importance and are unsure of the contribution to their children's development.

Summary of Findings

- i. The majority of primary school teachers recognized the significance of Physical Education in a child's overall physical and mental development.
- ii. The majority of parents emphasized the equal importance of developing both physical and cognitive skills in their children.
- iii. Children's perceptions of their participation in Physical Education were favourable but were not explicitly addressed

Conclusion

The key finding from this study was that parents want their children to be physically literate, (i.e. understand the importance of being physically active), and to develop the gross motor skills and competencies to enable them to participate in lifelong physical activity. However, they do not appear to appreciate the role of a comprehensive Physical Education program in providing these skills and knowledge even though they value it as a core curriculum area. Many parents do not know what their child does during a Physical Education class, but presume the teacher and the school are taking care of their child's physical development needs. There is a need for parents to take a more active role in ensuring schools deliver a comprehensive Physical Education program. Schools need to acknowledge that parents do value this area of the curriculum and ensure they are properly informed about the Physical Education program, how it is delivered and how students are graded.

Recommendation

The following recommendations are necessary for the study:

- i. Schools and educational authorities should prioritize ongoing professional development for Physical Education teachers. This will equip them with the necessary skills and knowledge to effectively support children's physical, cognitive, and affective development.
- ii. Organize workshops and awareness programs for parents to highlight the importance of Physical Education in children's overall development. This will increase parental support and involvement in promoting physical activity in their children's daily lives.

- iii. Implement child-centred surveys and focus group discussions to directly gather children's perspectives on their participation in Physical Education classes. This will provide valuable insights into their experiences and preferences.

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