

## **Assessing Demographic Factors as Correlate Between Social Interaction and Memory Development Among Adolescents in Secondary Schools in Kaduna North, Nigeria**

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### **Abstract**

Social interactions that babies and early children have with other people have a significant impact on how well their memories develop. This study assesses demographic factors, social interaction and memory development among adolescents in secondary schools in Kaduna North. Cross sectional survey design was employed using two instruments; Working Memory Questionnaire (WMQ) and Social Interaction Scale to collect data from the participants in some selected secondary schools in Kaduna North of Kaduna State, Nigeria, Government Secondary School Independent Way, Adeyemo Secondary Schools, Katsina Road Baptist Secondary School and Taiwo Road all in Kaduna North, Nigeria. Random sampling technique was used to select male and female participants from the ages of 11-20 years from JSS 3- SS 3. Two hypotheses were tested using independent t-test. Hypothesis one analysis of the data revealed a no statistically significant results in General memory functioning  $t(174) = -0.493, P > 0.05$ ; Retrospective functioning  $t(174) = 0.836, P > .05$ ; Frequency of forgetting  $t(174) = -0.067, P > .05$ ; Frequency of forgetting during reading  $t(174) = -0.914, P > .05$ ; Remembering past events  $t(174) = 0.245, P > 0.05$  and Mnemonics usage  $t(174) = 0.104, P > 0.05$  have no difference between students age 10-14 years and students between 15-19 years on memory development among adolescents in Secondary Schools Students in Kaduna State. In other words, this hypothesis was not confirmed significant in this study. Hypothesis two results revealed a no statistically significant  $[t(174) = -0.018, P > 0.05]$  difference between male and female students in social interaction in Kaduna State. In other words, this hypothesis was not confirmed significant in this study. The study concludes that there is age and gender difference in memory development and social interaction among adolescents in Secondary Schools in Kaduna State. It recommends that communication should be intensified in the family between the parents and children as communication is the central quality of the human social environment.

**Keyword:** Demographic factors, Social Interaction, Memory Development, Adolescents and Secondary Schools.

### **Introduction**

Social interaction is the process of reciprocal influence exercised by individuals over one another during social encounters. Usually, it refers to face-to-face encounters in which people are physically present with one another for a specified duration. However, in contemporary society

we can also think of social encounters that are technologically mediated like texting, skyping, or messaging.

The social interactions that babies and early children have with other people have a significant impact on how well their memories develop. Children brains develop as a result of social contact;

How they view themselves in relation to other individuals, objects, and mental processes. Every day, second by second, infants, children, and adults connect with each other in social ways, talking with and reacting to each other's intents, wants, and meanings (Berk, 2019). The matching and mismatching of intentions and meanings distinguish the mutual regulating process, notwithstanding the difficulty of this process. Social contact is important in people's lives from the very beginning because newborns connect with their caregivers and form the emotional bond that forms the basis for future relationships.

The relationships and interactions demonstrated by the idea that social interactions with the environment and other people have an impact on each child's individual behavior, activities, and knowledge. The relationships and interactions aid in the growth of a child's cognitive, motor, and communicative abilities (MacNaughton & Williams, 2008). Through playing with others and forming relationships with adults and other kids, children can learn crucial social skills that they will need throughout their lives. According to Gonzalez-Mena (2021), young children have the opportunity to develop important social skills that will affect their knowledge of how to behave in society. Children, for instance, learn via social contact how to share, collaborate, and respect others and their possessions. The learning process is the subject of several theories. Although learning may take place in a variety of settings, what exactly promotes memory development? According to Vygotsky's theories, social connection helps children learn how to use language and to see the world as a member of their particular culture. Language and social interaction are also specifically linked to children's cognitive development. As a prospective teacher, it is crucial that we examine Vygotsky's theories and think about how they can apply to my own instruction. Kutnick *et al* (2007), Sammons *et al* (2008) argued in their article that the early years experiences of very young children from disadvantaged backgrounds can be particularly significant in providing social environments which contribute to both social and cognitive enhancement (Kutnick *et al*, 2007; Sylva *et al*, 2010).

These environments are closely connected to particular routines, activity settings and relationships and relate to the quality of the setting. The issue of quality is known to influence long-term cognitive and behavioural development as 'children who attended low quality pre-schools had cognitive and behavioural scores that were not significantly different from those of children with no pre-school experience' (Sylva *et al*, 2011).

Infants' and young children's social engagement with other people is a fundamental process shaping a child's normal and abnormal development. Social interaction sculpts the child's brain as it shapes the child's sense of his- or herself in relation to the world of people and things in the world, their states of consciousness. Social interaction is a mutually regulated process in which infants, children, and adults on a second-by-second basis communicate and respond to relational intentions, needs, and meanings of the other. The mutual regulatory process is not smooth but is characterized by a matching and mismatching of intentions and meanings. The messiness of

mutual regulation is resolved by a reparatory process in which mismatches are transformed into matches (Tronick, 2020).

A cognitive mechanism with limited storage that can hold information briefly is the memory (Miyake & Shah, 1999). Memory is necessary for reasoning, decision-making, and conduct (Diamond, 2013). Short-term memory and memory are sometimes used synonymously, although some theorists believe the two forms of memory are different because working memory allows for the manipulation of information that has been stored there, whilst short-term memory merely refers to the short-term storage of information. According to Diamond (2013), the concept of memory is essential to cognitive psychology, neuropsychology, and neuroscience. This causes a lot of debate in the working memory task known as the complicated-span task, in which the encoding of information to be remembered alternates with a challenging activity (Lewandowsky & Oberauer, 2009). It is asserted that the causes of degradation are either the amount of time needed to do this work or the volume of interference it entails (Lewandowsky & Oberauer, 2009). Another time-based resource sharing model contends that temporal decay occurs whenever focus shifts away from the information that has to be recalled and becomes obsessed with processing the information (Portrat *et al.*, 2008). By bringing attention back to the information that has to be recalled, active rehearsal, according to this idea, improves processing and storage of the knowledge (Portrat *et al.*, 2008).

Provine (2021) studied 1200 two-person social interaction among male and female he observed discretely in public places like shopping malls. He discovered that when a female adolescent was speaking and a male adolescent was listening the female do not interact more than the male. Similarly, when a male adolescent was speaking and a female adolescent listening, she was still not more likely to interact than him. “Female speakers do not interact more than their male audience. In contrast, male speakers laugh about 7 percent less than their female audience” (Provine, 2021). Provine suggests that this shows that males lead in producing humour while females lead in laughing at humour, but it might also show a pattern of social deference reflecting the unequal social status of men and women.

Children’s families are their first social group and they begin to learn how to get their needs met by communicating. Children learn how to behave and develop their beliefs based on their social exposure. Their brain development begins in infancy created by the amount of external stimulus they have around them. The sociocultural theories are based on growth, physical, social, psychological, cultural, emotion, spiritual and cognitive development in becoming self-sufficient and independent beings (Lavery & Reet, 2021). The stages of the social theories are based on the child’s age, their environment, and how they interact with their caregivers. Children are able to learn important social behaviours that are needed in life, through playing with others and the development of relationships with adults and other children. Gonzalez-Mena (2021), suggests that during the early childhood years, children are able to learn key social skills that will impact their understanding of how to act in society. For example, children learn how to share, cooperate and respect others, and their belongings through social interaction.

## **Statement of the Problem**

The subject of teenage memory development is highly significant, especially in contemporary culture. The frightening pace at which children are failing has alarmed parents and the general public. The underlying mechanisms and processes that prohibit children with weak memory from displaying appropriate social conduct while interacting with others are less well understood. Our responsibilities in life greatly influence our choices and our development as people because majority of children who experience insufficient pleasant social connections have trouble developing their memories. The presence of these problems is a warning sign for a number of undesirable consequences, including drug abuse, delinquent conduct, and academic failure in our society today. Studies looking at the connection between social interactions and memory development only consider one social factor, frequently the social network. Consider about the responsibilities of a parent: providing moral advice, problem-solving, driving, cleaning, and so on. Similar to this, when one or more roles are in conflict, a person may suffer role conflict. Peer connections are difficult for children with weak memories to establish and sustain, and these difficulties persist throughout adolescence and adulthood (Friedman *et al*, 2003 and Mikami & Hinshaw, 2006). Recent studies are quite consistent in linking performance deficits rather than knowledge deficits to social issues in kids with weak memories (Prins, 2021). They seem to be aware of social conventions in an age-appropriate way, but they do not allow that understanding dictate how they act with other people. It is on this note that the study seeks to investigate how demographic factors, correlate between social interaction and memory development among adolescents in secondary schools in Kaduna North.

### **Research Questions**

The study is guided by the following research questions

- i. What is the age difference in memory development among adolescents in secondary schools in Kaduna North?
- ii. What is the gender difference in social interaction among adolescents in secondary schools in Kaduna North?

### **Objectives of the Study**

The study aimed at achieving at the following objectives:

- i. To determine age difference in memory development among adolescents in secondary schools in Kaduna North.
- ii. To determine gender difference in social interaction among adolescents in secondary schools in Kaduna North.

### **Methods**

The study employed Cross sectional survey research design because it is the method of studying characteristics of a sample through questioning that enables a researcher to make generalizations concerning population of interest. This design was considered most appropriate for this study because there was no intention of manipulating the variables.

The study participants covered some selected secondary schools in Kaduna North of Kaduna State, Nigeria. The population was three thousand, two hundred and twenty-three (3223) students. The

research setting for this study included Government Secondary School Independent Way, Adeyemo Secondary School, Katsina Road and Baptist Secondary School Taiwo Road, all located at Kaduna North, Kaduna State, Nigeria. The study accessed 64 males (36.4%) and 112 females (63.6%), age ranging from 10 to 19 years with the mean age of 13.94 and standard deviation of 1.699; age was further grouped as 10-14 years (N= 110; 62.5%) and 15-19 years (N= 66; 37.5%). From the ages of 11-20 years respectively were selected in the class of JSS 3- SS 3.

The sample size for the study was one hundred and seventy-six (176) participants. Simple random sampling technique was used to select the participants out of the three thousand two hundred and twenty-three (3223) population of the study.

The sample size formula using Dillman's representative sample size determination was adopted to sample the number of participants across levels. The Dillman (176) sample size was calculated as follows:

$$\text{Formula } n = [(N) (p) (1 - p)] / [(N - 1) (B/C)^2 + (p) (1 - p)]$$

Where N = 3223, p = 0.5, B = 0.05, C = 1.96

$$n = [(3223) (0.5) (1-0.5)] / [(3223-1) (0.05/1.96)^2 + (0.5) (1-0.5)]$$

$$n = [(3223) (0.5) (0.5)] / [(3222) (0.0255)^2 + (0.5) (0.5)]$$

$$n = [3223 \times 0.25] / [(3222) (0.0255)^2 + (0.5) (0.5)]$$

$$n = (505) / (3222) (0.0255 \times 0.0255)^2 + (0.25)$$

$$n = (505) / (3222) (0.00065025) + (0.25)$$

$$n = (505) / (2.27 + 0.25)$$

$$n = 505 / 2.52 = 200.3968$$

$$n = \underline{176}$$

Two different questionnaires called Working Memory Questionnaire (WMQ) and Social Interaction Scale were the questionnaire employed to collect data. The Working Memory Questionnaire (WMQ) was developed by Vallat-Aouvi et al. (2009). It is a 7-item questionnaire with 14 response options ranging from not at all to Not Relevant. The Psychometric property of the scale was obtained by the authors of Cronbach's alpha of .94 indicating a very high reliability with the concurrent validity of .90. Social Interaction Scale (SIS) was developed by Lihenderson and Zunbargo (2000). It has 35 items with five (5) response options. The psychometric property was obtained in Nigeria by Omoluabi (2012) with reliability of .93 and validity of .92 respectively.

To ensure the validity of the instrument, content validity method of obtaining estimate of validity which requires the adoption of experts was employed. The validations of the instruments were done by submitting the items to the experts for scrutiny in order to ensure that the instrument was in agreement with the study's objectives.

The administration of the questionnaire took place at three secondary schools: Government Secondary School Independent Way, Adeyemo Secondary School, Katsina Road and Baptist Secondary School Taiwo Road, all located at Kaduna North, Kaduna State, Nigeria where the

participants were randomly selected from the schools. Permission was sought from the authorities of the schools by the researchers before the administration of the questionnaire.

| Memory Development                     | Age         | N   | Mean  | Std. Deviation | Df  | T      | Sig. |
|----------------------------------------|-------------|-----|-------|----------------|-----|--------|------|
| General memory functioning             | 10-14 years | 110 | 4.37  | 1.886          | 174 | -0.493 | .622 |
|                                        | 15-19 years | 66  | 4.52  | 1.800          |     |        |      |
| Retrospective functioning              | 10-14 years | 110 | 23.75 | 6.040          | 174 | 0.836  | .404 |
|                                        | 15-19 years | 66  | 22.94 | 6.614          |     |        |      |
| Frequency of forgetting                | 10-14 years | 110 | 78.45 | 19.106         | 174 | -0.067 | .949 |
|                                        | 15-19 years | 66  | 78.64 | 19.512         |     |        |      |
| Frequency of forgetting during reading | 10-14 years | 110 | 21.53 | 7.138          | 174 | -0.914 | .362 |
|                                        | 15-19 years | 66  | 22.55 | 7.177          |     |        |      |
| Remembering past events                | 10-14 years | 110 | 19.03 | 5.503          | 174 | 0.245  | .807 |
|                                        | 15-19 years | 66  | 18.82 | 5.438          |     |        |      |
| Mnemonics usage                        | 10-14 years | 110 | 32.35 | 9.631          | 174 | 0.104  | .918 |
|                                        | 15-19 years | 66  | 32.20 | 8.418          |     |        |      |

Also, consent of prospective participants was sought after brief explanation of the research. Those who consented were given the questionnaire with assurance of anonymity and confidentiality of responses. Participants were also informed that they were not under any obligation to participate and that they had the right to withdraw at any point they felt inclined to discontinue with the exercise. Participants were told that there were no right or wrong answers but they were encouraged to be honest in their responses.

Statistical Package for Social Sciences (SPSS) version 26 was used for data analysis. The descriptive statistics used for analyzing the data were frequencies, percentages, means and standard deviations while the inferential statistics used for the test of hypotheses was Independent Sample t-test. The results were presented in tables.

## Result of the Findings

### Test of Hypotheses

**Hypothesis 1:** There is a significant age difference in memory development among adolescents in Secondary Schools in Kaduna State. This hypothesis was tested using Independent Sample t-test in table 1.

**Table 1: Difference in Memory Development among Adolescents in Secondary Schools according to Age Groups**

Table 1 presents the summary results of the Independent Sample t-test on the components of memory development among secondary school students across age in Kaduna State where the results revealed the mean and standard deviation scores for General memory functioning: 10-14 years (M= 4.37; SD= 1.886) and 15-19 years (M= 4.52; SD= 1.800); Retrospective functioning: 10-14 years (M= 23.75; SD= 6.040) and 15-19 years (M= 22.94; SD= 6.014); Frequency of

forgetting: 10-14 years ( $M = 78.45$ ;  $SD = 19.106$ ) and 15-19 years ( $M = 78.64$ ;  $SD = 19.512$ ); Frequency of forgetting during reading: 10-14 years ( $M = 21.53$ ;  $SD = 7.138$ ) and 15-19 years ( $M = 22.55$ ;  $SD = 7.177$ ); Remembering past events: 10-14 years ( $M = 19.03$ ;  $SD = 5.503$ ) and 15-19 years ( $M = 18.82$ ;  $SD = 5.438$ ) and Mnemonics usage: 10-14 years ( $M = 32.35$ ;  $SD = 9.631$ ) and 15-19 years ( $M = 32.26$ ;  $SD = 8.418$ ). Further analysis of the data revealed a no statistically significant results in General memory functioning  $t(174) = -0.493$ ,  $P > 0.05$ ; Retrospective functioning  $t(174) = 0.836$ ,  $P > .05$ ; Frequency of forgetting  $t(174) = -0.067$ ,  $P > .05$ ; Frequency of forgetting during reading  $t(174) = -0.914$ ,  $P > .05$ ; Remembering past events  $t(174) = 0.245$ ,  $P > 0.05$  and Mnemonics usage  $t(174) = 0.104$ ,  $P > 0.05$  have no difference between students age 10-14 years and students between 15-19 years on memory development among adolescents in Secondary School Students in Kaduna State. In other words, this hypothesis was not confirmed significant in this study. Therefore, it implies that age have no significant mean difference in memory development among adolescents in Secondary School students in Kaduna State, Nigeria.

**Hypothesis 2:** There is a significant gender difference in social interaction among adolescents in Secondary School in Kaduna State. This hypothesis was tested using Independent Sample t-test in table 2.

**Table 2: Difference between Male and Female in Social Interaction among Adolescents in Secondary Schools in Kaduna State, Nigeria**

| Gender | N   | M     | SD     | Df  | T      | Sig. |
|--------|-----|-------|--------|-----|--------|------|
| Male   | 64  | 53.33 | 10.779 | 174 | -0.018 | .985 |
| Female | 112 | 53.36 | 9.692  |     |        |      |

**$t(174) = -0.018$ ,  $P > 0.05$**

Table 2 shows the summary results of the Independent Sample t-test on social interaction among students where it revealed the mean and standard deviation scores for male ( $M = 53.33$ ;  $SD = 10.779$ ) and female ( $M = 53.36$ ;  $SD = 9.692$ ). Further analysis of the results revealed a no statistically significant ( $t(174) = -0.018$ ,  $P > 0.05$  difference between male and female students in social interaction in Kaduna State. In other words, this hypothesis was not confirmed significant in this study. Therefore, it implies that gender indicates no significant mean difference on social interaction in this study among adolescents in secondary schools in Kaduna State, Nigeria

## Discussion

The study investigated the relationship between social interaction and memory development among adolescents in secondary schools in Kaduna North. Two hypotheses were tested using the Statistical Package for Social Sciences (SPSS) version 26 for the data analysis. The descriptive statistics used for analyzing the data were frequencies, percentages, means and standard deviations while the inferential statistics used for the test of hypotheses was Independent Sample t-test. The results of the study were presented in tables. It is discovered that memory development constitutes the

general memory functioning, retrospective functioning, frequency of forgetting, frequency of forgetting during reading, remembering past events and mnemonics usage.

Hypothesis I stated that there is a significant age difference in memory development among adolescents in Secondary School in Kaduna State, Nigeria. This hypothesis was tested using Independent Sample t-test. Further analysis of the data revealed a no statistically significant results in General memory functioning; Retrospective functioning; Frequency of forgetting; Frequency of forgetting during reading; Remembering past events and Mnemonics usage have no difference between students age 10-14 years and students between 15-19 years on memory development among adolescents in Secondary School Students in Kaduna State. In other words, this hypothesis was not confirmed significant in this study. This implies that age has no significant mean difference in memory development among adolescents in Secondary School students in Kaduna State. In consensus with the finding of this study, respondents appear to have age-appropriate awareness of social norms, but they do not let that knowledge control how they behave with other people.

A child's family is his first social group and he begins to learn how to get his needs met by communicating. Children learn how to behave and develop their beliefs based on their social exposure. Their brain development begins in infancy created by the amount of external stimulus they have around them. The sociocultural theories are based on growth, physical, social, psychological, cultural, emotion, spiritual and cognitive development in becoming self-sufficient and independent beings (Lavery & Reet, 2021). The stages of the social theories are based on the child's age, his environment, and how he interacts with his caregiver. Children are able to learn important social behaviours that are needed in life, through playing with others and the development of relationships with adults and other children. Gonzalez-Mena (2021) suggests that during the early childhood years, children are able to learn key social skills that will impact their understanding of how to act in society. For example, children learn how to share, cooperate and respect others, and their belongings through social interaction.

Hypothesis II states that, there is a significant gender difference in social interaction among adolescents in Secondary School in Kaduna State. This hypothesis was tested using Independent Sample t-test. Further analysis of the results revealed a no statistically significant difference between male and female students in social interaction in Kaduna State. In other words, this hypothesis was not confirmed significant in this study. Therefore, it implies that gender indicates no significant mean difference on social interaction in this study among adolescents in secondary school in Kaduna State. In agreement with this finding, Provine (2021) studied 1200 two-person social interaction among males and females he observed discretely in public places like shopping malls and discovered that when a female adolescent was speaking and a male adolescent was listening, the female does not interact more than the male. Similarly, when a male adolescent was speaking and a female adolescent listening, she was still not more likely to interact than him. Female speakers do not interact more than their male audience; while male speakers laugh about 7 percent less than their female audience (Provine, 2021). Provine suggests that this shows that males lead in producing humour while females lead in laughing at humour, but it might also show a pattern of social difference reflecting the unique social status of men and women.

## **Conclusion**

The study confirmed that there is no significant age difference in memory development among adolescents in Secondary Schools in Kaduna State. This is to note that memory development constitutes the general memory functioning, retrospective functioning, frequency of forgetting, frequency of forgetting during reading, remembering past events and mnemonics usage among secondary school students. Also, there is no significant gender difference in social interaction among adolescents in Secondary Schools in Kaduna State. This means that irrespective of the gender, social interaction is found to be unison without difference among males and females. Understanding children's experiences can contribute to discussions around best practices in early childhood settings, particularly in light of the movement towards seeing children as active stakeholders themselves rather than the dependents of parent stakeholders.

### Recommendations

The study recommends that:

- i. Irrespective of age, children should not be treated differently based on their age and gender as development depends on the age and at time gender of the person.
- ii. Communication should be intensified in the family between parents and children as communication is the central quality of the human social environment. Social interaction depends on communication.

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