

ADDIS ABABA UNIVERSITY  
SCHOOL OF PSYCHOLOGY  
DEPARTMENT OF APPLIED DEVELOPMENTAL PSYCHOLOGY

FAMILY CHARACTERISTICS AS THE MODERATORS OF THE  
RELATIONSHIP BETWEEN LATE ADOLESCENTS' PSYCHOLOGICAL  
CONSTRUCTS AND INTERROGATIVE SUGGESTIBILITY IN BAHIR DAR  
CITY ADMINISTRATION

BY  
REDA DARGE NEGASI

A Dissertation Submitted to the Department of Applied Developmental  
Psychology in the School of Psychology of Addis Ababa University

In Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy  
in Applied Developmental Psychology

MARCH 2014  
ADDIS ABABA

FAMILY CHARACTERISTICS AS THE MODERATORS OF THE  
RELATIONSHIP BETWEEN LATE ADOLESCENTS' PSYCHOLOGICAL  
CONSTRUCTS AND INTERROGATIVE SUGGESTIBILITY IN BAHIR DAR  
CITY ADMINISTRATION

BY  
REDA DARGE NEGASI

A Dissertation Submitted to the Department of Applied Developmental  
Psychology in the School of Psychology of Addis Ababa University

In Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy  
in Applied Developmental Psychology

MARCH 2014  
ADDIS ABABA

ADDIS ABABA UNIVERSITY  
SCHOOL OF PSYCHOLOGY  
DEPARTMENT OF APPLIED DEVELOPMENTAL PSYCHOLOGY

FAMILY CHARACTERISTICS AS THE MODERATORS OF THE  
RELATIONSHIP BETWEEN LATE ADOLESCENTS' PSYCHOLOGICAL  
CONSTRUCTS AND INTERROGATIVE SUGGESTIBILITY IN BAHIR DAR  
CITY ADMINISTRATION

BY  
REDA DARGE NEGASI

MARCH 2014  
ADDIS ABABA

## ACKNOWLEDGEMENTS

My deepest gratitude goes to my supervisor Dr. Ayele Meshesha. I greatly appreciate his guidance, encouragement and invaluable input. I would like to thank him for all the hard work, support and effort that he put in the different stages of my dissertation without showing any sign of negligence from the time he was asked to take this responsibility.

My heartfelt appreciation goes out to Dr. Mulugeta, Mr. Tilahun, Mr. Lake, and Mr. Asnakew in addition to helping me with my statistical analysis; they stepped in at a very crucial time and gave life to my dissertation. I am indebted to them for their kind assistance and the hours of hard work that they put in. To my friends Dr Tebeje, Dr. Dawit, Mr. Yinager, Mr.Zelalem, Mr. Markos, Mr. Sami, Mr. Kibrom, Mr. Sintayhu, W/rt Simegn, and Mr. Raja who stood by me, supported and motivated me.

I would like to extend my gratitude to all the teachers, students and principals in Bahir Dar preparatory school that took part in my research. I would like to sincerely thank my children, Milli and Bethi who are my strength, inspiration and my life. Their love and encouragement gave me the ability to get this far.

My deepest appreciation goes out to all my colleagues at the Faculty of Educational and Behavioral Sciences in Bahir Dar University. I thank you all, for your support. I truly appreciate everything you have done for me, more than words can express. I will carry a piece of all of you in my heart always.

Reda Darge Negasi

## ABSTRACT

*This study examined the role that family characteristics play on the relationship between late adolescents' psychological constructs and interrogative suggestibility. The research design employed to conduct this study was Quasi-experimental Single-Group Interrupted Time-Series Design. The 'individual differences approach' in eyewitness suggestibility developed by Gudjonsson was adapted to use as a conceptual framework in this study. The Video Suggestibility Scale (VSS) was adapted to gather data about suggestibility as dependent variable and where VSS text and questions are regarded as independent variables. To assess individual differences in eyewitness suggestibility in relation to their family characteristics and psychological constructs a total of 135 Bahir Dar preparatory school students aged between 18-21 years from Bahir Dar city administration, North-West of Ethiopia, were shown a 2 ½-minute video-recorded story about a man robbed of his money. Background information questionnaire was utilized to gather data about the family characteristics, while scales were administered to collect data on psychological constructs and interrogative suggestibility variables. Analysis involving mainly hierarchical regression revealed that parenting style demonstrated moderating effects on the relationships between extraversion, conscientiousness, locus of control, memory accuracy and suggestibility variables in a late adolescent group. Parenting style was a significant predictor of suggestibility and shift, rather than moderating the effect of openness to experience, neuroticism, and agreeableness on suggestibility and shift. On the other hand, parent's educational level was neither a predictor nor a moderator variable in explaining the relationship between personality traits and suggestibility variables. The hierarchical regression analysis further indicated that parent's educational level was merely found to moderate relations between social desirability, sense of control and interrogative suggestibility variables. The importance of the results, particularly in relation to the moderating role of family characteristics in explaining relations between psychological constructs and interrogative suggestibility variables, and the kinds of family characteristics that help to understand the influence of psychological constructs on interrogative suggestibility variables are discussed in light of the literature.*

<b>TABLE OF CONTENTS</b>		
<b>CONTENT</b>		<b>PAGE</b>
Acknowledgements -----		iv
Abstract-----		v
Table of Contents-----		vi
List of Tables -----		x
List of Figures -----		xii
<b>CHAPTER ONE</b>		
<b>INTRODUCTION</b> -----		1
1.1	Background to the Study -----	8
1.2	Rationale of the Study -----	10
1.3	Statement of the Problem -----	10
1.4	Objectives of the Study -----	13
1.5	Research Questions -----	13
1.6	Significance of the Study -----	14
1.7	Delimitations of the Study -----	16
1.8	Limitations of the Study -----	16
1.9	Operational Definition of Key Terms -----	17
<b>CHAPTER TWO</b>		
<b>REVIEW OF RELATED LITERATURE</b> -----		19
2.1	Interrogative Suggestibility: A Historical Review-----	19
2.1.1	The Meaning of Interrogative Suggestibility -----	19
2.1.2	The Effects of Suggestion on Witnesses' Accounts -----	24
2.1.2.1	Early Research on Suggestibility -----	26
2.1.2.2	More Recent Research on Suggestibility -----	30
2.2	Individual Differences in Suggestibility -----	36
2.2.1	The Relationship between Family Characteristics and Suggestibility -----	36
2.2.2	The Relationship between Psychological Characteristics and Suggestibility -----	44
2.3	The Types of Memory Involved in Eyewitness Testimony -----	53

2.4	Types of Suggestive Influences in Questioning -----	55
2.5	Model of Interrogative Suggestibility-----	61
<b>CHAPTER THREE</b>		
<b>RESEARCH METHODOLOGY-----</b>		<b>71</b>
3.1	Research Design -----	71
3.2	Participants -----	71
3.3	Instruments -----	73
3.3.1	Measures of Accuracy and Suggestibility -----	73
3.3.2	Measures of Psychological Constructs: Sense of Perceived Control and Personality Traits -----	78
3.3.3	Measures of Family Characteristics -----	82
3.4	Procedures -----	85
3.4.1	Sampling Procedure -----	85
3.4.2	Training of Data Collectors -----	86
3.4.3	Data Collection Procedure -----	86
3.5	Methods of Data Analysis -----	87
<b>CHAPTER FOUR</b>		
<b>RESULTS -----</b>		<b>89</b>
4.1	Descriptive Statistics of the Study Variables -----	89
4.2	Interrelations among Variables -----	90
4.3	Family Characteristics and Psychological Constructs as Predictors of suggestibility Variables -----	93
4.4	Moderated Regression Analysis -----	94
4.4.1	Parenting Style Moderating the Relationship between Personality Traits and Suggestibility Variables -----	95
4.4.2	Parenting Style Moderating the Relationship between Sense of Perceived Control and Suggestibility Variables -----	104
4.4.3	Parenting Style Moderating the Relationship between Memory Accuracy and Suggestibility Variables -----	109

4.4.4	Parent’s Educational Level Moderating the Relationship between Personality Traits and Suggestibility Variables -----	113
4.4.5	Parent’s Educational Level Moderating the Relationship between Sense of Perceived Control and Suggestibility Variables -----	119
4.4.6	Parent’s Educational Level Moderating the Relationship between Memory Accuracy and Suggestibility Variables -----	127
4.4.7	Subgroup Analyses -----	128
<b>CHAPTER FIVE</b>		
<b>DISCUSSION AND IMPLICATIONS-----</b>		135
5.1	Family Characteristics and Psychological Constructs as Predictors of Suggestibility Variables -----	135
5.2	Parent’s Educational Level Moderating the Relationship between Psychological Constructs and Suggestibility Variables -----	140
5.3	The Moderating role of Parenting Style in Explaining Relations between Psychological Constructs and Suggestibility Variables -----	144
<b>CHAPTER SIX</b>		
<b>SUMMARY, CONCLUSIONS AND RECOMMENDATIONS -----</b>		146
6.1	Summary and Conclusions -----	146
6.2	Recommendations -----	151
<b>REFERENCES -----</b>		153
<b>APPENDICES -----</b>		173
	Appendix A: Background Information Questionnaire -----	174
	Appendix B: Suggestibility Scale -----	175
	Appendix C: Personality Scale -----	176
	Appendix D: Social Desirability Scale -----	179
	Appendix E: Memory Efficacy Scale -----	181
	Appendix F: Locus of Control Scale -----	183
	Appendix G: Parenting Style Scale -----	185

Appendix H: Suggestibility Rating Form -----	187
--	-----

አባሪዎች----- 188

አባሪ ሀ፣ዳራዊ መረጃዎች----- 189

አባሪ ለ፣የ አቋም ጽናት አመለካኝ መጠይቅ-----190

አባሪ ሐ፣የ ስብሰባ ና መጠይቅ-----192

አባሪ መ፣የ ማህበራዊ እሴት መጠይቅ-----195

አባሪ ሠ፣የ ማስታወስ ችሎታ /ብቃት/ መጠይቅ-----197

አባሪ ረ፣ሁኔታዎችን የመቆጣጠር ዝንባሌ መጠይቅ-----199

አባሪ ሰ፣የ ልጅ አስተዳደግ ዘዴ መጠይቅ-----201

አባሪ ሸ፣የ አቋም አመለካኝ መጠይቅ-----203

## List of Tables

<b>Table</b>	<b>Page</b>
Table 1: Descriptive Statistics of the Study Variables -----	90
Table 2: Intercorrelations among Variables -----	92
Table 3: Results of Regressions on Suggestibility Variables -----	93
Table 4: The Moderating Effect of Parenting Style on Extraversion -----	96
Table 5: The Moderating Effect of Parenting Style on Neuroticism -----	98
Table 6: The Moderating Effect of Parenting Style on Conscientiousness -----	99
Table 7: The Interaction between Parenting Style and Agreeableness in the Prediction of Suggestibility Variables -----	102
Table 8: The Moderating Effect of Parenting Style on Openness to Experience -----	103
Table 9: The Interaction between Parenting Style and Social Desirability in the Prediction of Suggestibility Variables -----	105
Table 10: The Moderating Effect of Parenting Style on Memory Efficacy -----	106
Table 11: The Interaction between Parenting Style and Locus of Control in the Prediction of Suggestibility Variables -----	107
Table 12: The Interaction between Parenting Style and Memory Accuracy in the Prediction of Suggestibility Variables-----	110
Table 13: The Moderating Effect of Parent’s Educational Level on Extraversion -----	113
Table 14: The Interaction between Parent’s Educational Level and Neuroticism in the Prediction of Suggestibility Variables.-----	115
Table 15: The Moderating Effect of Parent’s Educational Level on Conscientiousness ----	116
Table 16: The Moderating Effect of Parent’s Educational Level on Agreeableness -----	117
Table 17: The Moderating Effect of Parent’s Educational Level on Openness to Experience -----	119
Table 18: The Moderating Effect of Parent’s Educational Level on Social Desirability ---	120
Table 19: The Moderating effecting of Parent’s Educational Level on Memory efficacy --	123
Table 20: The Interaction between Parent’s Educational Level and Locus of Control in the Prediction of Suggestibility Variables -----	126
Table 21: The Moderating Effect of Parent’s Educational Level on Memory Accuracy ---	128

Table 22: Relationship among Psychological Constructs and Parenting Style -----	131
Table 23: Relationship among Psychological Constructs and Parent's Educational Level -----	133

## List of Figures

<b>Figure</b>	<b>Page</b>
Figure 1: The moderating effect of parenting style in the relationship between extraversion and shift -----	97
Figure 2: The moderating effect of parenting style in the relationship between Conscientiousness and suggestibility -----	100
Figure 3: The moderating effect of parenting style in the relationship between conscientiousness and shift -----	101
Figure 4: The moderating effect of parenting style in the relationship between locus of control and suggestibility -----	108
Figure 5: The moderating effect of parenting style in the relationship between locus of control and shift -----	109
Figure 6: The moderating effect of parenting style in the relationship between memory accuracy and suggestibility -----	111
Figure 7: The moderating effect of parenting style in the relationship between memory accuracy and yield 1 -----	112
Figure 8: The moderating effect of parent’s educational level in the relationship between social desirability and suggestibility -----	121
Figure 9: The moderating effect of parent’s educational level in the relationship between social desirability and yield 1 -----	122
Figure10: The moderating effect of parent’s educational level in the relationship between locus of control and suggestibility -----	125
Figure11: The moderating effect of parent’s educational level in the relationship between locus of control and shift -----	127

# CHAPTER ONE

## INTRODUCTION

This part sets the introduction of the study in nine sections. It begins with an overview of the issues on how and why individual differences become important issues of eyewitness testimony. The second section deals with the rationale of the study. This is followed by presentation of the research problem in section three. The objectives of the study, research questions and significance of the study are explained in fourth, fifth, and sixth sections respectively. Finally, the delimitation of the study, limitations of the study and operational definition of terms are presented in seventh, eighth, and ninth sections respectively.

### **1.1. Background to the Study**

Evidence in criminal trials is often based upon eyewitness testimonies. Around the world, thousands of people are charged with crimes solely on the basis of eyewitness evidence. The outcomes of trials have depended on the memory of witnesses. In the courtroom lawyers and judges, most often, rely on memories of witnesses.

Despite its benefit, eyewitness identification is often inaccurate. Research has revealed insight into which factors may influence the accuracy of eyewitness accounts. Stories abound with innocent people who have wasted years in prison because of the erroneous testimony of eyewitnesses-witnesses who were sincere, but sincerely wrong (Brandon & Davies, 1973). Fifty years ago, Yale law professor, Borchard (1932 cited in Myers, 1983) documented sixty-five convictions of people whose innocence was ultimately established beyond a doubt. Most resulted from mistaken identifications of the culprit by eyewitness. Borchard (cited in Myers, 1983: 562) observed:

In several of the cases the convicted prisoner, later proved innocent, was saved from hanging or electrocution by a hairbreadth. Only by rare good fortune were some of the sentences of hanging and electrocution commuted to

life imprisonment or indictments for first-degree murder modified by verdicts of second-degree murder, so that the error could still be corrected. How many wrongfully convicted persons have actually been executed, it is impossible to say.

Still, thousands of criminal trials each year would not establish that eyewitness accounts are not to be trusted. Whether assessing the accuracy of eyewitnesses' recollections or psychics' predictions, one needs to ascertain their overall 'hit' and 'miss' rates. One way to gather such information is to stage crimes comparable to those in everyday life and later solicit eyewitness reports. This has been done many times, with disconcerting results. For example, at the California State University, Hayward, 141 students witnessed an assault on a professor. Seven weeks later, when Buckhour (1974) asked them to identify the assailant from a group of six photographs, 60 percent chose an innocent person. So it is not surprising that eyewitnesses to actual crimes frequently disagree about what they witnessed. Research shows that as witnesses construct and rehearse memories of what they have observed, errors creep in easily (Buckhour, 1974; Myers, 1983). Buckhour (1974) suggested that errors sneak into witnesses' perceptions and their memories because their minds are not videotape machines. Rather, witnesses construct their memories, based partly on what they perceived at the time and partly on their expectations, beliefs, and current knowledge.

A compelling example of mistakes in eyewitness testimony is given by Loftus et al. (1978). Loftus and her associates provided a dramatic demonstration of memory construction. University of Washington students were shown thirty slides depicting successive stages of an automobile-pedestrian accident. One critical slide showed a red Datsun, stopped, either at a stop or at a yield sign. Afterward, the students were asked questions, among which was, for half of them, 'Did another car pass the red Datsun while it was stopped at the stop sign?'. The other half were asked the same question but with the words 'stop sign' replaced by 'yield sign.' Later, when shown both slides and asked which one they had previously seen, those previously asked the question consistent with what they had seen were 75 percent correct. But those previously asked the misleading question were only 41 percent correct; more often than not, they denied seeing what they had actually seen and instead 'remembered' a picture they had never seen.

In other experiments, Loftus (1979) has found that after suggestive questioning, witnesses may believe that a red light was actually green or that a robber had a mustache when he did not. According to Loftus, one factor that has been most known to interfere with memory performance on a wide range of memory tasks is the wording of questions. Loftus emphasized that the suggestiveness of a question or of an interview procedure influences a person's reporting of events or objects. She further demonstrated that the memories of the eyewitnesses can be reconstructions, instead of exact replicas of the events witnessed. Cassel and Bjorklund (1995) found similar effects with children. They voiced their concern that children may be suggestible in that their accounts can be biased by suggestions put to them, either purposely or unwittingly. Children's willingness to take on an interviewer's false suggestions is positively related to external influences such as peer pressure (Greenstock & Pipe, 1996), interviewer authority (Ceci, Ross, & Toglia, 1987), interviewer bias and stereotypes (Leichtman & Ceci, 1995), the number of repeated and leading questions and the degree of reinforcement given by the interviewer for false responses (Goodman et al., 1990).

Moreover, questions that restrict the range of possible responses provided by the child and that focus the child on highly specific details of the event elicit greater compliance to misleading information than questions that elicit elaborate responses and details about the central features of the event. This is particularly evident when the child is required to recall an incident of a repeated event that incorporates many variable details. To some extent, the substantial variation between the participants is clearly related to inappropriate questioning techniques. Unfortunately, no information is available on the psychological characteristics of these children. While the onus always rests primarily on the interviewer to avoid the use of misleading or other inappropriate questioning techniques, an understanding of the psychological factors related to the individual that reduce his/her resistance to interviewer suggestions is important for determining the potential risk of any contaminating information. However, the psychological factors of the witness that protect witnesses against suggestibility are not largely targeted in forensic assessment (Ceci & Friedman, 2000; Endres, 1997).

Loftus (1979) believes that leading questions can encourage eyewitnesses to alter their original memories. She further argues that the additional information actually becomes integrated in the memory of the original event. As a result, the original event can never be retrieved again. Others argue that misled witnesses remember the event details just as well as the witnesses who were not misled, but also remember the suggested detail and follow this suggestion, but leaving their original memory intact for retrieval under the right conditions (Pezdek & Greene, 1993; McCloskey & Zaragoza, 1985).

From the applied perspective, the important issue is that eyewitness reports can be biased by post-event information. Suggestive questions asked by the police who could interfere with the witness' original memory of the event should therefore be avoided. Unfortunately, not only the police but also others (friends, acquaintances) will talk with the witness about the event. Their suggestive information may distort the witness' memory as well. If Loftus is right, this distortion can never be corrected; if otherwise, Loftus is wrong, the damage done by this post-event information can be restored. A large body of research (e.g., Pezdek & Greene, 1993; Sdorow, 1998) provides more arguments against than in favor of Loftus' point of view. As a result of these works, specific recommendations for examining witnesses involved with the legal system have been proposed, with the goal of improving the accuracy of their testimony (e.g., American Academy of Child and Adolescent Psychiatry, 1997; American Professional Society on the Abuse of Children, 1990; Orbach et al., 2000; Poole & Lamb, 1998; Gordon et al., 2001).

In Ethiopia, there is no law that deals with how the examinations of witnesses have to be carried out except as mentioned in the procedures and Court Rule of 1943 (cited in Sedler, 1968). The Court Rule 37 of 1943 stated that every witness shall give his/ her evidence on oath and orally and in open court and in the presence under the direction and superintendence of the court. According to this rule, the party who calls the witness has the right to examine the witness. Whereas for other situations such as, the obligation of a witness to testify only to the material facts within his knowledge which will help the party to prove his / her case, the emotions of adversary were left without being explained by the rule. Another important point to be considered is the prohibition of leading question in examination-in-chief. The criminal procedure

code stated that no leading question shall be put to a witness without the permission of the court. Leading questions should not be used on the direct examination of a witness except when it may be necessary to develop the witness's testimony. While prosecutors must obtain special permission to ask leading questions-counter suggestions-of witnesses on direct examination, a defense attorney may ask them as a matter of course on cross-examination to undermine witnesses' confidence and reduce their credibility in the eyes of the jury. Sedler (1968) elaborated the assertion by stating that the purpose of the rule forbidding leading question in the examination-in-chief is to prevent a witness who is quick to adopt the suggestion of the investigator from saying something that he/she would not say otherwise. The investigator should not put words in the mouth of the witness, so to speak. In other words, the investigator should not suggest the answer he/she wants to receive and try to get from the witness. While the rules of evidence and others safeguard protection in the courtroom, they are absent in the backroom of the precinct station (Hilgard & Loftus, 1979).

Given these error-prone tendencies, eyewitness experts have proposed constructive steps to prevent misleading information from influencing the memories of eyewitnesses. For example, when the police interview eyewitnesses they should let them tell the story in their own words. Unprompted memories are most accurate (Lipton, 1977). Then they should ask specific questions, but treat the answers skeptically. Moreover, they should keep such questions free of hidden assumptions. But some psychologists argue that informing investigators of the unreliability of eyewitness's testimony might make already skeptical investigators too skeptical, perhaps leading to the exoneration of guilty persons (McCloskey & Egeth, 1983 cited in Sdorow, 1998).

Regardless of the exact extent to which eyewitness testimony can be influenced by misleading information and the reasons for that influence, Loftus believed that eyewitness testimony is, in fact, too easily affected by such information. She expressed this in a statement that was a takeoff on Watson's claim regarding his ability to condition infants to become any kind of person one desired. Loftus and Hoffman (cited in Sdorow, 1998:305) remarked:

Give us a dozen healthy memories, well-informed, and our own specified world to handle them in. And we will guarantee to take any at random and train it to become any type of memory that we might select-hammer, screwdriver, wrench, stop sign, yield sign... regardless of its origin or the brain that holds it.

However, Loftus and Hoffman's assumption was challenged by some other investigators suggesting that, despite the significant impact of the above-mentioned factors on suggestibility, the relative impact of any of these factors is not equal for all individuals. Individual differences in suggestibility exist (Liebman et al., 2002).

As long as researchers have studied individual differences in suggestibility, they have been interested in why some witnesses are more suggestible than others. However, despite this interest, there are few published studies in which researchers have directly assessed a broad range of predictors and related them to children's susceptibility to misleading information. Hints about the characteristics of more suggestible children- and their parents- bubble up from the literature. But findings are scattered and often inconsistent from one study to another. For example, intelligence (Danielsdottir, Sigurgeirdottir, Einarsdottir, & Haraldsson, 1993; Geddie, Fradin, & Beer, 2000), memory performance (Danielsdottir et al., 1993; Endres, Poggenpohl, & Erben, 1999; Geddie *et al.*, 2000), and temperament (Endres *et al.*, 1999) have been shown to relate to suggestibility in children. Children with higher Intelligence Quotient (IQ) scores and better memories of an event tend to be less suggestible about the event than children with lower IQ and memory scores (Geddie *et al.*, 2000). Children who are rated highly on scales of 'shyness' tend to be less likely to yield to an interviewer's suggestions than children who are rated as less shy (Scullin & Hembrooke, 1998; Scullin & Ceci, 2001). However, the patterns of findings in relation to these variables have not been consistent. Some researchers have not found *any* significant relationship between IQ and suggestibility, particularly those studies in which most IQ scores are in the above average range (e.g. Scullin & Hembrooke, 1998; Scullin and Ceci, 2001). With regard to shyness, some studies have shown negative relationships between ratings of children's shyness and suggestibility (Scullin & Hembrooke, 1998; Scullin & Ceci, 2001), whereas others revealed positive relationships (Endres *et al.*, 1999) and no significant relationships (Muir-Broadbent, King, Downey, & Petersen, 1998 cited in Enders et al., 1999) using participants of similar age ranges.

Moreover, there is also evidence that suggestibility may be influenced by parents' educational level. Educational level influences memory through the interaction patterns of parents and their children (Hess & McDevitt, 1984). Low-educational level parents are more likely to 'tell,' rather than explain. Their language is less elaborate, their directions are less clear, and they are less likely to encourage problem solving. High-educational level parents, in contrast, talk more with their children, explain the causes of events, and encourage independent thinking. In addition, high-educational level parents are more likely to ask 'wh' questions (who, when, where, and why), promoting language development and preparing their children for the kind of verbal interaction found in the schools (Walberg, 1991). On a very basic level, it is not surprising that intelligence is associated with the ability to provide reliable and accurate testimony (Geddie et al., 2000; Richardson & Kelly, 1995; Gordon et al., 2001). Differences between low- and high-educational level parents also reflect the emphasis placed on student autonomy and responsibility. High-educational level parents emphasize self-direction, self-control, and individual responsibility; low-educational level parents, in contrast, place greater emphasis on conformity and obedience (Ballantine, 1989).

Similarly, there is also evidence that suggestibility may be viewed as a personality "trait" rather than a solely developmental factor (Clarke-Stewart et al., 2004; Gordon et al., 2001; Gudjonsson, 1992; Gudjonsson, 1988; Liebman et al., 2002; Gudjonsson & Lister, 1984; Paddock et al., 1998). In the study by Leichtman & Ceci (1995), Greene et al. (1982), Liebman et al. (2002) and Warren et al. (1991), for example, even under the most suggestive conditions both adults and children resisted suggestion.

Furthermore, it is also possible that the degree to which psychosocial factors play a role has a cognitive basis. When there is no memory of the original event, children may be more compliant and willing to accept suggestions because there is no competing trace to challenge the suggestion. On the other hand, when the memory traces are strong the individual is less likely to incorporate misleading suggestions into memory. Thus, Warren et al. (1991) and Ceci & Bruck (1993) reported that lower recall was significantly related to greater suggestibility. Their subjects were most easily misled about the details that were omitted in their original recalls. Moreover, there was a significant correlation between subjects' free recall of the event and the degree to which they changed their answers to their questions on the second round of questioning, a

reflection of how cognitive factors affect social manipulations ( i.e., children are most susceptible to suggestible influences when their memories for events are weak). In addition to cognitive factors underpinning the effectiveness of social factors, it is also possible that social factors underpin the effectiveness of cognitive mechanisms in producing suggestibility, thus ensuring greater encoding.

In a similar vein studies within the individual differences tradition have largely involved correlating scores on the Gudjonsson Suggestibility Scales with other measures. Clarke-Stewart et al. (2004) stated the following findings in their review of the research literature on suggestibility : (1) that children with lower levels of verbal intelligence may be more suggestible; (2) that children with low memory abilities may be more suggestible, but the evidence is limited; (3) that children with more psychological problems may be more suggestible, but the evidence is limited; and (4) that children are significantly more suggestible if their parents hold more traditional views- if their fathers believe that the most important thing to teach children is obedience to authority.

Several personality variables have also been found to be predictive of adults' susceptibility to misinformation, including high state anxiety, intelligence, field-dependence, self-esteem (Gudjonsson, 1992), a need for social desirability and lack of assertiveness (Gudjonsson, 1988; Liebman et al., 2002), and teacher-reported behavioral ratings of self-esteem (Gudjonsson & Singh, 1984). Furthermore, studies by Gudjonsson and Singh (1984) and Liebman et al. (2002) and Paddock et al. (1998) all found that individuals with an external locus of control were more suggestible than individuals with an internal locus of control. In another line of research, Tousignant (cited in Liebman et al., 2002) noted that adults who believed that they had good memories were more suggestible. Schooler and Loftus (1993) and Liebman et al. (2002) hypothesized that memory efficacy may result in an increase in delayed misinformation acceptance.

In sum, the review of the literature revealed that an aim of the judicial system is to guarantee fair judgments. Oaths, opposing attorneys, and cross-examinations, exist partly to provide fairness. But witnesses are not dispassionate computing machines, so they can be influenced by situational and individual factors. Situational factors include a weak memory representation of the event in

question, uncertainty, high trust in the interviewer, and unrealistic expectations of the interviewee's performance. Individual factors include family characteristics and psychological constructs.

## **1.2. Rationale of the Study**

In many of the correlational studies that have reported on suggestibility effects, most of the studies focused on suggestibility effects, and individual difference measures were added as a secondary interest. Research on the interaction effects of these individual difference variables is scarce, and even in the few that exist, the discussion in the suggestibility literature is limited to correlational analysis.

Correlational designs merely show the interrelationship between two variables, not the degree to which one particular variable can be predicted from another or several other variables. Furthermore, when researchers have adopted more sophisticated analyses (e.g. multiple regression analyses), they have tended to include only one or two key variables in the study because of restrictions in sample size of the study (McFarlane et al., 2002). They further demonstrated that more informative and consistent results can emerge from the adoption of larger scale investigations that reveal the combined and independent contributions of various interrelated individual difference variables in interrogative suggestibility. In line with this, Bruck and Melnyk (2004) emphasized that the review of the present literature demonstrates the complexity of interrogative suggestibility that it is not related to a single cognitive or psychosocial domain, but may in fact be related to a combination of the two. In this regard, this study is in a position to examine the moderating effect of family characteristics on the relationship between personality constructs and suggestibility variables in a late adolescent group.

A transition to regression analysis research design will be especially helpful for eyewitness researchers who offer opinions in forensic settings, because without an ability to predict how the unique features of individual cases are likely to be combined to affect memory performance, the frequent conclusion that adolescents' memory is both resistant to suggestion and highly malleable leaves experts unable to argue that they contribute unique insights to the trier of fact.

In line with this, Bruck and Melnyk (2004) emphasized that without going into more detail, it would be very difficult to translate correlational results into the courtroom. They further emphasized that the most the literature can presently inform the court is those individual difference characteristics that distinguish individuals who are more suggestible from those who are not; it cannot provide the court with reliable information about the types of individuals whose reports are most likely to be tainted by suggestive interviewing. However, gaining insight into the suggestive interviewing techniques is only one part of the eyewitness research, informing the court about the avenues through which the influence of interviewing techniques is exerted through individual difference variables is important as well.

Surprisingly, little attention has been paid, so far, to the effects of individual difference variables on interrogative suggestibility. Thus this study is unique in its inclusion of family characteristics, late adolescents' psychological constructs and interrogative suggestibility within a regression analysis. This study is important in examining how family characteristics moderate psychological constructs in interrogative suggestibility.

Moreover, as interrogative suggestibility has not been studied in Ethiopia so far, this study will serve as the first attempt to collect data on individual differences in interrogative suggestibility in Bahir Dar city administration. Moreover, there is a clear need to widen our understanding of interrogative suggestibility to focus on late adolescents (an age group that has been virtually ignored in the literature to date), to delineate the specific characteristics that distinguish the late adolescent's profile who differs in his or her vulnerability to suggestion.

### **1.3. Statement of the Problem**

One factor that has been associated with behavior during an interrogation is a witness's characteristics. Although the use of leading questions (questions involving material not occurring during the event) and negative feedback (informing a suspect that he/she did not do well and has to try harder) is often successful during interrogations, researchers agree that not all individuals are equally likely to yield to the influence of suggestibility (Eisen et al., 2002; Liebman et al., 2002). Even in studies with pronounced suggestibility effects, there are always some children who are highly resistant to suggestion. No matter how much an interviewer may try to suggest

that an event occurred, some children consistently resist and do not incorporate the interviewer's suggestion or point of view (Clarke-Stewart et al., 2004). On the other side, although suggestibility effects tend to be most dramatic after prolonged and repeated interviewing, some children incorporate suggestions quickly, even after one short interview. The questions that naturally arise are why some individuals are more suggestible than others and what factors account for individual differences in suggestibility. There exist individual differences in suggestibility (Gudjonsson, 1983; Liebman et al., 2002).

Accordingly, in this study, a number of individual difference variables that may be relevant to eyewitness testimony are taken into account. These include family characteristics (e.g. parents educational level and parenting style) and psychological constructs (such as personality traits and sense of perceived control). Although parents educational level, parenting and psychological constructs may all play a role in suggestibility effects, what has been neglected is how educational level and parenting style influence the relationship between late adolescents' psychological constructs and interrogative suggestibility. In this regard, the researcher wants to know whether a particular individual in a particular setting is likely to be a reliability risk. The focus is thus shifted from simply examining whether adolescents are suggestible to determining under what conditions they are suggestible. To answer such questions, the focus of the current study is on the moderating effects of family characteristics in the relationship between late adolescents' psychological constructs and interrogative suggestibility.

#### **1.4. Objectives of the Study**

The accuracy and suggestibility of childhood memories have always interested psychoanalysts, experimenters and developmental theorists. In the last decade the demand for forensic applications of this type of research increased, especially with regard to memory development and child witnesses in the judicial system. For example, the courts have turned to clinicians and behavioral scientists to assist them in adjudicating abuse cases (Melton & Limber, 1989). Despite the growth of research on children's memories and its emphasis on ecological validity (Bronfenbrenner, 1989 cited in Calicchia & Sebastian, 2004; Goodman, Rudy, Bottoms & Aman, 1990) scientists are far from agreement on when suggestibility does occur and how it is related to cognitive, personality and environmental variables. Furthermore, clinicians have few tools available for assessment that could assist them in providing the courts with information

about the suggestibility of a witness or a defendant. Thus, the objective of this study is to examine how family characteristics moderate the relationship between psychological constructs and interrogative suggestibility variables. Accordingly, the central objectives of this study are to:

1. examine individual differences in interrogative suggestibility with respect to family characteristics (e.g., educational level and type of parenting style) and psychological variables,
2. examine the effects of family characteristic and psychological variables on interrogative suggestibility.

### **1.5. Research Questions**

To achieve the enteral objectives of the study the following research questions were entertained in this study:

1. Are memory efficacy, social desirability, and locus of control (all of them are sense of perceived control variables) significantly relate to late adolescents' memory accuracy and interrogative suggestibility variables?
2. Do adolescents' conscientiousness, agreeableness, extraversion, neuroticism, and openness to experience (all of them are personality traits) significantly relate to late adolescents' memory accuracy and interrogative suggestibility variables?
3. Is there a significant relationship among parenting style, parent's educational level (both of them are family characteristics), sense of perceived control and personality traits?
4. Does each of the specified family characteristics, sense of perceived control, personality traits, and memory accuracy significantly predict interrogative suggestibility variables?
5. Does each of the specified family characteristics moderate the relationship between personality traits and interrogative suggestibility variables?
6. Does each of the specified family characteristics moderate the relationship between sense of perceived control variables and interrogative suggestibility variables?

7. Does each of the specified family characteristics moderate the relationship between memory accuracy and interrogative suggestibility variables?

## **1.6. Significance of the Study**

Understanding the moderating role of educational level and parenting style in late adolescents' interrogative suggestibility has become the focus of interest both for theoretical and applied purposes. From a theoretical point of view, knowledge of whether or not a particular late adolescent in a particular setting is likely to be at risk is of great importance for developmental theory in understanding the relevant contextual factors (e.g. educational level, type of parenting style, and psychological constructs) that may be functioning in interrogative suggestibility. Specifically, it is necessary for those wanting to aid fact finders in examining how the educational level and type of parenting style moderate cognitive and psychosocial factors in interrogative suggestibility, and address issues of mechanisms underlying suggestibility effects.

From the applied side, knowledge of the types of late adolescent who are most prone or most resistant to suggestion is of great importance to the legal system and mental health providers. In terms of the legal system, knowledge of how individual differences in specific family characteristics, cognitive and psychosocial domains would provide the courts with important information to develop instruments designed to assess the relevant characteristics and abilities of individual adolescents prior to conducting a forensic interview. The results of such assessment could aid in the interpretation of the late adolescent report. In terms of mental health practitioners, it would alert them to be highly cautious in using certain techniques with late adolescents who fit the profile of highly suggestible. Specifically, the study is significant because it helps to:

1. provide a conceptual framework to study the effects of parents' educational level, type of parenting style and psychosocial factors on late adolescents' interrogative suggestibility.
2. provide the courts with important information about the types of late adolescents who are most prone or most resistant to suggestion.
3. provide the court with information about the risk that certain suggestive techniques would have in tainting a specific individual's testimony.

4. provide psychologists and legal professionals with knowledge related to meaningful predictors of suggestibility that could help them shape future policy.
5. identify ways to reduce witnesses' suggestibility, including techniques that improve witnesses' ability to increase witnesses' confidence in their memories.
6. provide information to the court about the memory accuracy and suggestibility of a witness.
7. serve as a spring board for further research applicable to the juvenile justice system.

### **1.7. Delimitations of the Study**

Bahir Dar Preparatory School students, whose ages range from 18 to 21 years, served as the target population of the study. The study is concerned with students at the preparatory school level because late adolescence is essentially a period of "student-hood"; it exists only for those who move on to "post-secondary" education before settling into full-time work (Keniston, 1970 cited in Hurlock, 1978).

In terms of developmental psychologists delineation of the periods of the human life span the respondents' limited age level (18-21 years) represents the approximate age of late adolescence (Shaffer, 1999). Late adolescents are the focus of the current study, because this is an age group that has been virtually ignored in the literature to date (Ann & Stephen, 2001; Ceci & Bruck, 1993).

This study was conducted in Bahir Dar, first, because the researcher is acquainted with the language, culture, and psychological make-up of the people. Second, the researcher's place of work is there and, hence, follow-up plans and participation in future interventions would be easily attained.

### **1.8. Limitations of the Study**

Several limitations should be taken into account in this study. The first of these refers to lack of adequate research in the area of late adolescents' eyewitness testimony. Second, many respondents did not properly respond to items that ask family structure, number of siblings, parental income, and type of occupation. As a result, items that ask family structure, number of

siblings, parental income and type of occupation were excluded from the analysis. A third limitation may be the small sample resulted in one of parents' educational level, namely the junior college level only having two parents despite a reasonably large sample size in this study (with n= 135).

## **1.9. Operational Definition of Key Terms**

Following are the definitions of terms used in this study:

Agreeableness: participants' traits that reflect how they tend to interact with others.

Authoritarian parents: parents who are highly demanding and directive, but not responsive.

Authoritative parents: refers to parents who are both demanding and directive, but are accepting and responsive.

Conscientiousness: participants' traits that reflect how they are organized and persistent in pursuing their goals or duties.

Countersuggestion: refers to leading question that suggests to the witness that an event does not occur.

Eyewitness: refers to a witness who has seen, heard, or otherwise observed events personally.

Eyewitness memory / accuracy: refers to the number of details the participant could recall about the event.

Extraversion: refers to participants' traits for preference and behavior in social situations.

Indulgent parents: parents who are "permissive" or "nondirective", but are demanding, nontraditional and lenient, do not require mature behavior, allow considerable self-regulation, and avoid confrontation.

Interrogative pressure (IP): refers to the cognitive and social factors that may be present during an interview or interrogation which interfere with the interviewee's ability to provide accurate recall.

Interrogative suggestibility (IS): participant's tendency to submit to leading questions or interrogative pressure.

Leading question: is a question in which the direction of the expected answer is implied.

Memory ability: refers to the number of details the participant could recall about the event.

Misinformation effect: refers to the incorporation of false information into later reports about a target event.

Moderator variable: is a variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable.

Neglectful parents: parents who are rejecting, unresponsive, undemanding and low in control.

Neuroticism: participants' traits that reflect their tendency to experience negative thoughts and feelings.

Openness: refers to participants' traits that reflect their open-mindedness and interest in culture.

Parenting: a complex activity that includes many specific behaviors that work individually and together to influence child outcomes such as spanking or reading aloud.

Parenting style: late adolescents' perception of their parents with respect to parental warmth and parental control dimensions.

Parental control: refers to the amount of regulation, restriction and supervision parents guarantee to their children.

Parental acceptance / warmth: the amount of love or affection and responsibilities that parents display to their children.

Personality: refers to adolescence behavior measured in five broad factors, which are known as the "Big Five" namely, extroversion, agreeableness, conscientiousness, neuroticism, and openness to experience/intellect.

Recall memory: refers to the active retrieval of some memory material that is not immediately present.

So far this chapter provides an introduction to the study. Next, a comprehensive and exhaustive review of the related literature of previous empirical research on suggestibility follows.

## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

This chapter presents a review of the empirical findings of previous research on suggestibility. The first part of the review will provide a historical review of interrogative suggestibility. While subsequent sections deal more specifically on individual differences in suggestibility that is types of memory involved in eyewitness testimony and types of suggestive influences in questioning. Finally, the model of interrogative suggestibility together with the ways in which situational and individual difference variables relate to suggestibility are reviewed.

#### **2.1. Interrogative Suggestibility: A Historical Review**

##### **2.1.1. The Meaning of Interrogative Suggestibility**

The term interrogative suggestibility is frequently used to explain a wide array of diverse phenomena, from hypnotic responsiveness to simple gullibility (Eysenck & Fureaux, 1945 cited in Eisen et al., 2002; Schooler & Loftus, 1993). In the domain of eyewitness memory research, the term 'suggestibility' is generally employed to describe one's susceptibility (or resistance) to misleading information (Schooler & Loftus, 1993). It is a special type of suggestibility which bears little resemblance to the traditional type of suggestibility associated with hypnosis (Gudjonsson, 1987). It is best constructed as the tendency of an individual's account of events to be altered by misleading information and interpersonal pressure within interviews (Gudjonsson, 1984).

Interrogative suggestibility was first introduced at the turn of the century by people like Binet (1900 cited in Ceci & Bruck, 1993) and Stern (1938 cited in Gudjonsson, 1987), who were interested in the form of a question on recall and testimony. There is no doubt that Binet's contribution to the understanding and measurement of the various types of suggestibility has been outstanding and it is unfortunate that his complete work has never been translated into English. His procedure for measuring interrogative suggestibility involved asking leading questions concerning a picture subjects had been shown previously. This kind of 'interrogatory' procedure was subsequently used by subsequent researchers. The classical experimental work of

Stern (1938 cited in Gudjonsson, 1987) clearly demonstrated that leading questions produce distorted responses because they are phrased in such a way as to suggest the desired response whether correct or incorrect.

Several subsequent studies have employed a similar procedure to Stern in order to elicit this type of suggestible phenomenon (e.g. Powers, Andriks & Loftus, 1979; Cohen & Harnick, 1980). However, there appeared to be a lack of a suitable objective psychometric instrument for quantitatively measuring this type of suggestibility (Gudjonsson & Gunn, 1982). For this reason Gudjonsson (1984) constructed a suggestibility scale for research and clinical purposes to assess an individual's response to 'leading questions' and to 'negative feedback' instructions, referred to as 'Yield' and 'Shift' respectively. Factor analysis of Yield and Shift data revealed that these are loaded on two separate factors, representing different types of suggestibility. He considered that both aspects of suggestibility were directly relevant to the questioning of witnesses and suspects during police interrogation, but the scale clearly has implications for the reliability of information obtained during interviewing in other similar contexts (e.g. interviewing job applicants, patients, etc.). Basically, the Gudjonsson Suggestibility Scale (GSS) is intended to measure individual differences in the tendency to 'Yield' to leading questions and to 'Shift' elements of one's previous answers in response to criticism or interpersonal pressure. A considerable amount of work has been carried out into the validity of the GSS by Gudjonsson and his colleagues (Grisso, 1986; Gudjonsson & Clark, 1986). As a result, a detailed definition of interrogative suggestibility has been proposed by Gudjonsson and Clark.

Suggestibility is defined as the extent to which, within a closed social interaction, people come to accept messages communicated during formal questioning, as the result of which their subsequent behavioral response is affected. This definition contains five interrelated components: the nature of the social interaction, a questioning procedure, a suggestive stimulus question, some form of acceptance of the stimulus message, and a behavioral response. The first feature of the above definition relates to the type of social interaction involved. A police interview generally involves a closed social interaction, where the officer is in full control over the situation (Bartol, 1983). The second distinguishing feature of interrogative suggestibility is that it involves a questioning procedure and at least two participants (i.e. one is asking the question and the other is 'expected' to give an answer). Most commonly the questions relate to

some factual material that the interrogator wishes to obtain from people about what they have seen, heard or done, although it may also involve emotional material or opinions (e.g. asking people how they felt during a particular event). As the questioning is primarily concerned with past experiences and events, memory recollections and knowledge states are of crucial importance to the phenomenon. This makes interrogative suggestibility very different from traditional types of suggestibility which are almost exclusively concerned with the motor and sensory experiences of the immediate situation.

Related to the questioning procedures are the specific features of the suggestive stimulus, which take the form of a 'leading' question. Although there is not general agreement on the definition of the term 'leading', it implies within the context of interviewing that questions are phrased in such a way as to suggest the 'wanted' or 'anticipated' answer. Richardson, Dohrenwend and Klein (1965 cited in Gudjonsson, 1987) have shown that leading questions often produce distorted responses because such questions communicate certain 'expectations' and 'premises'. Expectation refers to the interviewer indicating the response he or she anticipates the respondent will give, whereas a premise may be defined as a proposition that serves as a foundation for an argument or a conclusion. An expectation can generally be identified by the syntax and logic of the questions but it can on occasions also be communicated by the interrogator's intonation (i.e. emphasizing a particular word within a sentence). Questions obviously vary in the strength of the expectation communicated and in the degree to which the interviewer is 'informed' about the subject matter with which the questions deal (Richardson *et al.*, 1965 cited in Gudjonsson, 1987). An 'informed expectation' refers to the interviewer having full knowledge about the subject matter contained in the question or about the respondent. An 'uninformed expectation', on the other hand, indicates lack of any such knowledge.

According to Richardson *et al.* (1965 cited in Gudjonsson, 1987) a question contains a premise "when it builds and depends on prior information". All questions to some extent contain premises, but not all questions contain expectations. The better informed the premise the more likely it is to be valid. Whereas informed expectations and premises may serve some positive functions (e.g. enabling the interviewer to build on what he or she already knows), uninformed (incorrect) expectations and premises can easily lead to distorted and invalid responses. For these reasons scales measuring interrogative suggestibility utilize uninformed and incorrect premises

and expectations in the questions asked in order to measure susceptibility to distorted influence (Gudjonsson, 1984).

The theoretical model of Gudjonsson and Clark (1986) is concerned with the process whereby people come to accept uninformed and incorrect premises and expectations during police interrogation, resulting in inaccurate testimony. Within the theoretical framework, the three most important antecedents to a suggestive response are a sense of uncertainty, interpersonal trust and certain expectations the witness holds during interrogation. The final component in the definition of interrogation suggestibility involves a behavioral response. That is, it is not sufficient for the person to 'accept' or believe the suggestion 'mentally'; it must have some observable behavioral effect. For example, people may 'accept' the expectation and premise contained in a question, but nevertheless not be willing to give an affirmative or a suggestible answer. One reason may be that although they 'accept' the suggestion they are reluctant to commit themselves to a definite answer. A similar situation may occur when people are given 'negative feedback' after answering a question or questions. Some people 'believe' they may have given an incorrect answer(s), as indicated by the feedback, but are not willing to commit themselves to changing it.

There is empirical evidence that interrogative suggestibility is unrelated to other types of suggestibility, particularly that of the 'primary' type. Primary suggestibility, for example, as measured by the Body Sway test, is clearly related to hypnotizability and it seems unrelated to other types of suggestibility (Stukat, 1958 cited in Gudjonsson, 1987). Therefore, it has no theoretical or practical implications for interrogative suggestibility. Indeed, Hardarson (1985) found no significant relationship between the Harvard Group Scale of Hypnotic Susceptibility and Interrogative suggestibility measured by the GSS. Further evidence for the independence of these two types of suggestibility comes from studies showing that the incorporation of misleading information into memory is an effect that is independent of the person's susceptibility to hypnosis (Sheehan & Tilden, 1983).

Similarly, the nature of the tests having significant loadings on the secondary suggestibility factor in the Eysenck and Furneaux (1945 cited in Eisen et al., 2002 ) study bear little resemblance to tests of interrogative suggestibility. This may be partly due to the fact that in their factor analytic study the authors did not include tests directly intended to measure 'personal' or 'prestige' suggestibility. Since such tests are clearly important in everyday social interactions,

Stukat (1958 cited in Gudjonsson, 1987) decided to include some of them in his extensive factor analytic studies. The results revealed a secondary suggestibility factor which was somewhat dissimilar to that of Eysenck and Furneaux and represents tests “in which different subjective influences, such as set, expectations, and need for conformity, direct the individual’s perceptions, memory, and judgments”. The types of tests that had the highest loadings on Stukat’s secondary suggestibility factor were: (a) ‘Contradictory Suggestion’ tests (the examiner contradicts the subject’s judgment in a discrimination task); (b) ‘Co-judge Suggestion’ tests (a tendency to be influenced by co-judge suggestion in making one’s judgment in a discrimination task); (c) Weight and Line Pairs tasks (the subject has to classify non-identical Weights and Lines after a suggestion that they are identical). Stukat’s two ‘Leading Question’ tests had rather low loadings on this factor and correlated poorly with the secondary suggestibility tests described above. Stukat considered that the Contradictory and Co-judge tests were most clearly characterized by personal influence and pressure from one individual upon another, so that the individual’s need for conformity was the most significant functional determinant in the suggestion process.

In sum, it is evident that there are good theoretical and empirical reasons for viewing interrogative suggestibility as a distinct type of suggestibility. Indeed, interrogative suggestibility bears little resemblance to the traditional definitions of suggestibility, whether classified into ‘primary’ and ‘secondary’ phenomena, or ‘primary’, ‘challenge’ and ‘imagery’ suggestibility, as argued by Evans (1967 cited in Gudjonsson, 1987). What is clear from the literature is that most studies attempting to classify suggestibility have made little or no attempt to measure susceptibility to ‘leading questions’ as introduced by Binet (1900 cited in Ceci & Bruck, 1993 ) earlier this century. One reason may be that at the time there were no easily applicable tests available for measuring interrogative suggestibility and most of the research has been carried out into the psychometric properties of suggestibility tests rather than investigating the phenomena they measure, as pointed out by Evans (1967 cited in Gudjonsson, 1987). It is evident from the above definition of interrogative suggestibility that it shares with other types of suggestibility the idea of some sort of ‘uncritical’ acceptance of a stimulus, perhaps implying limited critical judgment as suggested by Coffin (1941 cited in Gudjonsson, 1987). This is probably a characteristic that most suggestibility tests have in common.

Suggestibility is the extent to which individuals come to accept and subsequently incorporate post event information into their memory recollections (Gudjonsson, 1986; Powers et al., 1979). This narrower definition implies that suggestibility can only be unconscious (i.e., interfering information is unwittingly incorporated into memory); suggestibility results from the provision of information following an event as opposed to preceding it ; and suggestibility is a memory-based, as opposed to a social, phenomenon. According to the theoretical model of Gudjonsson and Clark (1986) interrogative suggestibility bears little resemblance to other types of suggestibility and four main features that differentiate interrogative suggestibility from other types of suggestibility are as follows: (a) interrogative suggestibility involves a questioning procedure within a closed social interaction; (b) the questions asked are mainly concerned with past experiences and events, recollections and remembered states of knowledge. This makes it different from suggestibility of those types that are concerned with the motor and sensory experiences of the immediate situation; (c) interrogative suggestibility contains a strong component of uncertainty which is related to the cognitive processing capacity of the individual; and (d) an important feature of interrogative suggestibility is that it commonly involves a highly stressful situation with important consequences for a witness, victim or suspect. Thus, this view of suggestibility is consistent with the legal use of this term to connote how easily one is influenced by both subtle suggestions and leading questions. In this regard, Gudjonsson's model of suggestibility provides a framework to study memory accuracy and interrogative suggestibility in eyewitness testimony.

### **2.1.2. The Effects of Suggestion on Witnesses' Accounts**

Since the turn of the century, psycholegal scholars have examined the suggestibility of children's testimony in an effort to determine whether they would be credible witnesses. A major issue in this research concerns the degree to which heightened levels of suggestibility may affect children's ability to accurately report what they have witnessed. Heydon (1984) emphasized that children are suggestible in that their accounts can be biased by suggestions put to them, either purposely or unwittingly.

Some psychologists have found children to be very resistant to suggestion, whereas others have found suggestions to have a strong biasing influence on children's responses to questions and on their subsequent accounts (Clarke-Stewart et al., 1989). Suggestibility can be the result of

alterations of memory or of social pressure to say something counter to that in memory, or both. In their review and synthesis of research Ceci and Bruck (1993) particularly focused on cognitive and social factors that need to be considered. They concluded that age differences exist in suggestibility, but also that even very young children are capable of recalling much that is forensically relevant.

Ceci and Bruck (1993) pointed out that for nearly a century researchers have tried to study the effects of suggestion up on children's accounts. They noted that since 1983 more research had been conducted on this topic than in all the previous decades combined, and that this had been prompted by the fact that in several countries young children were increasingly being called up on to give accounts as witnesses or victims. Much of the research conducted prior to the 1980s was of poor quality, and little of it had compared the suggestibility of children with the suggestibility of adults. This latter point, which even today is still under researched, assumed greater significance with the seminal research of Loftus (Loftus 1979; Amina et al., 1998) who showed that some adults accounts could be manipulated by the experimenter's use of suggestion. The dilemma facing experts whose opinions were sought on child witness suggestibility was that, as Ceci and Bruck (1993:403) noted:

On the one hand, children are described as highly resistant to suggestion, as unlikely to lie, and as reliable as adult witnesses about acts perpetrated on their own bodies (Beriner, 1985; Goodman et al., 1990; Jones and McGraw, 1987). On the other hand, children are described as having difficulty distinguishing reality from fantasy, as being susceptible to coaching by powerful authority figures, and therefore as potentially being less reliable than adults (Feher, 1988; Gardner, 1989; Schuman, 1989; Underwager and Wakefield, 1990).

Ceci and Bruck's (Ceci & Bruck, 1993) overview sought to reconcile these apparently opposing views, though they were aware that both camps express the belief that children are capable of high levels of accuracy, provided that adults don't attempt to bias their reports. This last point, about the influence of adults, is a crucial one. It is absolutely essential that people are made aware of how the interviewer can unwittingly or purposely make suggestions to the child. Both adults' (Gudjonsson, 1992) and children's (Carter et al., 1996) accounts can be biased by the

interviewer's behavior. To realize this and to be fully aware of it is even more important than any differences which may, or may not, exist between children's and adults' suggestibility.

In fact, some measure of suggestibility may be found in the adults who conduct research and write on the topic of children's suggestibility. Though psychologists put great effort in endeavoring that their research studies follow the established principles of science, they always have to interpret the meaning of the data they collect. To some of them their own data can appear to be the case. As Ceci and Bruck (1993: 403) pointed out "... although there is controversy, it is less the result of inconsistent data than of how the data are interpreted". To address this issue, this section reviews early and recent research on suggestibility.

### **2.1.2.1. Early Research on Suggestibility**

Historically, interest in testimonial competence, both by the legal profession and by social scientists, has reflected specified judicial events, the structure of the judicial system, and general social conditions of the era. In the United States, there was little interest in this field until the last half of the 20<sup>th</sup> century. To some degree this reflected the Salem Witch Trials of 1692 (cited in Amina et al., 1998). At that time a group of children gave false testimony in the witchcraft trials of more than 20 residents of Salem village and Salem Farms. The girls made fantastic claims (Ceci et al., 1990).

Several years after the execution of defendants, some of the child witnesses publicly recanted their testimonies. For the most part, the prevailing legal attitude for the following 300 years has been one of skepticism about the testimony of child witnesses (Wigmore, 1935 cited in Ceci & Bruck, 1993). Repeatedly, legal scholars have cited the excesses of Salem as a basis for their reviews of child witnesses (Ceci & Bruck, 1993).

The Salem Witch trials at the end of the Seventeenth century resulted in defendants being executed based at least partly, on the testimony of child witnesses (Amina et al., 1998). However, some years later these witnesses change their stories. Causes such as this, and European researcher early this century, had a great influence on people's beliefs, especially lawyers', concerning children's suggestibility. The European research was taken by many to suggest that young children are highly suggestible. However, as Ceci and Bruck (1993) noted,

close examination of the published reports of this “early” research does not readily result in the simple conclusion that children are very suggestible.

In some of these early research studies children’s responses to adults’ questions did contain incorrect information. However, this was very largely the result of the experimenters’ purposive attempts to influence the children’s replies. For example, Binet (1900 cited in Ceci & Bruck, 1993) and Stern (1910 cited in Ceci & Bruck, 1993) found that asking children misleading questions occasioned more incorrect information than asking children to provide their own accounts (i.e., by using free recall). Binet (1900 cited in Ceci & Bruck, 1993) on the basis of a series of studies of children between the ages of 7 and 14 years, claimed that suggestibility reflected the operation of two classes of factors. The first class concerns the influence of a prominent thought (autosuggestion) that develops within the individual, and is not the result of another’s influence, but that paralyzes the critical senses. The second class of factors is external to the individual and reflects mental obedience to other individuals. In the second case, Binet directly ascribed children’s suggestibility to social factors, namely, children’s eagerness to comply with adult suggestions rather than to memorial factors.

In a similar vein, Stern (1910 cited in Ceci & Bruck, 1993) developed an experiment that is still in use today. In this paradigm, subjects were shown a picture and asked to study it for a short period of time. Immediately after its presentation, they were asked to recall what they had seen. They were then asked a series of direct questions, requesting information that was in the picture, and a series of misleading questions, requesting information about none existent objects. In one study that included 7- to 18- years- old, free recall produced the fewest errors, whereas misleading questions produced the most errors (Stern, 1910 cited in Ceci & Bruck, 1993). Although younger children were the most suggestible, even the 18- year- olds occasionally were misled by the suggestive questions.

The subsequent mistake some lawyers and other adults made was to take such early research to suggest that children are somehow inherently suggestible, irrespective of the way in which they are interviewed. In assessing this early research one must be aware of the very important point hinted at by Donaldson (1978) that when children are asked a question by an adult, if they have no information in memory as a response to that question, in order to “answer” the question they may “translate” or “gloss” the question into ever distant versions of the original questions until

they find a version which can actually occasion “correct” recall from their memory. They then provide in their response a “true” answer to a “translated” question, which is not a correct answer on the original question.

In one study, Varendonck (1911 cited in Ceci & Bruck, 1993) asked the children in his class to describe a person who had approached him in the school yard that morning. Although there was no such person, most of the children fell sway to his suggestion, with 70 percent of the children giving a name for the person, the color of his clothes, and so on. Varendonck claimed that the types of questions he used were parallel to those that the examining magistrate used with one of the child witnesses. Varendonck concluded that the children’s responses were false, the results of suggestions provided by the experimenter. He further concluded that children can not observe accurately and that their suggestibility is inexhaustible. His work is noteworthy because of the direct forensic applications of his empirical data.

The work of Lipmann (1911 cited in Ceci & Bruck, 1993), a German Psychologist, is of interest because many of his hypothesis are the focus of modern research. Consistent with Binet, he concluded that cognitive as well as social factors accounted for children’s greater suggestibility. Children were thought to have different not fewer memories than adults because they were sensitive to different attributes of stimuli than adults. When children are questioned by adults, who have authority over them, about events that are neither essential nor salient to the child, the child will attempt to revise his or her memory, making the report consistent with the question. Eventually, everything that is imagined becomes real (i.e., the child fails to differentiate fantasy from reality).

The writing of early psychologists such as Freud and Piaget were taken to imply that children may well have difficulty in discriminating fact from fantasy (Amina et al., 1998). However, Freud never conducted any proper experimental studies on this topic, and the children Piaget studied may not have understood his instructions and therefore failed to demonstrate discriminations which they might have been capable of.

In the 1970s researchers at last conducted good empirical studies on this topic and these researchers converged on the view that young children were able to distinguish between reality and fantasy (Ceci & Bruck, 1993). However, when the boundary between reality and fantasy is

not very clear cut, Ceci and Bruck suggest that young children may experience some discrimination difficulties. Lindsay is one of the leading researchers on this topic. His research suggests that when asked to discriminate their memories for actual, real events from their memories of suggested events, children only have greater difficulty than adults when their memories (i.e. actual versus suggested events) arise from very similar (or the same) sources (Lindsay et al., 1991; Amina et al., 1998).

In addition, young children have difficulty discriminating between their memories for things they themselves have done and their memories for similar things they have been asked merely to imagine doing. However, they seem to have little difficulty distinguishing their memories of what other people have done from their memories of merely imagining what other people have done. However, research on this topic is still at a relatively early stage and so it would be premature to use it as a way of explaining the results of other types of research on children's suggestibility (Amina et al., 1998). Nevertheless, this exciting, complex research on source monitoring clearly indicates that in some circumstances children may no more suggestible than are adults. Again, whether children are more suggestible seems to depend more on the relevant circumstances than on any general deficit in children.

Modern researchers would return to the issue of the young child's ability to separate the sources of their information, including whether it was imagined or perceived (Foley & Johnson, 1985; Foley et al., 1983; Lindsay et al., 1991). They would also return to the idea that children have different perceptions (or scripts) of the world than adults and that these can also affect the nature of their memories.

In sum, two important points emerged in early research on children's suggestibility deserve mention. First, all of the researchers during this early period were interested in applications of children's memory research to the legal system. Second, multifactorial mechanisms underlying suggestibility were posited. These involved cognitive factors related to children's encoding, storage, and retrieval of events as well as social factors related to children's compliance with authority figures. It should also be noted that this early work foreshadowed a large number of findings that were to appear in the modern literature, such as the idea that repeated questioning is detrimental, that questions are interpreted as "imperatives" by young children, that free recall

produces fewer errors than yes-no questioning, that fantasy-reality distinctions are problematic for very young children, and that even adults are suggestible.

### **2.1.2.2. More Recent Research on Suggestibility**

Human suggestibility is a topic as old as empirical psychology. At the beginning of the twentieth century, it was studied by eminent psychologists like Freud, James, Janet, Wundt, Pavlov, Stern and, most notably, Binet (cited in Gheorghiu, 1989). Binet (cited in Gheorghiu, 1989) was also probably the first to conduct experimental research into age-related differences in suggestibility. He concluded that children are more suggestible than adults. To a great extent this view is also accepted today. In their comprehensive review of over 100 years of research in this area, Ceci and Bruck (1993) stated that there are reliable age-related differences in suggestibility. That is, children are more prone to accept suggestions than adults, at least under certain circumstances. Ceci and Bruck also discussed broadly factors that mediate children's susceptibility to misinformation and conditions under which children are able to provide reliable testimony.

The late 1970s marked a resurgence of interest among developmental researchers in the reliability of children's reports. There has been an immense increase in research on children's suggestibility since 1980, and Gudjonsson (1992) noted a similar trend in research on adults' suggestibility. Ceci and Bruck (1993) reported on children's suggestibility and they noted that four interrelated factors account for the dramatic increase in empirical research. First, there has been a broadening of admissibility of expert psychological testimony in recent years. Second, research psychologists were becoming more willing to apply their scientific training to socially relevant issues. Third, many studies were motivated by or influenced by methods and theories emanating from studies on eyewitness testimony of adults, which, for the reasons just mentioned, were also increasing in number. The fourth stimulus for the explosion of research on suggestibility is the legal community's heightened interest in behavioral science data related to specific innovations for dealing with child witnesses. For example, until the 1980s most people seemed unaware that child abuse was a fairly common occurrence (Spencer & Flin, 1993). Of late, more and more data suggest that a significant proportion of children are abused (physically and sexually). In 1989, there were 2.4 million reports of suspected child maltreatment in the United States 900,000 were substantiated (Daro & Mitchel, 1990; Ceci & Bruck, 1993). Since the 1980s, more children are being admitted as witnesses as a result of dramatic increases in

reports of crimes involving sexual abuse and physical abuse in which the child has been a victim or a witness (Ceci & Bruck, 1993).

The research conducted since 1980 has not only usually been methodologically more sophisticated than that which preceded, it has also often tried to be more relevant to the needs of interviewers and of legal procedures. The modern research has also shifted its focus from simply examining whether children are suggestible to determining under what conditions they are suggestible. To some degree this shift has been influenced by current work on the testimonial competence of adults (Melton & Thomson, 1987), as well as by recent basic research on the cognitive and social development of children.

During the modern period, some investigators, like the predecessors, have emphasized evidence of children's special vulnerability of suggestions (Cohen & Harnic 1980; King & Yuille, 1987; Ceci et al., 1987; Ornsterin et al., 1992; Oates & Shrimpton, 1991). The reviews of these studies indicated that children were more suggestible than adults. Much less is known about the suggestibility of older adults, who remain a seriously understudied population. Some work comparing suggestibility of older and younger adults was done in the eyewitness misinformation paradigm, introduced by Loftus, Miller, and Burns (1978). The paradigm consists of presenting participants with a film clip or slide show, then exposing them to some misleading information concerning the film or slides, and finally testing memory for the original event. For example, Cohen and Faulner (1989) presented young adults (mean age 35 years) and older adults (mean age 70 years) with a short film showing a scene of a kidnapping. Afterwards, participants were required to read to an account of the film. In the experimental group, the narrative contained two details inconsistent with the film. A subsequent recognition test revealed that older adults were more prone to give answers consistent with the misinformation than younger adults.

Loftus, Levidov, and Duensing (1992) conducted a field experiment in a museum of science, inviting people who visited an exhibit on memory to take part. In this way, Loftus et al. (1992) were able to gather data from 1989 people, thus forming the largest study on the misinformation effect ever done. In this experiment, participants first watched a film clip depicting a political rally with some violence. Then they wandered through the exhibit, finally reaching a computer which invited them to take part in an 'Eyewitness Testimony' experiment and to answer some questions about the film. For about half of the participants, two questions presented misleading

information about the film, and for the other half, the questions were worded in a neutral way. Two final questions examined whether participants yielded to the misinformation. As participants ranged in age from five to over 75, Loftus et al. (1992) were able to study the size of the misinformation effect across various age groups. They found that the youngest and the oldest participants showed the greatest misinformation effect. Inexplicably, however, participants aged between 51 and 65 showed a robust reverse effect, as the percentage of participants giving answers compatible with the misinformation was almost three times greater in the control group than in the misled group (60.9% vs. 21.7%).

Schacter, Koutstaal, Johnson, Gross, and Angel (1997) tested whether older people differ in their suggestibility in a task connected with everyday activity. The participants were shown a video of everyday activities taking place in a kitchen and 20 minutes later they were exposed to true photographs, depicting events shown in the video, as well as false photographs of events not shown in the video. Schacter et al. (1997) found that older adults were more likely than younger ones to mistakenly declare that events shown on false photographs were actually seen. Mitchell, Johnson, and Mather (2003) had their younger and older adults watch a film about a house burglary and answer questions that repeatedly presented misinformation about the film. Finally, participants were given a source memory test in which they indicated their confidence that they saw a particular item in the video and/or they read about it in the questions. Older adults were more likely than younger adults to claim that they saw items about which they had only read. Older adults were also more confident in their false memories. In contrast, Coxon and Valentine (1997 cited in Nurmoja, 2005) did not find older adults to be more suggestible than young adults. They compared the suggestibility of children aged 7–9 years, college students aged 16–19 years, and older adults aged 60–85 years. Participants watched a video recording of a kidnapping, and immediately afterwards they answered questions about the video. Four of these questions included misinformation for participants in the misled group. Finally, participants wrote their answers to 20 open-ended questions about the film. Coxon and Valentine (1997 cited in Nurmoja, 2005) found that both children and older adults gave fewer correct and more incorrect answers to non-misleading questions. They also found that children gave more misled responses than young adults and older adults, but older adults did not differ from young adults in the number of misled responses.

Taken together, the experiments described above indicate, with some exceptions, that older adults tend to be more suggestible than younger ones. However, one of the serious shortcomings in this research area is the fact that the studies on suggestibility of older adults were done exclusively in the context of the classical misinformation paradigm. It is an experimental approach which examines the conditions under which people tend to accept or reject misleading suggestions. There exists a complementary approach, in which the susceptibility to suggestions is seen as a relatively stable individual trait, called interrogative suggestibility. In addition to studying situational variables that affect suggestibility, researchers in this area examine individual differences in susceptibility to suggestions and their personality correlates.

Researchers have examined the effects of repeated interview or repeated questions within one interview, the impact of long delay intervals between the occurrence of an event and a child's subsequent testimony, the consequences of suggestive or misleading questions, and stress as an event is experienced, when a report is being made or during both these situations (Bruck et al., 1998). The results of this research have documented a number of factors that can greatly reduce the accuracy of children's memory reports. Moreover, some children can even be induced to provide false information, claiming that certain events occurred when in fact they didn't (Ceci & Bruck, 1993). Indeed, the evidence suggests that young children, especially preschoolers, are more vulnerable to these types of suggestibility effects than are children or adults.

Several years ago the work of Loftus (1979) demonstrates that some adults will answer "yes" to the suggestive questions presented to them. Cassell and Bjorklund (1995) found somewhat similar effects with children. They found younger children reliably more suggestible about salient, central actions, with fully 42 percent altering their answer in response to repeated questioning in the former study. Other investigators (Martin et al., 1979; Duncan et al., 1982; Flin et al., 1992; Rudy & Goodman, 1991; Goodman & Clarke-Stewart, 1991; Saywitz et al., 1991) however have emphasized evidence of children's ability to resist suggestions and to give accurate testimony. Children, no matter how much more suggestible they are than adults, are nevertheless capable of recollecting large amounts of forensically accurate information when the adults who have access to them have not engaged in repeated erroneous suggestions.

In many of the studies that have reported age-related differences in suggestibility, young children perform quite well-until and unless an interviewer persists in making repeated erroneous

suggestions or subtly reward the child for inaccurate answers. Short of this, the children do quite well. Even in studies with pronounced suggestibility effects, there are always some children who are highly resistant to suggestion. These have been seen in Manshel's (Manshel, 1990) study: in some cases, no matter how much an interviewer may try to suggest that an event occurred, some children will consistently resist and not incorporate the interviewer's suggestion or point of view. On the other side, although suggestibility affects tend to be, most dramatic after prolonged and repeated interviewing, some children incorporate suggestions quickly, even after one short interview (Clarke-Stewart et al., 1989).

According to the Gudjonsson and Clark (1986) model of interrogative suggestibility, there is one main reason why older adults should be generally more suggestible than younger ones: they have poorer memory ability, and since poor memory and uncertainty resulting from it is one of the major premises of interrogative suggestibility, they should be more suggestible. Thus, Gudjonsson and Clark (1986) posed the hypothesis that older adults would be more suggestible than younger ones, both in terms of Yield and Shift. Gudjonsson further explore the role of memory ability in determining interrogative suggestibility across both age groups.

Previous research has consistently shown that memory correlates negatively with interrogative suggestibility (Gudjonsson, 2003). However, experiments on this topic are not free from some problems. Schooler and Loftus (1986) pointed out that most research on the relationship between memory and interrogative suggestibility consisted of analyzing the correlation between the memory of the story included in the GSS and indices of suggestibility concerning the same story. This makes it difficult to determine whether it is memory ability per se which influences suggestibility or just memory of the story on which suggestibility is being measured.

Some research (Gudjonsson, 1987) suggests that memory ability correlates negatively with interrogative suggestibility even if testing of the memory is not based on the story to which the misleading questions are directed. In this research, Gudjonsson (1987) administered both versions of the GSS to the same participants and correlated interrogative suggestibility from one version with memory of the story from the second version, as well as suggestibility and memory within the same versions. The correlations were significant and similar both for the within and between measures. However, recalling the content of the story included in the GSS is not a comprehensive test of memory ability. To address this problem, Gudjonsson (1987) included two

reliable independent measures of memory ability: a test of memory performance, the Wechsler Memory Scale (WMS; Wechsler, 1945 cited in Polczyk et al., 2004); and a self-rating test of everyday memory, the Memory Assessment Clinics Self-Rating Scale (MAC-S; Crook & Larrabee, 1990 cited in Polczyk et al., 2004). These tests allowed for verifying if memory ability measured independently of the material on which suggestibility testing is based, is negatively related with this suggestibility.

In sum, researchers have begun to contribute important insights to legal testimony, though clearly more research is needed. Regardless of the complexities of the research, the present state of scientific knowledge permits experts to make general statements about the reliability of the testimony of the child witnesses. Judging from the research on children's eyewitness memory, the most important step might be to place sensible limitations on the ways children are interviewed so as to lessen the likelihood of suggestibility. This can be accomplished by asking questions in nonleading ways, by limiting the number of times children are interviewed, and by cautioning children that it is better to say 'I don't remember' or to admit to not knowing an answer than it is to guess or to go along with what an interviewer is implying (Ceci & Bruck, 1993). Remaining friendly and patient with a child, rather than stern and adversarial, also seems to lessen the probability that children will report inaccurate details or construct false memories.

Finally, it is also important that the court appreciate the complexity of the interrelationships of the factors affecting children's suggestibility. Even though suggestibility effects may be robust, the effects are not universal. Results vary between studies and children's behavior varies within studies. Thus, even in studies with pronounced suggestibility effects, there are always some children who are highly resistant to suggestion. In some cases, no matter how much an interviewer may try to suggest that an event occurred, some children will consistently resist and not incorporate the interviewer's suggestion or point of view. On the other side, although suggestibility effects tend to be most dramatic after prolonged and repeated interviewing, some children incorporate suggestions quickly, even after one short interview (Clarke-Stewart et al., 1989). To resolve this apparent controversy, the review reorient this debate to one concerning individual differences in suggestibility in order to understand under what conditions individuals are or are not suggestible.

## **2.2. Individual Differences in Suggestibility**

Since Alfred Binet's pioneering work on suggestibility nearly 100 years ago (Cunningham, 1988), psychological researchers have conducted numerous studies to identify external or "situational" variables that affect children's testimony (Ceci & Bruck, 1993, 1995). More recently, researchers have begun to examine the characteristics within children that cause some to be more accurate than others (Bruck, Ceci, & Melnyk, 1997; Quas, Qin, Schaaf, & Goodman, 1997). According to these reviews, there is a growing consensus that children's suggestibility entails interplay between individual characteristics and situational factors and that further research is needed to examine this relationship in greater detail.

In the 1980s, Gudjonsson and his colleagues published several studies reporting individual differences in suggestibility. In 1997, Bruck et al. (1997) wrote a review paper on individual differences in children's suggestibility. The review largely focused on external (interviewing) factors that increased or decreased suggestibility among children. A small section of that review focused on the 'internal factors' that included cognitive and psychological factors. Seven years later, the number of studies focusing on individual differences in suggestibility with cognitive, psychosocial and to a lesser degree, socio-demographic variables has greatly increased. Since the analysis in this study tests a relationship of this pattern, it is particularly important to mention the findings of the available studies.

### **2.2.1. The Relationship between Family Characteristics and Suggestibility**

A larger body of research (McFarlane et al., 2004; Geddie et al., 2000; London & Bruck, 2002; Clarke-Stewart et al., 2004; Geddie et al., 2000; London & Bruck, 2004; Quas & Schaaf, 2002) examined the relationship between suggestibility and family characteristic variables. Of these six studies, for example, only one (McFarlane et al., 2004) yielded a direct effect that was maintained after controlling for other background factors. In this study, children from lower SES backgrounds were more suggestible than children from higher SES backgrounds. The size of this effect was quite small (accounting for 2 percent of the variance) and was obtained in the study with the largest sample size in this set. This suggests that SES effects may only be detected in studies with large (>200) samples.

In a similar vein, Geddie et al. (2000) and Neisser et al. (1996) examined the relationship between SES, IQ, and memory performance. The quality of the child's home environment has been found to impact on the children's performance on intellectual/academic tasks as well as the way they perceive and respond to social demand characteristics (Gudjonsson & Singh, 1984). Therefore it is feasible that SES, like IQ and memory, could also impact on children's performance in suggestibility paradigms. However, Geddie et al. (2000) failed to find a significant relationship between SES and suggestibility using a preschool sample. This is because they used a rural sample (in which extreme differences in SES may have been minimized). Further, they used the Hollingshead social status index (Hollingshead, 1975) which measures SES on the basis of education and occupation category alone. McFarlane et al. (2002) who adopted a measure of SES, which was based predominantly on income, revealed that SES and memory performance inversely predicted children's suggestibility, uniquely explaining 2 percent and 1 percent of the variance respectively.

A possible explanation for the relationship between SES and suggestibility was due to extreme poverty and malnutrition. A more obvious contributor may be differences in the educational and social opportunities experienced by the two SES groups. The major difference between the two SES groups was the amount of time spent at preschool (i.e., high SES children attended approximately 36 hours per week, whereas the low SES children attended for 6-9 hours). The difference in time spent in formal education could have directly impacted the cognitive competencies of the children, which in turn may have impacted their level of suggestibility. Schooling plays a central role in the development and crystallization of children's cognitive abilities (Ceci, 1996; Ceci & Williams, 1997) and children who spend less time in school are more dependent on their parents and family interactions for cognitive stimulation. High SES parents typically use a more elaborative conversation style with their children (also characteristics of teachers) compared with low SES parents. This conversational style, in turn, has been shown to facilitate the development of cognitive competences in children (Leseman & Sijshing, 1996) as well as their autobiographical memory abilities (Reese et al., 1993). These explanations are supported by a moderate positive correlation between IQ and SES. The higher rate of physical abuse and neglect among low SES children also needs to be considered (Deccio et al., 1994; Wolfner & Gelles, 1993). The findings may have arisen in part from differences

between the two groups' perceptions of the consequences of not conforming to the authoritarian interviewer (Gudjonsson & Singh, 1984).

Moreover, research (Burgwyn-Bailes et al., 2001; Carke-Stewart et al., 2004; Crossman, 2001; Imhoff & Baker-Ward, 1999) examined the relationship between parenting styles and suggestibility. Although all these studies used similar measures to tap authoritative, traditional, and permissive styles of parenting, included children of the same age range (3 to 7 year olds), and used misleading questions as the suggestibility measure, the results were not consistent. For example, Crossman (2001) found that authoritative mothering was associated with high suggestibility. However, Burgwyn-Bailes et al. (2001) found that permissive parenting was associated with suggestibility, and Imhoff and Baker-Ward (1999) found no relationships using this same scale. The findings of Clarke-Stewart et al. (2004) that traditional parenting by fathers but not mothers was associated with children's suggestibility are also inconsistent with Crossman's (Crossman, 2001) findings.

A seemingly obvious fact about human nature is that our personality is influenced by our parents. It seems as if the way our parents raise us exerts an enduring influence on the nature of our personality. By teaching certain types of behavior and by punishing actions of which they disapprove, parents may significantly influence the behavioral and emotional styles of their children. Rogers contended that people's psychological experiences are determined by their subjective interpretations of objective events in the world. These interpretations, in turn, are heavily influenced by a person's self concept. Specifically, people may experience psychological distress when they cannot integrate their daily experiences with their sense of who they really are. People's self-views are a primary determinant of their overall experiences.

With regard to the influence of parental influences, Rogers believed that parents are generally the major source of influence in the early years of child development, the extent to which parents display unconditional positive regard to their children, as opposed to imposing conditions of worth, should influence long-term personality development. There are four types of parenting styles based on whether they exercise high or low on parental demandingness and responsiveness. These are indulgent, authoritarian, authoritative, and neglectful (Maccoby & Martin cited in Darling, 1999). They are different in patterns of parental values, practices, and behaviors and involve a distinct balance of responsiveness and demandingness.

To substantiate the issue of parental influences on personality, one key source of evidence would be longitudinal studies, that is, studies that examine the same individuals across a long period of time. Ideally, such work would measure aspects of child rearing early in life and determine whether they predict personality characteristics as measured later in life. Such a study has been conducted by Harrington, Block, & Block (1987). They studied a large group of people at two points in time: early childhood and adolescence.

During early childhood, the researchers obtained measures of the degree to which each child's parents exhibited a "Rogerian" style of child rearing, that is, a style in which few conditions of worth were imposed on children and, instead, children were accepted for who they are and were allowed to explore the world freely. There were two such measures. One was a self-report of parents' child-rearing styles, and the other was an observational measure in which researchers observed parents interacting with their children and coded whether the parents acted in a prototypic Rogerian manner. The two measures were combined into an overall index of Rogerian child rearing. In adolescence, the researchers obtained a measure of creativity. Teachers were asked to rate the degree to which the research participants, who were their students, approached tasks in an open-minded, creative manner. Since the researchers had measures on the same individuals at two points in time, they were able to determine the degree to which the childhood measure of parenting style predicted the adolescent measure of creativity. The finding strongly supported Rogers' theory of personality development (Harrington et al., 1987).

Just as Rogers would have predicted, children whose parents treated them in a Rogerian style turned out to be adolescents who were judged as being more creative. Child rearing style was a statistically significant predictor of creativity. Importantly; this was true even when the researchers controlled for a measure of intelligence that also was obtained during childhood. It is not merely the case that intelligent children were treated in a Rogerian style and also were creative. Instead even controlling for intelligence, parental child rearing predicted creativity. In this regard, parenting style has been found to predict children's well being in the domain of social competence, academic performance, psychosocial development, and problem behavior (Darling, 1999). For instance, authoritative parenting makes children well equipped to meet the challenge of school. Whereas authoritarian and permissive parenting makes children not to have

self-direction, self monitoring and self regulating abilities in their academic performance (Baumrind cited in Darling, 1999). It was also reported that authoritative mothers and fathers have children that have clear personal and professional goals. Moreover, they have students that feel in control of their academic lives.

In contrast, the children of authoritarian mothers and fathers are perceived as having lack of control over their academic lives (Strage, 1998). Indulgent parents are called permissive or nondirective. They are more responsive but they are less demanding (Baumrind cited in Darling, 1999). Although these parents are highly involved with their children, they do not control them, as they should. Children, whose parents are indulgent, are socially incompetent. They especially lack self-control. Such parents allow their children to exercise different types of activities, but they do not provide clear rules (Santrock, 1999). They are inconsistent in matters of discipline. Indulgent parents are more likely to believe that if they place demands on their children, it will affect their health development. So, they do not try to shape their children's behavior because they consider themselves resources, which the children may or may not use (Steinberg, 1989).

On the other hand, authoritarian parents are highly demanding and directive, without being responsive. These parents provide rules and orders to their children, and are expected them to respect them without questioning even though the rules are not clearly explained (Baumrind cited Darling, 1999). They are persistent in enforcement rules in the face of opposition without considering their children's desires and opinions (Hertherington & Parke, 1993). These types of parents highly control their children and do not allow them to talk (Santrock, 1999). They use harsh and punitive means of discipline so that they are low in warmth and highly involved with their children (Hertherington & Parke, 1993). They tend to be restrictive and follow punitive style in order to get the children to follow their direction and to respect work and effort (Santrock, 1999). Authoritarian parents do not encourage independent behavior so that they tend to place a good deal of importance on restricting the children's autonomy (Steinberg, 1989).

Authoritative parents are both demanding and responsive. They monitor and provide clear standards for their children's conduct. They tend to be assertive rather than intrusive and restrictive. They also tend to favor supportive rather than punitive disciplinary measures. They want their children to be assertive as well as socially responsible, and self-regulated as well as cooperative (Baumrind cited in Darling, 1999). Although authoritative parenting allows children

to be independent, there is still restriction and supervision on their action. Extensive communication is allowed, and these types of parents are warm and nurturing toward the children (Santrock, 1999). The standards for the children's conduct are set by authoritative parents by forming expectations that are consistent with children's developing needs and capabilities. They encourage highly the development of autonomy and self-direction by assuming the ultimate responsibility for their children's behavior. Authoritative parents are rational, and they always like discussion and explanation with their children over matters of discipline (Steinberg, 1989). Neglectful parents are low in both responsiveness and demandingness (Darling, 1999).

These types of parents have children that are socially incompetent, and they especially lack self-control. They do not care about the children's activities and where about. They almost do not know their children's performance in school and their interaction with their friends. Children of this type of parenting are rarely allowed to participate in decision-making. They are also eager to have parents who care about them. These children are low in self-control and do not develop independence well (Santrock, 1999). Neglectful parents do not bring up their children according to a set of beliefs about what is good for the children's development. Instead they structure their home life primarily around their own needs and interests. Since they do not give values to interacting with their children, they try to minimize the time and energy that they have (Steinberg, 1989).

Therefore, it is possible that children's suggestibility is related to their parents' disciplinary strictness. One study of parenting styles did reveal an association between stricter parenting (more traditional, authoritarian attitudes) and lower levels of suggestibility (Burgwyn-Bailes et al., 2001, for more strongly worded misleading questions). However, this association was not found in another study (Imhoff & Baker-Ward, 1999). Moreover, in three studies, low SES- which is typically associated with more traditional, authoritarian views on child rearing predicted higher levels of suggestibility, not lower (Alexander et al., 2002; Geddie et al., 2000; McFarlane et al., 2002).

Parenting style has been found to predict child well-being in the domains of social competence, academic performance, psychosocial development, and problem behavior. Research based on parent interviews, child reports, and parent observations consistently finds: (1) Children and

adolescents whose parents are authoritative rate themselves and are rated by objective measures as more socially and instrumentally competent than those whose parents are nonauthoritative (Weiss & Schwarz, 1996; Miller et al., 1993), and (2) children and adolescents whose parents are uninvolved perform most poorly in all domains.

In general, parental responsiveness predicts social competence and psychosocial functioning, while parental demandingness is associated with instrumental competence and behavioral control (i.e., academic performance and deviance). These findings indicate: (1) Children and adolescents from authoritarian families (high in demandingness, but low in responsiveness) tend to perform moderately well in school and be uninvolved in problem behavior, but they have poorer social skills, lower self-esteem, and higher levels of depression, and (2) children and adolescents from indulgent homes (high in responsiveness, low in demandingness) are more likely to be involved in problem behavior and perform less well in school, but they have higher self-esteem, better social skills, and lower levels of depression.

In reviewing the literature on parenting style, one is struck by the consistency with which authoritative upbringing is associated with both instrumental and social competence and lower levels of problem behavior in both boys and girls at all developmental stages. The benefits of authoritative parenting and the detrimental effects of uninvolved parenting are evident as early as the preschool years and continue throughout adolescence and into early adulthood. Although specific differences can be found in the competence evidenced by each group, the largest differences are found between children whose parents are unengaged and their peers with more involved parents. Differences between children from authoritative homes and their peers are equally consistent, but somewhat smaller (Weiss & Schwarz, 1996). Just as authoritative parents appear to be able to balance their conformity demands with their respect for their children's individuality, so children from authoritative homes appear to be able to balance the claims of external conformity and achievement demands with their need for individuation and autonomy.

Parental education is also another factor that should be considered. According to Amato & Booth (cited in Olson & DeFrain, 1997), the higher levels of education in the parents had positively related with the psychosocial development of children. Parents who were with higher levels of education, their children were socially active, had more friends, were happier, and had higher levels of self-esteem. Parents' higher levels of education were also directly related to the level of

education attained by their children. The consequence of this had an influence on the quality of life outcomes for children, including income level.

In Ethiopia, modes of child upbringing can be seen as expressions of cultural and individual conceptions of how children's socialization can best be promoted. Such conceptions are manifested by the use of rewards and punishments (Poluha, 2004). In Ethiopia it is common to have quite a permissive attitude towards infants (Poluha, 2004). Very small children are usually not punished by parents or significant others because children do not understand that they have made a mistake. Up to the age of about two to three, children are showered with love and affection. With increased social participation in early childhood, children begin to understand how to relate to others in socially desirable ways. As they acquire the foundations of moral reasoning and behavior, they begin to understand concepts such as right and wrong. Then if they made a big mistake, especially if they have previously reprimanded for it and told not to repeat it, they would be swiftly beaten or else, it is feared, the bad habits might set and be difficult to get rid of.

Children are physically punished at home until the age of 11 or 12, but usually not later. Those who deliver physical punishments in the home environment are mostly fathers. Mothers can also slap or pinch their children but tend to advise them, telling them not to do something, not to repeat whatever bad deed they had done. Neighbors could also give advice, but do not have the right to physically punish somebody else's child.

In Ethiopian context studies related to child rearing practices have been made. The earliest study, those conducted by Habtamu (1979) and Abraham (1996) focused to identify the type of parenting style adopted in Ethiopia. Studies conducted two decades ago appear to suggest that authoritarian style is predominantly practiced in Ethiopia (Habtamu, 1979; Abraham, 1996). Habtamu (1979) for instance conducted a survey study at Bahir Dar suggesting that the dominant parenting style in Bahir Dar was authoritarian and found also the following results. These include (1) a quiet child is preferred over a talkative one, (2) children are not allowed to participate in adults' discussions at home, (3) hiding of faults is common with children due to fear of corporal punishment, (4) children are not allowed to argue with parents, and (5) children are not allowed to ask 'personal' questions to parents.

Similarly, a study conducted in Siltigna-speaking community also revealed that authoritarian parenting style is practiced in Siltie (Abraham, 1996). Abraham (1996) further revealed that parents are of opinion that children are not supposed to do things on their own. It was generally unacceptable for children to ask questions and to express their views. However, these findings are challenged by few recent local studies (Selesh & Sentayehu, 1998 cited in Abesha, 2011; Tilahun, 2002; Ambachew, 2011). All seemed to conclude that the predominant parenting style exercised in different ethnic groups studied in Ethiopia is authoritative.

More recently, Abesha (2011) emphasized that all typology of parenting styles are prevalent in Gondar. A possible explanation for the differences in the findings of these two groups of studies is the time elapsed in between (Abesha, 2011). More specifically, the former studies dealt with conditions that existed about two decades ago and it is likely that the rapid socio-cultural and political changes which have taken place in Ethiopia since then have resulted in some cultural changes. Similarly, a number of researches (Dornbush et al., 1987; Hetherington & Park, 1979; Selesh & Sentayehu, 1998 all cited in Abesha, 2011; Teka, 2002; Tilahun, 2002) emphasized that parents' way of upbringing children is influenced by several factors such as family size, socio-economic status of parents, culture, educational level of parents, personality and religion. Stronger support for cultural difference was also found from the findings of some other researchers (Chao, 1994; Chen et al., 1997).

### **2.2. 2. The Relationship between Psychological Characteristics and Suggestibility**

In the last three decades, researchers have investigated how individual differences may influence accuracy and quantity of testimony. Initial research examined the relationship between recall and personality characteristics, such as imaging, introversion/extroversion, and need for approval (Marks, 1972). However, more recent endeavors have explored the linkage between memory and temperament or "expression of behavior" (Thomas & Chess, 1977) as a means of understanding why witnesses vary in the accuracy and quantity of information reported about a crime. Ornstein, Shapiro, Clubb, Follmer, and Baker-Ward (1997) proposed that certain temperament characteristics affect eyewitnesses' perception and attention to an event as it unfolds (e.g., activity level, emotional intensity, persistence), whereas other dimensions (e.g., adaptability, approach/withdrawal, distractibility) impact on their adjustment to the interview context and hence the extent of their reports.

Other researchers have looked at cognitive and personality differences related to how suggestible an individual is. For example, Gudjonsson (1983, 1988) has argued that interrogator suggestibility is a trait related to low assertiveness, high neuroticism, and willingness to lie for self-presentation purposes, low intelligence, and poor overall memory ability. In contrast, Loftus and her colleagues have been unable to find a relationship between suggestibility in response to misinformation and general memory ability (Tousignant, Hall, & Loftus, 1986) or intellectual ability (Powers, Andricks, & Loftus, 1979).

In research looking at other measures of individual difference, Tousignant (1984, cited in Schooler & Loftus, 1993) correlated several scales, particularly imagery scales and measures of social desirability, to suggestibility in the standard misinformation paradigm. Tousignant found that imagery ability is marginally related to suggestibility. One variable that has consistently been found to relate to suggestibility is hypnotisability (Barnier & McConkey, 1992; Labelle, Laurence, Nadon, & Perry, 1990). For example, Barnier and McConkey (1992) had high and low hypnotizing participants view a slide series, and then, while either hypnotized or awake, the participants were given misleading suggestions. They found that hypnotisability, but not hypnosis, was related to the acceptance of misleading post event information. Thus several cognitive/personality factors may relate to suggestibility in the standard misinformation paradigm.

Results from suggestibility studies in the adult eyewitness literature support this contention. For example, Gudjonsson (1988) found that suggestibility was high in shy/avoidant and unassertive adults. Shapiro, Blackford and Chen (2005) reported that shy, highly active, or emotionally intense adults who were given incorrect leading suggestions demonstrated high levels of suggestibility for peripherally related crime features, whereas distractible, emotionally intense, or withdrawn adults produced high rates of suggestibility for the victim's appearance. High rates of suggestibility were also found in the suspect's appearance with shy or distractible adults and in bicycle features with non-persistent adults. In contrast, only one unpublished study (Palmer, Brandt, Chen, & Shapiro, 1998) has examined how temperament may affect recall for central and peripheral information elicited with open-ended questions. Palmer et al. (1998) found that easy-going witnesses who have irregular personal regiments demonstrated low recall levels for

central features; whereas, difficult witnesses who are slow-to-adapt to new situations demonstrated low recall levels for peripheral details.

In summary, temperament does seem to affect adults' encoding and retrieval of events and to mediate their responses to open-ended and incorrect leading questions. The remaining categories of cognitive variables yielded relatively low numbers of significant correlations. Of particular surprise was the finding that event memory in one setting was not a good predictor of suggestibility in a second setting; even when there were significant relationships, half of these showed that good event memory was correlated with high suggestibility. These results suggest that previous findings that good memory for the details of an event is associated with low levels of suggestibility (Marche, 1999; Marche & Howe, 1995; Pezdek & Roe, 1995) reflect context-specific factors rather than cognitive profiles of individual children.

Finally, IQ is not a significant predictor of suggestibility within the normal population; however, it does predict suggestibility when children with mental retardation are added to the sample; children with mental retardation are more suggestible than typically-developing children with normal intelligence, particularly on close ended-questions. The highest correlations with suggestibility were obtained for measures of self-concept, maternal attachment style, and parent-child relationships. Thus children with poor self-concept, poor supportive relationships with fathers or mothers and with mothers who were insecurely attached in their romantic relationships were at risk for being suggestible (Vrij & Bush, 2000; Murch & Slater, 1996; Howie & Dowd, 1996; Davis & Bottoms, 2002; Burgwyn-Bailes et al., 2001). The major measure of suggestibility used in these studies was misleading questions; thus, there is little opportunity to observe potential correlations with misinformation. Also, with the exception of Burgwyn-Bailes et al. (2001), this effect was obtained for older children and not for preschoolers. For example, Davis and Bottoms (2002) found that children who felt confident about telling an adult he or she was wrong succumbed to few misleading questions, if the children were older than 6.5 years and if they were interviewed by a supportive interviewer. In other words, the supportive interviewer increased older children's feelings of self-efficacy which in turn lowered suggestibility. This pattern was not found for the younger children. Either this age difference that separates significant from nonsignificant studies could reflect the greater stability of self-esteem with age, or it could reflect the greater reliability of self-esteem scales for older children. Although none of

the studies directly modeled the causal pathway to suggestibility, based on these significant findings Bruck and Melnyk (2004) propose the following for future study. The common finding of maternal attachment-suggestibility relationship may in fact represent the mother's style of interaction with adult partners that also characterizes her interactions with her child. Children raised by secure and supportive parents may develop positive self-concepts, which in turn may make them resistant to suggestions that are inconsistent with their own experiences.

A large body of research has been conducted over the past decade to investigate relations between suggestibility and various cognitive, personality, and social measures (Bruck et al., 1997). Some of the many social and personality factors examined in relation to suggestibility in recent studies include: compliance, dependence, self-esteem, temperament-specifically inhibition and adaptability-and parents' and children's attachment styles-categories of parent-child relationship security (Bruck et al., 1997; Quas et al., 1997). Gordon et al. (1993), for example, found that children who were more at ease in new situations (adaptability) than were their peers provided more information, both verbally and nonverbally, about a physical examination.

Another individual difference variable that may affect memory performance is suggestibility. There is some evidence that suggestibility may be viewed as a personality "trait" rather than a solely developmental factor (Clarke-Stewart, Thompson & Lepore, 1989). In almost all studies of suggestibility, a substantial proportion of even the youngest children do not report false information. In the study by Leichtman and Ceci (1995), for example, even under the most suggestive conditions one quarter of the 3- to 4-year-olds and two-thirds of the 5- to 6-year-olds resisted suggestion.

Several social-emotional factors have also been explored as predictors of children's suggestibility. One such factor is the child's shyness. In Kagan's research, shy toddlers became obedient preschoolers, who were less likely to refuse an experimenter's requests or ask why an act should be carried out (Schacter, Kagan, & Leichtman, 1995). Perhaps, then, shyness is a quality that would predispose a child to accept an adult's misleading suggestions. There is one study in which support for this idea was found. Children, from 6- to 10-years old, were interviewed about an event they had observed on video 3 weeks earlier. Those who were rated as more shy by their teachers did indeed give more incorrect answers in response to misleading questions (Roebbers & Schneider, 2001). However, in other studies, suggestibility has not been

related to parents' or teachers' ratings of children's shyness or tendency to withdraw or become anxious in new social situations (Bartlett, 2001 cited in Gordn et al., 2001; Burgwyn-Bailes et al., 2001; Crossman, 2001 cited in Gordn et al., 2001; Imhoff & Baker-Ward, 1999; Young et al., 2003). This seems like a bit of a dead end. A similar impasse has been reached when researchers have investigated whether children who are less adaptable or flexible in a new situation are more likely to accept misleading suggestions. In two studies, researchers failed to find a significant link between suggestibility and adaptability (Burgwyn-Bailes et al., 2001; Geddie et al., 2000).

Compliance is a possible predictor of suggestibility; it is reasonable to expect that children who are more willing and eager to please adults would go along with their suggestions (Bruck et al., 1997). However, empirical support for this connection is lacking (Crossman, 2001 cited in Gordn et al., 2001). Perhaps the issue is not compliance as much as the child's ability to control impulses. Perhaps more suggestible children lack inhibitory control and blurt out agreement with an interviewer's suggestions. Quas and Schaaf (2002) tested this hypothesis that impulsive children are more suggestible but found no link between suggestibility and 5-year olds' impulsivity on a cognitive matching task. Similarly, Payment (2002 cited in Gordn et al., 2001) found no association between suggestibility and elementary school children's inhibitory control assessed with the Stroop test. However, evidence of an association was found in two other studies: Alexander et al. (2002) found that cognitive inhibition on the Stroop test and effortful control on the Child Behavior Questionnaire (CBQ)1 were related to more correct responses to misleading questions when 3- to 7-year olds were interviewed about the inoculation they had experienced 2 weeks earlier, and Roberts and Powell (2001) found that control in a test of retroactive inhibition was related to resistance to suggestions when 5- to 6-year-old children were given a suggestive interview after an interactive event in their classroom. In our example, in a Continuous Performance Task (CPT), suggestible Child A responded impulsively 46 times whereas resistant Child B made no impulsive errors at all.

Research conducted by Candel, Merckelbach, and Muris (2000) suggests that individual differences in suggestibility can be reliably measured in children. Using the Bonn Test of Statement Suggestibility, they found that younger children had higher suggestibility scores than did older children. Moreover, within age groups, children who were judged by their teachers as

being more suggestible had higher scores than did those who were judged to be not particularly suggestible.

Similarly, using the Gudjonsson Suggestibility Scale (Gudjonsson, 1989) to measure individual differences in interrogative suggestibility, Richardson and Kelly (1995) found that suggestibility was significantly negatively correlated both with intelligence and recall performance in 10- to 16-year-old boys. The challenge for researchers is to begin to identify those characteristics that distinguish children who are more suggestible from those who are not. Work in this area has just begun ( Goodman & Quas, 1997; Ornstein et al., 1997; Quas, Qin, Schaaf, & Goodman, 1997) with a focus on cognitive factors such as event knowledge and source monitoring abilities, and social/emotional variables including attachment styles, self-esteem, parenting styles, and the presence or absence of psychopathology. Children with high self-esteem, for example, have been found to be more resistant to misleading or suggestive questions when compared with those with lower self-esteem (Howie & Dowd, 1996; Vrij & Bush, 2000).

Other work indicates that self-esteem may interact with the age (or cognitive developmental level or both) of the child in determining individual differences in suggestibility. Preschool children, who do not yet have a well developed sense of self, may be more influenced by developing cognitive abilities, such as the ability to distinguish the sources of their memories and to simultaneously consider more than one aspect of a problem, than by self-esteem. In contrast, self-esteem may play a more important role in individual differences in suggestibility among older children (Mazzoni, 1998; Muir-Broadbent, King, Downey, & Petersen, 1998; Welch-Ross, Diecidue & Miller, 1997). Indeed, it may be that individual and age-related differences in these basic cognitive abilities underlie the increased susceptibility to suggestion that is consistently found among preschool children (Templeton & Wilcox, 2000).

In their review, Bruck, Ceci, and Melnyk (1997) noted that in studies from the early 20<sup>th</sup> century researchers found a negative relation between suggestibility and intelligence, but recent studies have rarely included measures of intelligence, and when they have, researchers have seldom found evidence that the relation was significant. Bruck et al. speculated that the link was found in early studies because they included children with lower IQs than current studies typically do. Since this review, intelligence has been included in several studies, including those of children with intellectual disabilities, and evidence for an association is accumulating. Although no link

was found when intelligence was measured with nonverbal tests (Eisen, Qin, Goodman, & Davis, 2002; Roebbers & Schneider, 2001), some researchers have found that suggestibility was related to lower IQ in studies using full-scale IQ tests or verbal subscales from these tests (Geddie et al., 2000; McFarlane et al., 2002; Young et al., 2003). In the study by McFarlane et al., lower intelligence was the strongest predictor of 3- to 5-year-old children's suggestibility on the Yield subscale of the Video Suggestibility Scale for Children (Scullin, Kanaya, & Ceci, 2002)—stronger than gender, socioeconomic status (SES), or memory performance. It is reasonable that suggestibility-measured in terms of children's verbal responses to questions—would be more reliably related to verbal intelligence than to nonverbal intelligence.

The most important cognitive factors that contribute to individual differences in suggestibility are memory ability, event-relevant knowledge levels, and source monitoring ability (Bruck et al., 1997; Quas et al., 1997; Ceci and Huffman, 1997). As Ceci and Huffman (1997) point out, memories of our experiences potentially come from a variety of sources (e.g., thinking, talking, hearing, and reading about the event, as well as seeing it, participating in it or doing both). If children are not able to differentiate among these various sources of information, they will be more susceptible to error and suggestions, possibly misattributing information obtained from other sources to their actual experience. Considerable research has examined this topic and some consistent findings have emerged. Preschool children, for instance, have particular difficulty with most aspects of this cognitive task, whereas school-aged children are able to distinguish what they said from what someone else said (Foley, Johnson, & Raye, 1983), and what they did from what someone else did (Foley & Johnson, 1985). However, these older children do not perform as well as adults in distinguishing memories of activities they performed from those that were imagined (Foley & Ratner, 1998). Children who can't source-monitor well may not be able to keep track of which pieces of information came from their own experience of the original event and which came from external sources (Quas et al., 1997). Children with greater event-relevant knowledge, on the other hand, may show increased or decreased suggestibility relative to children who possess less event-relevant knowledge (Quas et al., 1997). Although they may remember more accurate information, children who know more about the theme of an event may infer information that was presented.

There is little evidence that intelligence is related to eyewitness identification performance. Although an early study indicated a significant relation between face recognition accuracy and intelligence, later studies have shown no relationship (Brown, Deffenbacher, & Sturgill, 1977). A word of caution is in order here, however, because Howells' sample of witnesses included a much greater range of intelligence at the low end than have later studies. At the low extremes of intelligence, it seems likely that a pattern would emerge that is similar to that found with children, namely a high rate of mistaken identifications in response to culprit-absent lineups. Similarly, the research on individual differences in children's suggestibility is replicate with inconsistent and often weak findings (Quas et al., 1997). For example, intelligence is sometimes related to suggestibility, and other times not (Bruck et al., 1997).

Research on individual differences has revealed numerous variables that may affect children's susceptibility to suggestion. The practical implications of these findings, as described by Quas et al. (1997), is that identification of the individual difference factors that predict suggestibility may eventually allow legal professionals to take special precautions when interviewing children who are at the greatest risk of incorporating suggestions into their reports. Clarke-Stewart et al. (2004) similarly emphasized that without going into more detail, it is apparent that these results would be very difficult to translate into the courtroom. The most the current results can tell the court is that suggestive interviewing techniques have a high risk of tainting witnesses' testimony; they cannot provide the court with reliable information about the types of witnesses whose reports are most likely to be tainted by suggestive interviewing.

In spite of the applied success of the eyewitness identification literature, significant amounts of work have yet to be done. A major concern with the eyewitness identification literature is that it has been driven much less by theoretical frameworks than it has by practical perspectives. This is a problem with this state of affairs. The problem with the premium on application and forensic relevance in the eyewitness identification literature is that it reduces the interplay and sharing of ideas between eyewitness identification research and basic areas of psychology, especially cognitive and social psychology. In addition, the experimental eyewitness identification literature is likely to never be complete enough to cover every possible situation that arises in actual cases; hence, better theory is needed to generalize this body of literature and to fill in gaps regarding what is likely to happen under various conditions. A second concern in the eyewitness

identification literature is that, although laboratory data on eyewitness identification are extensive, there is a relative paucity of some key forms of real-world data. There are some estimable rates of eyewitness identification behavior and lineup conditions from actual cases that could assist the design and interpretation of laboratory work. For instance, there have been no empirical estimates of the base rate for culprit-present versus culprit-absent lineups in actual cases.

In sum, the idea that some eyewitnesses are better than others seems an obvious truism, but the empirical evidence is not overwhelming. For example, there is little evidence that intelligence is related to eyewitness identification performance. Although an early study by Howells (1938) indicated a significant relation between face recognition accuracy and intelligence, later studies have shown no relation (Brown, Deffenbacher, & Sturgill, 1977). A word of caution is in order here, however, because Howells' sample of witnesses included a much greater range of intelligence at the low end than have later studies. At the low extremes of intelligence, it seems likely that a pattern would emerge that is similar to that found with children, namely a high rate of mistaken identifications in response to culprit-absent lineups. A recent meta-analysis by Meissner and Brigham (2001) shows that this effect is robust across more than 25 years of research. There is little published research relating personality characteristics to eyewitness identification accuracy.

Hosch, Leippe, Marchioni, and Cooper (1984) found that high self-monitors are more susceptible to biased lineup procedures than are low self-monitors and Hosch and Platz (1984) found a relation between self-monitoring and correct identifications. Also, a meta-analysis by Shapiro and Penrod (1986) indicated that individuals high in chronic trait anxiety made fewer mistaken identifications than individuals low in chronic trait anxiety. Their meta-analysis also indicated that field independents made less accurate identification (but equal mistaken identifications) relative to field dependents. However, no strong theory relating personality to eyewitness identification performance has emerged in the literature and there is a relative paucity of research directed at the role of personality in eyewitness identification. These circumstances will often be of a social or of a cognitive type. Social circumstances may cause a child to acquiesce (i.e. say yes') to a leading question (and therefore produce possibly incorrect recall).

Cognitive circumstances would affect whether an incorrect reply would 'carry over' to become part of a child's report on a subsequent occasion.

As in much of psychology, human behavior and the mind, the effects of social circumstances/factors are mediated by cognitive circumstances/factors (and vice versa). More research is needed on the extent to which the effect of each type of circumstance is dependent on the other type of circumstance. Nevertheless, what one can now say is that the more suggestible the interviewing circumstances the more likely it is that biased accounts will be provided by individual witness, especially if both social and cognitive suggestibility is involved.

### **2. 3. The Types of Memory Involved in Eyewitness Testimony**

When individuals are involved as witnesses in legal proceedings, they are asked to report events that transpired months or even years previously. Hence, the extent and quality of witnesses' testimony is determined to a large extent by the retrievability of information in long-term memory. The long-term memory system includes two major representational subsystems, declarative memory and nondeclarative or procedural memory (Bjorklund, 2000). Declarative memory involves the retention of information. It is represented in knowledge structures such as concepts and propositions. Whereas procedural memory concerns knowing how to accomplish specific tasks. There are many distinctions between procedural and declarative memory (Tulving, 1983). For example, procedural memory can be demonstrated only by performing the procedure.

Evidence of declarative memory can come in a variety of forms (e.g., recall, recognition, application, and association to other knowledge). Procedural knowledge is neither true nor false, whereas the truth value of much of declarative can be determined. Procedural knowledge is often acquired only after extensive practice. Much declarative knowledge is acquired after a single exposure.

Testimony typically calls for the use of declarative memory, more specifically a type of declarative memory termed episodic memory, or memory for information that can be linked to a particular occurrence. Episodic memory is memory of personally experienced events. Because individuals can be consciously aware of the contents of episodic memory and can deliberately retrieve the information, episodic memory is sometimes described as explicit memory. In

contrast, procedural memory is a type of implicit memory, it is automatic and must be assessed indirectly (Schacter, 1992). Although questions sometimes arise about the role of implicit memory as the basis for evidence of child abuse (Howe, 2000), testimony requires episodic memory, which is expressed verbally.

Tulving (1983) emphasized that episodic memory contains representations of ordinary experiences as well as unique events that become part of one's life story. The events reported by witnesses are not only referenced in time and place, but are also important occurrences for the individual. Specifically, the point of reference for episodic knowledge is the self (Did this event happen to me?). Episodic information is easily forgotten. It is coded with respect to when the information was acquired. It is remembered. In this regard, testimony typically calls for a type of episodic memory that is termed autobiographical memory, defined by Nelson (1993: 61) as "specific, personal, long-lasting, and (usually) of significance to the self-system." The developmental emergence of autobiographic memory can reasonably be considered to mark the earliest point at which a child can be expected to provide testimony, especially in cases in which the child is the alleged victim.

Another important characteristic of individuals' testimony involves the nature of the events under investigation. Assuming that crimes were actually committed, child witnesses are typically victims of abuse or close observers of violent acts, often involving family members. They can be expected to have suffered some degree of trauma, and in many cases, may have experienced repeated abuse for some extended period of time. As a consequence, in many instances the effects of trauma on memory at both neurobiological and psychological levels are additional influences on children's testimony.

Moreover consideration in examining children's testimony involves the flow of information through the memory system. Before witnesses can report events, they must first have encoded the information and established representations in memory. Thus, changes in the memory representation that occur over time must be understood in order to evaluate children's capacity to provide accurate testimony. Information also must be retrieved from long-term memory, and retrieval is not always an automatic or perfect process. Hence, skills in monitoring what is in memory and in accessing one's own memory also are important in understanding testimony. As children develop, they learn strategies for organizing material and retrieving it from memory. As

a result, their narrative accounts of who, what, why, where, and when become more detailed, organized, and coherent. In addition, as children learn how narratives are structured, they are better able to retrieve specific information about an event, such as its setting, participants, conversation, affective states, and consequences (Mandler, 1990; Saywitz et al., 1993).

Research revealed that the development of inferential skills, abstract reasoning abilities, and metacognitive skills plays the fundamental role in decreasing children's susceptibility to suggestion (Ceci & Bruck, 1993). Hedderman (1987) reviewed recent relevant research on children's memory and susceptibility to suggestion and came to the view that accuracy and reliability of recall are related to certain level of cognitive maturity and that memory capacity does not appear to be a function of age. However, the acquisition and orchestration of techniques for operating the memory system appear to be related to other forms of cognitive maturation, such as the ability to think conceptually. Estimates of the age at which children begin to think conceptually vary between five and seven whilst children younger than five may have some stored information about an abusive experience, the question of whether they can be reliable witnesses depends whether their memories are robust and whether it is possible to compensate for their lack of deliberate recall skills by external cues. Feldman et al. (1979) and Feldman and White (1980) suggested that as children grow older they (like adults) have learned how to deceive.

Similarly, Johnson and Foly (1984) suggested that even six-year-olds seemed able to distinguish between what they had only thought and what they had actually done. However, psychiatrists (Rosenfeld et al., 1979 cited in Memon et al., 1998) do claim that allegations of abuse made by children under the age of nine should be carefully scrutinized. They said that children aged eight or less are often less able to distinguish between fantasy and reality than older children. Overall on the question of lies /fantasies there is virtually no evidence available on which to judge whether children are prone to fantasize about abuse (Hedderman, 1987). This question really needs much more rigorous and through investigation.

## **2.4. Types of Suggestive Influences in Questioning**

In addition to individual differences, type of questions may influence accuracy and quantity of testimony. In the last three decades, researchers have investigated how the format of questions

used to elicit eyewitness testimony affects both accuracy and quantity of information. The ability of the eyewitness to provide police officers and others in the judicial system with a clear understanding of what transpired during a crime is imperative for the prosecution of suspected perpetrators. When interviewing witnesses, a mixture of open-ended questions (i.e., requiring extensive responses) and closed-ended questions (i.e., requiring a simple yes/no response or a selection of two or more choices) is used to elicit a description of the suspect, information about the victim, and a description of the crime. By being aware of the types of suggestive influences in questioning police investigators can maximize accuracy of memory and improve the quality of the investigatory process. Eisen et al. (2002) typically indicated that overall recall from open-ended, unbiased questions (i.e., in which no answer is suggested), although less complete, is more accurate than overall recall from closed-ended questions, such as correct leading (i.e., in which a correct answer is suggested) and incorrect leading questions (i.e., in which an incorrect answer is suggested) (Dodd & Bradshaw, 1980; Loftus, Miller, & Burns, 1978; Smith & Ellsworth, 1987). Using leading questions inadvertently increases inaccuracy and the suggestion itself may interfere with the recall process.

The negative relationship between accuracy and quantity of overall recall is likely due to the fact that a witnessed event represents the type of complex-stimulus situation in which more information is learned than can be reported before availability of the information declines (Sperling, 1960 cited in Endres, 1997). According to Lipton (1977), closed-ended questions impact on witnesses' cognitive set by limiting the range of responses to one of the given choices in multiple-choice questions or by restraining the answer to yes/no responses in correct/incorrect leading questions. For this question format, cognitive set is "narrowest" as witnesses are required to respond, even if they do not know the answer, and should result in high quantity, but low accuracy. In contrast, open-ended questions widen witnesses' cognitive set as most questions lead to some response, although witnesses usually provide information only when they are sure of it. Consequently, this question format should result in low quantity, but high accuracy.

Although a number of investigators have studied the effect of questions on recall, their use of open-ended questions prior to closed-ended questions to elicit recall confounds type of question with accuracy and quantity. To disentangle these factors, different groups of witnesses must receive each type of question. Lipton (1977) showed college students a filmed murder-robbery

and then administered either an open-ended questionnaire or a multiple-choice questionnaire. Consistent with his contentions, accuracy was higher for those given the open-ended rather than the multiple-choice questionnaire (i.e., 83% vs. 56%), whereas quantity was higher for those given the multiple-choice rather than the open-ended questionnaire (i.e., 75% vs. 32%). However, Shapiro, Blackford, and Chen (2005) admonished researchers not to rely on overall recall to determine whether witnesses remember a crime, as various types of information about crimes are not recalled equally well.

Specifically, central information is more accurately recalled than peripheral information, particularly when open-ended questions are used (Cassel & Bjorklund, 1995; Clifford & Scott, 1978; Shapiro, Blackford & Chen, 2005). However, to elicit recall for peripheral information, specific cues in the form of unbiased and leading questions may be needed (Cassel, Roebbers & Bjorklund, 1996). Thus, one modification to Lipton's contentions is that high accuracy would be expected for central information with open-ended questions and for peripheral information with multiple-choice questions. A second modification would be that the high quantity expected for multiple-choice questions would favor central over peripheral information due to the use of specific cues to elicit salient features.

The purpose of an interview with a witness should be to obtain information about an event. However, interviewing inevitably also constitutes a flux of information in the other direction, from the interviewer to the interviewee (Flammer, 1981). Asking a question will give the witness a hint what the interviewer already knows and what information he lacks, and the interviewer's reactions to answers may give away what he expects to hear or what is surprisingly new for him. Thus, an interview will to some degree also be a process of learning on the side of the interviewee (Underwager and Wakefield, 1900). In addition to the exchange of information, an interview is further characterized by various aspects of mutual influence that can be described in terms of power, conformity, and compliance (Enders, 1997). If every question transports some amount of information, how do suggestive and nonsuggestive questions differ? A question may be defined as leading or suggestive to the extent that it includes information about the desired or expected answer.

Drawing from several lists compiled by Stern (1904 cited in Endres, 1997), Lipmann (1908 cited in Endres, 1997), Gudjonsson (1992), and Bender and Nack (1995), and enlarged by some

additional speculation, can be discriminated (Endres, 1997). The suggestive intensity of the question types is not necessarily closely related to their effectiveness, as more subtle methods might be more effective than more obvious tactics of influence. In order to obtain a statement, the interviewer has to prompt the witness in some way, by means of requests (Tell me what happened yesterday evening / or question). Open-ended questions ( mostly beginning with the letter w:'what', 'who', 'when', 'where', 'why', and 'how') only give a broad frame for the answer, without conveying any specific content information. Therefore, they usually demand full sentences as answers. This question type is universally recommended for interrogations of witnesses or suspects, particularly for the first phases of questioning. Identification question ('which color...?', 'what size...?') are usually also not suggestive as they just outline the dimension on which some answer is expected. Selection questions may be considered somewhat suggestive as they convey information on possible states and at the same time imply that the other person would know which the case is usually. They are not leading only if the 'don't know' option is explicitly part of the enumeration and if the diverse possible states possess about equal subjective likeliness.

Within an interrogation context post- event information can be incorporated into witnesses' testimony in at least two distinct ways. First, the questions asked may be loaded with suggestion and misleading cues. Second, the instructions given may be suggestive and misleading. The former type of suggestibility is commonly referred to in the literature in terms of so-called 'leading questions' (Loftus, 1979; Powers, Andriks & Loftus, 1979). It is generally assumed that leading questions will have a distorting effect on responses and therefore render testimony less accurate. A leading question with a premise contains items of knowledge that did not yet occur in the interviewee's preceding answers. The suggestiveness is relatively clear when the premise is the local content of the question. And probably much more subtle if it is presented in a syntactically less prominent position, in a subordinate clause, an adjective or adverbial phrase. The same applies to implied descriptions and evaluations. The well-known observation by Loftus (1979) that speed estimations depend upon the wording used in the question illustrates this.

Research has demonstrated that individuals exposed to information that is misleading or inconsistent with their experiences during the interval between encoding and retrieval typically perform less well during memory interviews than do those who do not receive such information

(e.g., Loftus & Palmer, 1974; Principe, Ornstein, Baker-Ward & Gordon, 2000; Roberts et al., 1997). Exposure to misleading information can occur during the course of memory interviews (in the form of suggestive or very specific questions), before the interview occurs (e.g., conversations with parents or other family members), or in-between multiple interviews (e.g., some therapeutic procedures, television news or newspaper reports, reading stories about similar events). Gudjonsson (Gudjonsson & Clark, 1986) suggested that misleading questions presented in an interrogative context can lead to increased guessing behavior, and result in affirmative response biases.

The classical experimental work described by Stern (1938 cited in Gudjonsson, 1992) clearly shows that leading questions produce distorted responses. The major reason is that leading questions comprise certain 'expectations' and 'premises' (Richardson, Dohrenwend & Klein, 1965 cited in Gudjonsson, 1992). An expectation is that component of a question by which the interrogator directly or indirectly indicates the response he anticipates. Because an expectation communicates the response expected in specific terms, it is usually of a closed yes-no type. Yes-no questions are mostly low to moderate in suggestive content, depending on how much they limit the range of possible answers and how accurately they represent the different options. Yes-no type questions might be regarded as a special case of selection questions as they explicit or implicitly present a complete disjunction of two possible alternatives, affirmation, and negation. However, in most cases those two will not be psychologically equivalent. First, it has long been known in test construction that subjects tend to favor acquiescent answers (Gudjonsson, 1992).

Second, the verbal description of a fact may evoke a mental image which in itself may exert a suggestive influence and which cannot be counteracted by an equally potent negative image. Besides that, 'yes' and 'no' are not psychologically equivalent answers as the latter means contradicting a high-status adult, and contradicting a person may be considered impolite if no justifying reason can be given. An extremely suggestive form of the yes-no question is an affirmative sentence with an interrogative intonation, which may be understood as a purely rhetorical question, a request for affirmation.

A question contains a 'premise' when its construction depends on prior information. Within an interrogation context one general class of premises warrants particular attention. This is the so-called 'closed alternative' question where only some of all possible responses are presented.

Closed alternative question may be quite misleading as it limits the number of alternatives and may thus carry the message that options not explicitly presented will be rejected (Enders, 1997). An incorrect premise may trick some subjects into giving one of the alternatives. Provided the premise is correct, its use can save a great deal of time because it helps the interviewer to build on information he already knows and to focus more effectively on obtaining new information. The effects of specific instructions and interpersonal pressure on individual responses during interviewing or interrogation have been less often systematically researched than the effects of leading questions. Nevertheless, they are undoubtedly important, which is clearly evident when one looks at the literature on police interrogation techniques (Bartol, 1983). The pressure toward conformity uses social comparison (peer pressure) or the force of authority by inducing conflicting tendencies and lowering confidence in an interviewee whose memory does not conform with what is presented to him as others' testimony or opinion. The conformity experiments of Asch (1951 cited in Enders, 1997) illustrate how difficult it is for subjects to stick to their own judgment when they feel they are in an extreme minority position.

In the context of ordinary held conversation rules, question repetition is just one specific form of negative feedback which informs the person addressed that his performance falls short of standards and has to be improved. Indeed, the study by Ceci et al. (1994) indicated that suggestibility effects increase over the course of interviews that are reported over time. Ceci and Bruck (1993:419) reported that when children are asked the same question more than once, they often change their answers presumably because they interpret the repeated question as 'I must not have given the correct response the first time; therefore, to comply and be a good conversational partner, I must try to provide new information.'

In Cassel and Bjorklund's (1992) study of children's memory for a bicycle theft, 42 percent of kindergarten children changed their mind on repeated questioning. Negative feedback may also be given explicitly, by saying that parts of a statement are impossible, incredible or unacceptable, and should therefore be changed. This can further be combined with threats and promises, the announcement of reward or punishment contingent on certain answers. Crude as these latter forms of suggestion may appear, analyses of real investigation interview transcripts show that they do indeed occur even in professional and police interrogations (Ceci & Bruck, 1995).

Some caveats are appropriate here. First, the list gives only verbal suggestive techniques and is probably far from complete; techniques like hypnosis, props such as anatomically detailed dolls, and the diverse channels of nonverbal behavior (gestures, facial expression and paralinguistic aspects of speech) have been disregarded here, although they represent even more powerful suggestive tools. Second, the context of the question or the entire interview has to be considered and may make question that in isolation seem rather innocuous highly leading. The actual suggestiveness of a question is an empirical issue and can certainly not be determined by definition or by theoretical arguments alone. And third, not all suggestive questions inherently illicit and detrimental in an interview context. Questioning a young child or an extremely monosyllabic witness is often not feasible without some amount of prompting and cueing. However, the use of suggestive prompts and cues should be considered in detail in accordance with a rule postulated by Arntzen (1989 cited in Endres, 1997) only the answer surplus, the portion of information which is not contained in the question, should be utilized as evidence. Using an impossible suggestion (e.g., ‘And the man just dissolved into thin air, or what happened?’) Or the contrary of the expected detail as a prompt may constitute a useful compromise.

Another factor that has been shown to increase suggestibility is the perceived authority or credibility (or both) of the person providing the misinformation. Children are more suggestible, for example, when the misleading information is presented by an adult, as opposed to another child (Ceci, Ross, & Toglia, 1987), when the adult is perceived of as being more rather than less credible, knowledgeable, or authoritative (Simpson & Guttentag, 1996; Templeton & Hunt, 1997; Toglia & Ross, 1991), and when the misleading information is provided by a familiar and trusted person versus a stranger (Jackson & Crockenberg, 1998).

In sum, the studies on interviewing provide evidence that suggestibility effects are influenced by the dynamics of the interview itself, the knowledge or belief posed by the interviewer, the emotional tone of the questioning and the props used. Children attempt to be good conversational partners by complying with what they perceive to be the belief of their questioner. Their perceptions, and thus their suggestibility may be influenced by subtle aspects of the interview such as the repetition of yes-no questions.

## **2.5. Model of Interrogative Suggestibility**

The “individual differences approach” (developed by English researcher Gisli Gudjonsson) was adapted to use in this study. The individual differences approach is rooted in Gudjonsson and Clark’s (1986) theoretical model of suggestibility. They proposed that whether or not individuals are suggestible depends on their cognitive coping strategies during interviews. These coping strategies will be influenced by three aspects of the interviewees: individuals’ uncertainty about the correct answer, their trust of the interviewers, and their expectations of success. Although these variables are situational variables that may be manipulated by interviewers (e.g. through negative feedback and/or repeated questions), interviewees’ responses to these situational variables comprise relatively stable individual differences that can be measured. The Gudjonsson Suggestibility Scale 2 (GSS 2) (Gudjonsson, 1987, 1997) was adapted to measure these individual differences.

Gudjonsson and Clark (1986) presented a theoretical model of interrogative suggestibility which attempted to identify the various influences present during interview which may distort testimony. According to the model, interrogative suggestibility is dependent on the coping strategies adopted by interviewees under interrogative pressure. All interviewees enter an interview with a general cognitive set regarding the situation. This cognitive set, which influences and is influenced by interviewees comprises, uncertainty about the subject matter of the interview, their expectations about what is required of them and how to manage the situation successfully, and their trust in interviewer’s honesty and intentions. Cognitive set may facilitate either a resistant or a suggestible behavioral response to interrogative pressure. The model also holds that negative feedback is an important determinant of suggestible responding. Negative feedback, if accepted, undermines previously given responses; encouraging interviewees to change or shift their responses and increasing their susceptibility to further leading questions (Gudjonsson, 1984, 1997, 2003; Gudjonsson & Clark, 1986).

Interrogative suggestibility has been defined by Gudjonsson and Clark (1986) as the extent to which, within a closed social interaction, people come to accept messages communicated during formal questioning, as a result of which their subsequent behavioral response is affected. One factor known to interfere with performance on a wide range of memory tasks, from physical judgments to person identification, is suggestive questioning (Loftus, 1979). The suggestiveness

of a question or of an interview procedure can be defined in terms of their potential to influence a person's reporting of events or objects.

Considerable research has demonstrated that individuals exposed to information that is misleading or inconsistent with their experiences during the interval between encoding and retrieval typically perform less well during memory interviews than do those who do not receive such information (e.g., Loftus & Palmer, 1974; Principe, Ornstein, Baker-Ward, & Gordon, 2000; Roberts et al., 1997). Although the power of the situation contributes to a person's likelihood of suggestibility, not all participants in experiments or witnesses who are interrogated are equally susceptible to suggestive influences. Understanding how personal characteristics contribute to witnesses' susceptibility or vulnerability to suggestive influences may tell us why some people come to internalize responsibility and others do not.

Another factor that has been associated with behavior during an interrogation is a person's suggestibility (Gudjonsson & Clark, 1986; Gudjonsson, 1992). Suggestibility has also been conceptualized as an individual trait variable, as a person's susceptibility or vulnerability to suggestive influences (Binet, 1900 cited in Endres, 1997; Gudjonsson, 1992). Even when information can be retrieved from memory, it may not always be reported. Individual differences among children in such areas as developmental limitations, temperament, emotional status, and intelligence can influence the reporting of information during an interview (Saywitz, 1993; Gordon et al., 2001).

Although the use of leading questions (questions involving material not occurring during the event) and negative feedback is often successful during interrogations, not all witnesses are equally influenced. Psychological and socio-demographic variables have all been shown to influence a witness' suggestibility (Gudjonsson, 1983, 1992). Similar findings were reported by Merritt et al. (1994) in their study of children's recall of the details of an event. In this study, both adaptability and the tendency to approach others (as opposed to withdrawal or shyness) were found to correlate strongly with recall. Personality characteristics interact with the interview setting and process to influence recall performance. That is, children who are more outgoing and adaptable adjust better to being interviewed and, as a result, are able to retrieve more information from memory.

Gudjonsson and Clark model postulates that most people are susceptible to suggestion if the necessary conditions of uncertainty, interpersonal trust and heightened expectations are present (Gudjonsson, 1992). However results from studies using GSS have shown that interrogative suggestibility is influenced by a number of individual difference variables. Included among these are such cognitive and personality measures as intellectual functioning (Gudjonsson, 1990), self-esteem (Gudjonsson & Singh, 1986), anxiety (Gudjonsson, 1988; Liebman et al., 2002), and assertiveness (Gudjonsson, 1988; Liebman et al., 2002). Mood variables, such as anger and suspiciousness, have also been shown to markedly reduce people's susceptibility to suggestions and their willingness to comply with requests (Gudjonsson, 1992). However, despite the centrality of the concept of coping to the Gudjonsson and Clark model, there are no current studies that have investigated coping style as an individual difference variable that might affect suggestibility. A basic premise of the model is that interrogative suggestibility—the degree to which interviewees will yield to suggestion—is dependent on their cognitive appraisal of the interrogative situation and the coping strategies that they are able to adopt, especially when faced with the uncertainty and expectations of the interrogative situation (Gudjonsson, 1992).

Specifically, Gudjonsson (1984) emphasized that within an interrogation context post event information can be incorporated into people's testimony in at least two distinct ways. First, the questions asked may be loaded with suggestion and misleading cues. Second, the instructions given may be suggestive and misleading. The former type of suggestibility is commonly referred in the literature in terms of so-called 'leading questions' (Powers et al., 1979; Gudjonsson, 1984). It is generally assumed that leading questions will have a distorting effect on responses and therefore render testimony less accurate. Indeed, the classical experimental work described by Stern (1938 cited in Gudjonsson, 1984) clearly shows that leading questions produce distorted responses. The major reason is that leading questions comprise certain 'expectations' and 'premises' (Richardson et al., 1965 cited in Gudjonsson, 1984). An expectation is that component of a question by which the interrogator directly or indirectly indicates the response he or she anticipates. Because an expectation communicates the response expected in specific terms, it is usually of a closed yes-no type. A question contains a 'premise' when its construction depends on prior information. Within an interrogation context one general class of premises warrants particular attention. This is the so-called 'closed alternative' question where only some of all possible responses are presented. An incorrect premise may trick some participants into

giving one of the alternatives. Provided the premise is correct, its use can save a great deal of time because it helps the interviewer to build on information he already knows and to focus more effectively on obtaining new information.

According to Gudjonsson (1992) and Nurmoja (2005) the main research findings derived from the model are stated as follows:

1. interrogative suggestibility is a distinctive type of suggestibility. It would not be expected to correlate with primary suggestibility as found in a hypnotic context.
2. suggestibility is a dynamic process that is potentially situation –bound (however the model recognizes that suggestibility can be reasonably stable over time because of the cognitive and personality factors that mediate suggestibility-stable individual differences in suggestibility can be measured reliably).
3. three components of suggestibility (uncertainty, interpersonal trust and expectation ) can be manipulated to a certain degree by an interrogator.
4. interviewees who enter the situation with a suspicious cognitive set are likely to be less suggestible than those with trusting cognitive set.
5. the type of coping strategies people are able to use during interrogation affects their level of suggestibility.
6. poor memory and low intelligence make people generally more suggestible.
7. suggestibility is related to certain personality variables (low self -esteem, anxiety proneness, lack of assertiveness and fear of negative evaluation).
8. negative feedback can markedly affect interviewees' mood and make them more suggestible.
9. there are significant differences between the response alternatives of suggestible and nonsuggestible individuals in response to negative feedback.

Gudjonsson and Clark (1986) and Liebman et al. (2002) emphasized that interrogative suggestibility comprises two main aspects : the tendency to be misled 'yield' by leading questions and the tendency to shift initial answers in response to negative feedback on initial performance (Bull, 1995 ). Based on the current theoretical model of the relative importance of social versus cognitive mechanisms underlying suggestibility, it is predicted that psychosocial

factors rather than cognitive factors would be associated with interrogative suggestibility, especially when there was a short delay between the event and suggestive questioning. According to this model there are two distinctive types of suggestibility which are especially important in forensic context. The first type relates to the work of Binet (cited in Endres, 1997) and Stern (cited in Endres, 1997) in the field of human testimony and its reliability. The focus is on the impact of suggestive questioning on testimony (yield). The second type of suggestibility relates to the extent to which negative feedback or interrogative pressure can shift the answers (shift) (Gudjonsson, 1992).

Gudjonsson argues that these two aspects of suggestibility are conceptually distinct and reasonably independent of each other but they are both mediated by similar factors such as cognitive variables (memory, intelligence), anxiety, social factors, and coping skills. However, there is growing evidence that yield score on the GSS2 (that is the tendency to yield to leading questions) is relatively more related to cognitive variables, whereas the GSS2 shift score (that is the tendency to shift to leading questions) is relatively more related to interpersonal and social factors. These findings can be explained within Gudjonsson & Clark's (1986) theoretical model of interrogative suggestibility. This is based on a socio-cognitive perspective, where suggestibility is dependant upon the coping strategies that people use when faced with the 'uncertainty' and 'expectations' of the interrogative situation.

The Gudjonsson and Clark model placed an emphasis on coping strategies a witness develops to deal with the uncertainty and expectations of an interrogation and the incorporation of post-event information into memory. Although these variables are situational variables that may be manipulated by interviewers (e.g., through negative feedback and/or repeated questions), interviewees' responses to these situational variables comprise relatively stable individual differences that can be measured. The main emphasis of the model is on explaining individual differences in interrogative suggestibility. Evidence for stable individual differences comes from correlational studies. Zimmerman (1982 cited in Endres, 1997) reported a positive correlation (.47) between test scores and teacher's ratings of a child's suggestibility in a sample of 220 nine- and ten-year-olds. In another sample of 170 subjects between 12 and 16 years he also found moderate positive correlations with extraversion (.58), neuroticism (.40), self-rated dishonesty (.49), and fantasy proneness (.43).

Similarly, Gudjonsson and several other authors have found substantial correlations between subjects' scores on Gudjonsson's test of interrogative suggestibility and different personality variables (agreeableness, neuroticism, extraversion, openness to experience, conscientiousness, and self-esteem). There is some evidence that highly agreeable individuals are more likely than less agreeable individuals to make errors when answering misleading questions, especially in situations where social pressure is high (Eisen et al., 2002). Gudjonsson (1983) has found a low but significant correlation between total suggestibility and neuroticism. However, Haraldsson (1985) found nonsignificant relationship between suggestibility scores and neuroticism (measured by the Eysenck Personality Questionnaire, EPQ).

Similarly, results on the relationship between extraversion and suggestibility are found to be controversial. Ward and Loftus (1985) revealed that introverts and intuitive individuals were more susceptible to misinformation, while Trouve and Libkuman found extraverts to be more suggestible (Schooler and Loftus, 1993; Nurmoja, 2005). However, Polczyk (2005 cited in Nurmoja, 2005) has found nonsignificant relationship between interrogative suggestibility with neuroticism, extraversion, openness to experience, agreeableness and conscientiousness as measured by the NEO Five-Factor Inventory. Thus, the results are inconclusive and by no means very robust.

The misinformation effect, or post-event information effect, is a phenomenon whereby the presentation of inaccurate information (misinformation) to witnesses after an event has occurred alters their recollections of the original event in a subsequent recall task (Loftus, 1975). To date, numerous debates exist on how and why this phenomenon occurs (Loftus, Miller, & Burns, 1978; McCloskey & Zaragoza, 1985). One explanation that is of relevance to the present study is the misinformation acceptance hypothesis, which maintains that some participants choose to report the misinformation because of a perceived social demand (i.e., the participants choose the answer they think the experimenter wants, resulting in the misinformation effect; McCloskey & Zaragoza, 1985). Given that shy witnesses may be prone to experimenter pleasing in order to avoid negative evaluations, they may be more susceptible to the misinformation effect.

Suggestibility as measured by the scale has also been shown to correlate significantly with intelligence, memory and social desirability (Gudjonsson, 1983) and more recently with self-esteem relevant to perceptions of 'competence' and 'potency' (Gudjonsson and Lister, 1984).

Gudjonsson (1983) reported a negative relation between scores on the Gudjonsson Scale of Suggestibility and intelligence, as measured by the Wechsler Adult Intelligence Scale (WAIS; Wechsler, 1955 cited in Nurmoja, 2005). Same results have been reported by Tully and Cahill (cited in Eisen et al., 2002), and also by Pollard et al. (2004) and Polczyk (2005 cited in Nurmoja, 2005). However Tata (1983 cited in Gudjonsson, 1984) found nonsignificant relationship between scores on the GSS and intellectual abilities (Eisen et al., 2002). There was also nonsignificant relationship found between intelligence and suggestibility in an eyewitness experiment conducted by Powers et al. (1979) and Gudjonsson (1987). In this regard, Gudjonsson (1992) speculates that these discrepant findings may come from the fact that intelligence might be related to suggestibility in participants with lower intellectual abilities.

Based on his results, Gudjonsson (1983) proposed that people with low intellectual ability are more likely to become confused and uncertain when asked misleading questions, which leads to an increased likelihood of acquiescing to misleading questions (Eisen et al., 2002). Tabachnick and Fidell (1996) similarly revealed that the inconsistent findings to date in relation to individual differences in children's suggestibility may be due in part to the fact that most studies have used bivariate correlation designs.

Furthermore, studies on the relationship between interrogative suggestibility and intelligence have yielded some what inconsistent results. For example, intelligence (Danielsdottir et al., 1993; Geddie et al., 2000), and memory performance (Danielsdottir *et al.*, 1993; Endres et al., 1999; Geddie *et al.*, 2000) have all been shown to relate to suggestibility in children. Children with higher Intelligence Quotient (IQ) scores and better memories of an event tend to be less suggestible about the event than children with lower IQ and memory scores (Geddie *et al.*, 2000). However, Clarke-Stewart et al. (2004) revealed that memory was not related to overall suggestibility. This lack of association is quite consistent with other research (Bruck and Melnyk, 2004). These conflicting results could be due to variations in the measures of intelligence used in each study, as well as to differences in recall tasks across studies.

Gudjonsson and Singh (1984) have also found a negative relationship between self-esteem and suggestibility, which supported the theoretical model of Gudjonsson and Clark (1986). Baxter et al. (2003 cited in Gilles and Martine, 2009) and Bain et al. (2004 cited in Gilles and Martine, 2009) emphasized that levels of interviewees self-esteem have been found to be associated with

susceptibility to interrogative pressure, with lower self-esteem being associated with sensitivity to increase in interrogative pressure such that GSS scores are elevated. They demonstrated that interviewees with lower self-esteem made more shifts in their responses on the GSS when they were faced with an abrupt interviewer than did those participants with higher levels of self-esteem.

With regard to the relationship between suggestibility and social desirability, Gudjonsson (1983) found modest correlation between suggestibility and social desirability measured by EPQ (Eysenck Personality Questionnaire) Lie Scale. Similarly, low but significant relationships have been reported by several other researchers (Haraldsson, 1985; Polczyk, 2005 cited in Nurmoja, 2005).

As to the criterion validity of the GSS, three studies have supported the scale's criterion-related validity (Gudjonsson and Singh, 1984; Gudjonsson, 1984). Gudjonsson and Singh (1984) found that suggestibility measured by the GSS correlated highly significantly with teachers' behavioral ratings of suggestibility among delinquent boys. In a second study, Gudjonsson and Singh (1984) found that GSS suggestibility correlated negatively with frequency of criminal convictions among young offenders. Gudjonsson (1984) compared suggestibility scores of subjects who had retracted their confession statements with those subjects who persistently denied any involvement in the crime they were charged with. The 'deniers' were significantly more resistant to suggestive influence and pressure than 'false confessors'.

According to Gudjonsson and Clark's (1986) theoretical model, interrogative suggestibility is the function of the coping strategies that subjects can generate and implement when confronted with the *uncertainty and expectations* of the interrogative situation. Factors that are thought to influence the coping strategies utilized, and suggestibility in a given situation, include the individual's intellectual skills, memory capacity, and "cognitive set" during interrogation. To Gudjonsson and Clark by "cognitive set" mean general expectations related to perceiving, thinking, and social information. For example, persons who enter interrogation in a suspicious, hostile or angry frame of mind would be expected to be less yielding to suggestions than persons who are trusting and friendly. There is some empirical support for this assertion suggesting that psychological characteristics of the witness as well as situational factors and investigative

questions should be taken into account in the study of suggestibility effects (Steller et al., 1993 cited in Endres, 1997; Gudjonsson & Clark, 1986).

Gudjonsson and Clark's (1986) theoretical model of interrogative suggestibility is particularly relevant to the individual dimension. For example, research shows that witnesses' attributions for success or failure and their beliefs about their own abilities, or self-efficacy, influence their memory accuracy and suggestibility. This study expands Gudjonsson and Clark's (1986) view beyond the individual dimension and focus on the family characteristics of the individual. Family characteristics of the witnesses that influences their psychological characteristics provide an ideal environment for individuals to stimulate memory. Accordingly, in this study, a number of additional family characteristic and psychological variables are proposed in the Gudjonsson and Clark's (1986) theoretical model. This may help to examine how family characteristic variables moderate psychological characteristics in eyewitness suggestibility.

In sum, the most important points which emerged in many of the correlational studies revealed that situational and individual difference variables have all been shown to influence a witness's eyewitness suggestibility. These correlational studies merely show the relationship between these variables, but not the degree to which eyewitness suggestibility can be predicted from individual difference variables. Accordingly, given the eyewitness suggestibility effects on the one hand, and individual difference variables on the other, the review points to the need for investigating the moderating role of family characteristics in explaining relations between psychological constructs and late adolescent's suggestibility.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

This chapter deals with the methodological considerations of the study. It begins with the research design of the study. This is followed by presentation of data on the participants of the study in section two. The instruments and procedures are explained in third and fourth sections respectively. Finally, the methods of data analysis are presented in the fifth section.

#### **3.1. Research Design**

This study examined the role of family characteristics as moderators of psychological constructs on suggestibility variables. The research design employed to conduct this study was Quasi-experimental Single-Group Interrupted Time-Series Design. The Visual Suggestibility Scale (VSS) was adapted to gather data about interrogative suggestibility variables as dependent variables where VSS text and questions were regarded as independent variables (see Appendix B). In addition to examining situational variables that affect interrogative suggestibility, the major emphasis of this experiment was on explaining individual differences in susceptibility to suggestions in relation to their family characteristics and psychological constructs.

#### **3.2. Participants**

A pilot study, the objectives of which was to assess the reliability and monitor the validity of contents of the instruments was carried out on 25 preparatory school students, whose ages ranged from 18 to 21 years ( for details concerning data collection procedure, refer to section 3.4.1). The total population of this study was students in three governmental preparatory schools in Bahir Dar City Administration. Of the three preparatory schools, one preparatory school; namely Bahir Dar Preparatory School was selected by using lottery method. Data for this study were then drawn from one randomly selected grade level namely, Grade 12.

A sample of 25 students, whose ages ranged from 18 to 21 years, was randomly drawn from a list of 228 grade 12 students enrolled in 2011. Based on the parenting style questionnaire adapted from Steinberg (1989) and Markos (1996), ten students were considered to be coming from authoritative parents, while six were classified as coming from authoritarian parents, three students were from indulgent parents, and six students were from negligent parents. On the other hand, the parents' educational levels of the sample students fall under were classified into six groupings. These were illiterate, elementary school level, junior high school level, secondary school level, junior college level and university education. Applying the index of measure of educational level of parents (Stenberg, 1989; Markos, 1996), it was considered that four parents were illiterate, ten had elementary school level education, three had junior high school level education, three had secondary school level education, and five had junior college level education.

The main study was conducted on a sample of 135 preparatory school students in Bahir Dar city administration. A sample of 146 students, whose ages ranged from 18 to 21 years, was randomly drawn from a list of 165 grade 12 students (class of 2013). However during data collection, eleven failed to respond appropriately to the experimental demonstration, and they were rejected from the sample. Then the data analysis was conducted on 135 students. The sample for the study was selected based on the age of the respondents (18-21 years) and on the basis of the Ethiopian legal requirements mentioned in the procedures and Court Rule of 1943 (cited in Sedler, 1968): any person can be a witness to an event he or she happens to see, hear, observe, and communicate as long as the legal requirements are fulfilled.

Based on the parenting style questionnaire adapted from Steinberg (1989) and Markos (1996), parenting style was split at the median into four groups namely authoritative (n=58), authoritarian (n = 19), indulgent (n = 20) and negligent (n = 38). With respect to parent's educational level the sample was split into six groups in terms of the highest educational level attained by the parents: Illiterate (n=50), primary education level (n = 16), Junior high school level (n = 18), senior high school (n = 28), Junior college level (n = 2), and university education (n = 21).

### **3.3. Instruments**

#### **3.3.1. Measures of Accuracy and Suggestibility**

The Video Suggestibility Scale was developed to examine memory accuracy and suggestibility when the context is a bimodal event- the auditory and visual suggestibility scale for late adolescents. In developing the auditory and visual suggestibility scale for late adolescents, the researcher retained Gudjonsson's (Gudjonsson, 1997) concepts of memory recall, yield, shift, and total suggestibility.

To extend the examination of individual differences to late adolescents who had not been previously addressed, a number of changes were introduced to make the scale more developmentally appropriate and consistent with forensic demands on late adolescents. The fact that a video (rather than an audiotape) was used as a stimulus material to tell a story that is involving both auditory and visual encoding was the reason why the researcher decided to develop a video suggestibility scale for late adolescents.

To assess memory and suggestibility to bimodal (auditory and visual) stimuli each participant was shown a 2 ½-minute video-recorded story about a man robbed of his money (see Appendix B) extracted from the film 'Demoz' (which means salary) produced by Beminabu Promotion and Advertizing PLC. The adapted auditory and visual suggestibility scale for late adolescents was administered verbally, not as a written questionnaire or a tape, which shares important aspects of real witness interrogations. The stimulus story to which the questions refer comprised verbal as well as visual information and thus avoids restriction to just one sensory channel. The participants' 'free recall' of the story was recorded. Each correct 'idea' in the story (parsed according to semantic structure) earned 1 point; the maximum possible score was 58. The participants were not required to recall exactly the visual as well as verbal information, but rather the meaning of each idea.

Participants were presented with 24 questions concerning the show, 18 of which were misleading and six were based on the actual event. The questions were based upon visual and verbal stimuli occurring during the show. For example: "Did the boy put the money he had stolen in his pocket?" and "Was the man robbed on Monday?"

After showing the story the examiner asked the participants the open-ended nonsuggestive question: 'Could you tell me everything you remember about the person robbed of his money?' When the participants stopped responding to open-ended probes like, 'What else happened?' a few directed probing questions were asked. For example, if the participant had failed to mention the stolen money, he/she would be asked 'What happened when *the man was complaining about the accident?*' The number of events or people in the video who were correctly described in either free recall or in response to further open-ended questions was coded as a measure of how much the participant remembered about the video after some time had elapsed. A list of a predefined set of key events in the video, names of the characters, and a script of the video were compiled and used for coding memory recall on a gist basis. The amount of information provided by each participant was scored by breaking up the stimulus story in about 58 meaningful items and determining which of these were present in the participants' free recall. Each correctly remembered salient point was awarded 1 point. A total of 58 event features could be recalled by the participants. This constituted the immediate recall protocol (refer to Appendix B).

The open questioning immediately following the stimulus story served two functions. First, each participant was required to recapitulate the story and thus encode it. Second, the amount of information supplied by the participants in this free-recall phase could be used as a control variable for memory performance. Thus, it could be determined if the participant, due to lack of attention or insufficient understanding, was able to reproduce the essential contents of the story; if not, the test was not applicable (Endres, 1997).

However, recalling the content of the story included in the GSS was not a comprehensive test of memory ability. To address this problem, three measures of suggestibility: Yield 1, Yield 2, and Shift were included. Thus, straight after the "immediate recall", the participants were asked 24 specific questions about the content of the story (refer to Appendix B). Six of the 24 questions (1, 5, 9, 13, 17, and 21) were "control or nonsuggestive" (NS) questions and were used as "buffer questions" (i.e., to disguise the real purpose of the test). They are 'true' questions; that is, the correct answer is an affirmative one- accurately reflects the true content of the story. These questions are interspersed among the 18 suggestive questions in order to minimize face validity or conceal the real purpose of the scale. This shows that the test is about memory accuracy rather

than malleability. Therefore, 18 of the questions are designed to measure how much participants give in or 'yield' to suggestive questions.

The control questions in this group are not included in the scoring and are theoretically unrelated to suggestibility as measured by the GSS. These questions can, however, be scored for correctness; that is "yes" is the correct answer and used as an estimate of memory ability. The remaining 18 questions are labeled as suggestive questions (S). These are of three general types:

**(i) *Leading questions*** : Six questions (2,6,10,14,18 and 22) selected in this category were constructed in such a way that would not be too obvious that they were leading, because leading questions that embody a high degree of expectation are only applicable to participants who are highly suggestible. Therefore, none of the leading questions embodied strong expectation but by including one or more salient premises in the questions certain expectations were created. For example, the questions "Did the man get out of a bank?" and "Did the boy put the money he had stolen in his pocket?" included the premises 'bank' and 'money' and therefore made an affirmative answer quite plausible.

**(ii) *Affirmative questions***: Six questions (3, 7,11,15,19, and 23) were included which have no salient premises or expectations but they tend to have a certain suggestive effect in that they have an affirmative response bias (Sigelman, Budd, Spanhe and Schoenrock, 1981 cited in Gudjonsson, 1984). Questions such as "Was the man robbed on Monday?" and "Did the man pay some money for tax? ", when neither was mentioned in the story, are examples of affirmative questions.

**(iii) *False alternative questions***: Six of the questions (4, 8, 12, 16, 20, and 24) imply the presence of objects, persons and events that are not mentioned in the story. Examples of 'false alternative' questions are: "Did the man give the boy a slap or a punch on the face?" and "Was the boy's or the man's bike severely damaged?" In each case neither is correct, so that if an alternative answer is given then a suggestibility score is earned.

Participants were then given a negative feedback and the 24 questions were repeated. The examiner read each of the questions aloud and asked participants to respond. After answering these 24 questions, participants were told that they had made a number of errors and that they should try to be more accurate as the questions were told again. The instructions were based on

the theory, substantiated by Kelman (1950 cited in Gudjonsson, 1984), that feedback of failure will increase suggestibility in accordance with the principle of reinforcement and related principles of learning. This theory can easily be tested by comparing the extent to which the participant 'yields' to the suggestive questions on Trial 1 as opposed to Trial 2. In other words, the participants should 'yield' significantly more on the second trial as a result of the negative feedback.

From an interrogative point of view, the extent to which participants' responses can be 'shifted' by the pressured instructions serves as an index of suggestibility. It is not critical in terms of the scoring of 'Shift' whether the instructions result in increased or decreased 'Yield 2' responses on Trial 2 with respect to the individual questions. It is the 'Shift' *per se* which determines the scoring. That is, the critical feedback may make some participants give in less to the suggestive questions, or vice versa, on the second trial. The fact that the participant changes his replies results in a 'Shift' score. The validity of the scale has received an extensive discussion in a recent review by Gudjonsson (1992).

The GSS scale provides five scores: one memory accuracy score and four suggestibility scores (shift, yield 1, yield 2 and total suggestibility y). The scale can be scored in terms of memory recall and suggestibility as follows.

- (1). **Memory accuracy score:** For the accuracy score, participants were given one point for each of 58 pieces of information correctly recalled. The number of accurate scores the adolescents reported in their accounts provided a measure of memory recall. The immediate memory recall is not used in the scoring of suggestibility, but it gives useful information about the respondents' recall of the interrogation context.
- (2). **Yield 1:** Each suggestive question that is answered affirmatively, or a false alternative given, is scored as *Yield*. It is the extent to which people give in to misleading questions. The range of possible scores is 0-18.
- (3). **Yield 2:** The extent to which people give in to misleading questions after interrogative pressure (negative feedback). The range of possible scores is 0-18.

(4). **Shift:** A *distinct* change in the nature of the reply to any of the 18 suggestive questions after negative feedback is scored as a *Shift*. Any distinct and clear change of the answer, regardless of its direction, is scored one point. The following illustrations were used as guidelines : a change from “Yes” to “No” or vice versa ; “Yes” to” *Don’t Know*”, or vice versa; “No” to” *Don’t Know*”, or vice versa ; “Slap” to “punch”, or vice versa; “Green” to “*White*”, or vice versa; “Pistol” to “*Neither*”, or vice versa ; “Walkie-talkie” to “*Don’t Know*”, or vice versa;” *Taken with the money*” to “ *Do not know*”, or vice versa;” *Boy’s bike*” to “*Man’s bike*”, or vice versa; “*First*” to “*Second*” , or vice versa . No point was earned if the replies had a similar meaning though the wording is different. For example, changes from “*Not Sure*” to “*Don’t Know*”, or “*Don’t Know*” to “*Not Mentioned*”, or “*No*” to “*No*”, or” *Not Sure*”, “*Not sure*” to “*No*”, or” *Yes*” to “*Probably*” are not scored as Shift.

(5). **Total suggestibility:** This is the sum of yield 1 (18) on Trial 1 and shift (18) scores. Total scores could range from 0 to 36. Yield 2 (i.e. the Yield score on the second trial) can also be obtained but it does not form part of the overall scoring.

The internal consistency of the Amharic version of the scale of the 18 yield items was 0.825 and of the 18 shift items was 0.586. These coefficients are considered promising, compared to those reported for the GSS (Gudjonsson, 1984, 1987, 1992) ranging between 0.770 and 0.670. These coefficients were taken as evidence that suggestibility can be measured reliably with the video suggestibility scale for adolescents. All the transcripts were first rated by two trained coders. Inter-rater judgment was 93 percent for the yield responses and 90 percent for the responses to the shift responses.

**The Suggestibility Rating Form (SRF) :** The 7 item rating form adapted from Gudjonsson & Singh (1984) which allowed two classroom teachers as independent observers to rate the participants’ behavior on a 4-point frequency scale ranging from 1(never) to 4 ( always ) was employed ( refer to Appendix H) . The scores for each of the 7 items were added to give a suggestibility score. The interrater reliability of the SRF was 0.740 (Gudjonsson & Singh, 1984). The maximum score was 35. Examples of the sample items include:

1. How commonly this student might likely deny things he/she had done wrong?
2. How commonly this student might stand up for things he/she believed in?

The internal consistency of the Amharic version of the scale of suggestibility rating form was 0.889 for the behavioral response scores.

### **3.3.2. Measures of Psychological Constructs: Sense of Perceived Control and Personality Traits.**

The measure of psychological constructs data collected from the participants of this study was classified as follows.

#### **3.3.2.1. Measures of Sense of Perceived Control**

The perceived control self-report scales were used to measure the perceptions of individuals about their abilities and competencies. The perceived control self-report scales involved two dimensions of perceived control: memory efficacy and locus of control. A scale to control for social desirability in the perceived control scales was also included (Liebman et al., 2002).

**Memory Efficacy:** The items shown under the memory efficacy scale were used to measure participants' beliefs about their memory competence (see Appendix E). From the pool of 15 items hypothesized to be part of the memory efficacy scale (Bandura, 1977 cited in Liebman et al., 2002; Berry, 1999 cited in Liebman et al., 2002), 14 items assumed to be relevant and meaningful to respondents who participated in this study were selected by the researcher through pilot study. Examples of the sample items include:

1. I have no problem remembering phone numbers.
2. I have no problem remembering the name of a person just introduced to me.

In the memory efficacy scale, the responses to the statements were rated on a 5-point scale ranging from 1 (not true of me) to 5 (completely true of me). Higher ratings on the Likert scale indicate higher memory efficacy. The Amharic version of the memory efficacy scale was administered to the pilot sample and was found to be reliable ( $\alpha = 0.777$ ).

**Locus of Control:** The items in the locus of control scale referred to the belief that participants are in control of their own life (inner locus) or at the mercy of outside events (external locus). From 22 items assumed to be part of the memory efficacy scale (Levenson, 1981), 14 items

found to be relevant to the participants of the study were selected via pilot study (see Appendix F). Examples of statements include:

1. Whether or not I get to be a leader depends mostly on my ability.
2. To a great extent my life is controlled by accidental happenings.

The items in the locus of control scale were scored on a 5-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher numbers indicate an internal locus of control (e.g. respondents believe that they control life happenings) and lower numbers indicate an external locus of control (e.g. respondents believe that life events and occurrences are influenced by the environment). The Amharic version of the locus of control scale was administered to the pilot sample and was found to be reliable ( $\alpha = 0.706$ ).

**Social Desirability Scale:** Thirty-three items were hypothesized to control for socially desirable response in the perceived control self-report inventories (Crowne & Marlowe, 1960 cited in Liebman et al., 2002). From 33 items assumed to be part of the social desirability scale, 23 items found to be relevant to the participants of the study were selected via pilot study. Participants' tendencies to respond in a socially desirable manner were assessed by adding the number of items responded in the socially desirable direction. The number of socially desirable responses ranged from 0 to 23, with higher scores representing socially desirable responses (see Appendix D). Below are examples of the sample items concerning personal attitudes and traits :

1. I have never been late for an appointment in work.
2. I never hesitate to go out of my way to help someone in trouble.

In the social desirability scale, a respondent is required to read each item and decide whether the statement is *true* or *false* as it pertains to him/ her personally. The Amharic version of the social desirability scale was administered to the pilot sample and was found to be reliable ( $\alpha = 0.778$ ).

### 3.3.2.2. Measure of Personality Traits

The Five Factor Personality Inventory was used as a measure of late adolescents' personality traits. Participants were rated how similar they were in terms of 50 statements, using a 5-point Likert scale ranging from 1 (very inaccurate) to 5 (very accurate).

The scale is divided into five main personality dimensions (neuroticism, extraversion, openness, agreeableness, and conscientiousness). The neuroticism domain measures the tendency of students to experience negative thoughts and feelings. Students who score high in measure of neuroticism are prone to insecurity and emotional distress. On the other hand, low scorers are usually considered to be reserved, independent, more relaxed, less emotional, less prone to distress and even-paced. The extraversion domain embodies traits for preference and behavior in social situations. Students who score high in measure of extraversion are generally considered to be energetic and seek out the company of others. On the other hand, students who score low show emotional stability and stable adjustment to stressful situations.

The openness to experience domain measures students' open-mindedness and interest in culture. Students who score high in measure of openness tend to be imaginative, creative, and to seek out cultural and educational experience. On the other hand, students who score low have less interest in art, and more practical, conventional in thought and behavior with a flattened emotional response. The agreeableness domain measures how students tend to interact with others. High scorers on the agreeableness domain show high interpersonal skills (trustworthy, friendly and cooperative) and are altruistic in nature while low scorers are less other-oriented (are less cooperative and more aggressive). Finally, the conscientiousness domain measures how students are organized and persistent in pursuing their goals. Students who score high in measures of conscientiousness are methodical, well organized and dutiful. On the other hand, students who score low are less careful, less focused and more likely to be distracted.

The NEO- Five Factor Inventory (NEO- FFI), being a modified version of the scale has been adapted and validated in Ethiopia. The Cronbach's alpha reliability estimates for the adapted personality subscales range between 0.530 to 0.760 (Kinde & Mekonnen, 2000).

Items in the *Buchanan's* (Buchanan, 2001) Five Factor Personality Inventory were adapted to serve as the measure of personality traits (see Appendix C). The Five Factor Model of

Personality scales which were adapted from Buchanan (2001) were used to measure five dimensions of personality: extraversion, agreeableness, conscientiousness, neuroticism, and openness. To establish whether or not the expected five-factor structure of the 50 items (10 items for each dimension of personality) was applicable in this study where content validity and reliability were calculated. The validity and internal consistency reliability (coefficient alpha) for the revised scales are presented as follows.

In the 50 items, 48 had content validity, given that these items were developed from the responses of a sample in one community of one state in the US and were being used by persons from many cultures and nations throughout the world. However, given that the purpose of the pilot study was to adapt the instrument that measures the domain constructs of the Five-Factor model with a high degree of fidelity, it seemed appropriate to exclude problematic items and, thus, create a new set of more relevant items to the present sample of the study.

From 48 items assumed to be part of the Five Factor Personality Inventory, 33 items found to be relevant to the purpose of the study were selected via the pilot study (refer to Appendix C). The reduced scales consist of eight items for neuroticism ( am often down in the dumps, dislike myself, have frequent mood swings, panic easily, seldom feel depressed, am very pleased with myself, rarely get irritated, am not easily bothered by things); five items for extraversion ( am the life of the party, know how to attract people, have little to say, don't like to draw attention to myself, would describe my experiences as somewhat dull );seven items for openness ( believe in the importance of art, have vivid imagination, enjoy hearing new ideas, don't like art, don't enjoy going to art museums, am not interested in abstract ideas, avoid truth-seeking/philosophical discussions); six items for agreeableness (have a good word for others, respect others, accept people as they are, make people feel at ease, am sharp-tongued, get back at others); and seven items for conscientiousness ( make plans and stick to them, carry out my plans, get everyday jobs done right away, pay attention to detail of information, find it difficult to get down to work, avoid my duties, waste time unnecessarily).

The Amharic version of the Five Factor Personality Inventory was administered to the pilot sample and was found to be reliable. The Cronbach's Alpha reliability estimate for neuroticism, extraversion, openness, agreeableness, and conscientiousness are 0.705, 0.568, 0.655, 0.666, and 0.888, respectively. These coefficients of the reduced scales are slightly lower compared to those

reported for the original scale ranging from 0.740 to 0.880 (International Personality Item Pool, IPIP, 2001 cited in Buchanan et al., 2005).

### **3.3.3. Measures of Family Characteristics**

The family characteristics data collected from the participants of this study were classified as follows.

#### **3.3.3.1. Measure of Parent's Educational Level**

Education is classified according to the highest educational level attained by the parents to measure the mean levels of education for both mother and father (Stenberg, 1989; Markos, 1996). This procedure may work best in the Western countries since parents in those societies may probably have similar educational level. However, this may not prove to be true in Ethiopia since most parents more likely do not have similar educational level. So the highest educational level attained by one of them was taken because the parent who attained the highest educational level is supposed to influence the children more. In this regard, the response of the participants was rated on a six-point scale (see Appendix A), where 1= illiterate, 2=primary education level (Grades 1-6), 3= junior high school level (Grades 7 and 8), 4= senior high school level (Grades 9-12), 5= junior college level (Grades 12 +1, 12+ 2 and 12+ 3), and 6=University education (12+4 years and above).

#### **3.3.3.2. Measure of Parenting Style**

Parents employ different types of parenting styles in upbringing their children: authoritative, authoritarian, indulgent, and neglectful. Therefore, parents would employ dominantly any one of the four parenting styles. And it measures the two dimensions of parenting style that are "acceptance" and "control".

The acceptance subscale consists of 9 items that measure students' perception of their parental acceptance as loving, responsive and warm. The control subscale, on the other hand, consists of 6 items that measure parental monitoring and supervision in the area of family decision-making (see Appendix G). Lamborn et al. (cited in Markos, 1996) developed the original scale for

research among Americans or Europeans. Hence it was adapted to suit to this study. It was in fact repeatedly modified and used in Ethiopia. For instance, Markos (1996) adapted the original subscales, and rated its appropriateness to the children and parents. The inter-judge reliability index (Pearson,  $r$ ) was .92. Mothers' and fathers' child rearing styles (Schaefer & Edgerton, 1985; Markos 1996) were assessed with a questionnaire administered to the adolescents. The instrument discriminated between authoritarian, authoritative, negligent and indulgent adolescent rearing styles. The method of scoring ranges in the acceptance subscale from 4=strongly agree to 1=strongly disagree; whereas in the control subscale the method of scoring range from 3=tries a lot to 1=doesn't try.

Respondents who scored above or equal to the median on both "acceptance" and "control" were assumed as having authoritative parents, those scored below the median on "acceptance" but at or above the median on "control" as having authoritarian parents, those scored at or above the median on "acceptance" but below the median on "control" as having indulgent parents and those scored below the median on both subscales as having neglectful parents. As was done in some studies (e.g. Steinberg , 1989 ; Markos,1996 ), for participants that were living with two parents, the scores for mother and father were averaged; for those who were living with one parent, only the score for that single relationship was used. The type of parenting style was then coded on four point scale, where 1=authoritative parents, 2=authoritarian parents, 3=indulgent parents and 4=negligent parents.

Mothers' and fathers' child rearing styles questionnaire consists of parenting style scales which were adapted from Markos (1996) and was analyzed for its appropriateness to the purpose of this study. Out of the 15 items (9 items in the acceptance subscale and 6 items in the control subscale, refer to Appendix D), 13 items had content validity.

The adapted scales consist of two subscales: acceptance subscale and control subscale. The acceptance subscale consists of 9 items that measure students' perception of their parental acceptance as loving, responsive and warm. The Amharic version of the acceptance subscale was administered to the pilot sample and was found to be reliable. The Cronbach Alpha reliability estimate for the mothers' and fathers' child rearing styles in the acceptance scale was found to be 0.947 and 0.941 respectively.

The control subscale, on the other hand, consists of 4 items that measure parental monitoring and supervision in the area of family decision-making. The Amharic version of the control subscale was administered to the pilot sample and was found to be reliable. The Cronbach's alpha reliability estimate for mothers' and fathers' child rearing styles in the control scale was found to be 0.961 and 0.943 respectively. The method of scoring in the acceptance subscale ranged from 4=strongly agree to 1=strongly disagree; whereas in the control subscale it ranged from 3=know a lot to 1=doesn't know.

In this study only adolescents' report was used. This was done because findings confirmed close correspondence between adolescents' report, observational measures and parents' reports about child rearing practices (Kochanska et al., 1989).

In sum, the reliability indices of the suggestibility scale, suggestibility rating form, personality subscales, perceived control scales and parenting style questionnaire were qualified as 'good' according to the standard of 0.700 for cognitive measures and 0.550 for psychosocial measures set by experts (Yalew, 2006). Content validity of each scale was tested by asking two senior instructors of educational psychology at Bahir Dar University. For a statement to be included in the final scales and create the pool of items, both instructors had to agree that the statement was a measure of a specified construct in the scale.

The suggestibility measured by the GSS was correlated with teachers' behavioral ratings of suggestibility among adolescents to monitor the criterion validity. The summaries of the relationships between the GSS scores (Yield 1, Shift, total suggestibility) and the suggestibility rating form (SRF) score indicated that the SRF significantly correlated with the Shift suggestibility score ( $r = 0.921$ ), Yield 1 (0.394), Shift (0.921), and total suggestibility score (0.755).

A number of family characteristics and suggestibility variables were found to be correlated to one or more of the psychological variables to show evidence for the construct validity of psychological constructs. Accordingly, the construct validity estimates of psychological constructs were found to be between 0.349 and 0.492.

### **3.4. Procedures**

#### **3.4.1. Sampling Procedure**

The population of this study was students in three governmental preparatory schools in Bahir Dar. From the three preparatory schools, one preparatory school namely Bahir Dar Preparatory School was selected by using lottery method. Data for this study were drawn from one randomly selected grade level, namely Grade 12. The sample for the study was selected based on the age of the respondents (18-21 years) and on the basis of the Ethiopian legal requirements mentioned in the procedures and Court rule of the 1943 (cited in Sedler, 1968): any person can be a witness to an event he or she happens to see, hear, observe, and communicate as long as the legal requirements are fulfilled. On this ground, volunteers who fulfill the requirements were selected to be part of the experiment. Thus, to identify respondents who fulfilled these requirements a screening questionnaire covering questions about participants' age, and general competency to hear, observe, and communicate was carried out for 10 minutes.

Then in order to rate adolescents' behavior that was considered directly relevant to suggestibility, two teachers who taught in Grade 12 were selected purposively. The teachers' frequent contact with the students made it relatively easy for them to rate the students' behavior reliably. Five sections in Grade 12 taught by the two teachers for two consecutive years (2010/2011) were chosen to serve as data source for the current study. In all, the five sections consisted of 287 students. The two classroom teachers and the sections were selected with the help of the school principal. Once the sections were selected the two teachers were given a list of 228 names who met the specified requirements in the participating sections. They were given the responsibility to select the names of students they had taught in Grades 11 and 12. They crossed out the names of students they did not know well enough to make a judgment. Students not known by the two teachers were unrelated to the purpose of the study. Then a total of only 35 students was qualified to serve as the subjects of this study.

A pilot study was carried out on 35 respondents who met these conditions. However during data collection, ten failed to respond appropriately to the experimental demonstration, and they were rejected from the sample. So the data analysis was conducted on 25 students.

### **3.4.2. Training of Data Collectors**

Before the field work started, the assistants who participated in administering the instruments and conducting the experiment were given training as to how they should go about administering the instruments and conducting the experiment. The assistants received a training of four hours in methods of rapport and in the accurate administration of the instruments. They were also given the responsibility to practice in doing the experiment by taking the researcher as an interviewee in the experimental process. Discussions were held about their performance.

### **3.4.3. Data Collection Procedure**

Following the selection of respondents, data for the pilot study was collected from the participants of the study. The instruments were subjected to two instructors of educational psychology (at Bahir Dar University) for checking their wording, clarity, and content validity to create the pool of items. The scales were translated to Amharic from English with the help of two instructors of Teaching English as a Foreign Language (at Bahir Dar University).

The data collection instruments were administered over two testing sessions during the participants' one week break-time in 2011 academic year ( semester two) , first, because this may give a reasonable comfort both to the data collectors and the respondents. Second, it might also allow the instruments to be completed within an acceptable time interval. During test session 1, participants were asked to complete the booklet in a time convenient to them, containing the family characteristics questionnaire and psychological characteristics scales with instructions to return the completed forms within 90 minutes. In session 2 (1 day after session 1), the experiment was carried out. The estimated administration time was 16 minutes. Demonstration of the experiment presented no serious problem. The experimenter comfortably interviewed five participants a day. Interviewing more than five participants was discouraged to minimize errors in data collection.

The experiment was conducted for four consecutive days (from Tuesday to Friday) at a time convenient to the participants. On the day of the experimental demonstration, the participants came to the room where the experiment was conducted. In the experiment, a film was presented to an individual participant on a laptop. The 2 minutes and 30 seconds movie was available as a 30,088 KB format file burnt on CD. The film was presented in a 3 meters by 3 meters room.

Each participant was informed about the procedure beforehand, then the confidentiality of their response was stressed.

Following the pilot study, the reliability estimates of the various scales were computed using KR20 and Coefficient alpha. Then items with poor item-total correlation were removed from the instruments, which resulted in the revised version with the reduced number of items. The correlation analysis was conducted to validate the instruments with the reduced number of items. Accordingly, further improvement was made on the instruments.

Finally, the main study was conducted on 135 students. In the main study the experiment was conducted in the same way as in the pilot study. During the main study the data collection instruments were administered over two testing sessions in 2013 academic year (semester two). During test session 1, participants were asked to complete the booklet in a time convenient to them, containing the family characteristics questionnaire and psychological characteristics scales with instructions to return the completed forms within 90 minutes. In session 2 (1 day after session 1), the experiment was carried out. The estimated administration time was 16 minutes. Demonstration of the experiment presented no serious problem.

The experiment was conducted for three consecutive weeks at a time convenient to the participants. On the day of the experimental demonstration, the participants came to the accommodated place. In the experiment, a film was presented to an individual participant on a Laptop. The 2 minutes and 30 seconds movie was available as a 30,088 KB format file burnt on CD. The film was presented in a 3 meters by 3 meters workshop or room. The participant was informed about the procedure beforehand. Then the confidentiality of the response was stressed.

### **3.5. Methods of Data Analysis**

The purpose of this study was to examine the moderating role of family characteristics in explaining relations between psychological constructs and suggestibility variables. Accordingly, the study employed different data analysis methods as appropriate to the specific purposes of the study. Initially, descriptive statistics, including mean and standard deviation were used to examine the actual mean and standard deviation of scores of psychological and suggestibility variables. Next, correlational analysis was employed to make an overview of possible overlaps among predictor variables and to have an idea about variables most related to suggestibility

variables. Multiple regression analysis was employed to examine the independent effect of family characteristics and psychological constructs on suggestibility variables. Moreover, regression analysis was undertaken hierarchically to test for significant interaction effects of family characteristics and psychological constructs over and above the simple effects of the family characteristics and psychological constructs.

Following the above detailed presentation of the research methodology, results obtained in the study will be addressed.

## **CHAPTER FOUR**

### **RESULTS**

This part presents the results of the study in four sections. First, descriptive statistics of family characteristics, psychological constructs and suggestibility variables are presented. Second, interrelations among family characteristics, psychological constructs and suggestibility variables are described. Third, results of the multiple regression analysis designed to assess the independent predictors of suggestibility are reported, followed by the results of the moderated regression analysis designed to assess the moderating effect of family characteristics on the relationship between psychological constructs and suggestibility variables.

#### **4.1. Descriptive Statistics of the Study Variables**

Descriptive statistics, including mean and standard deviation for the measures of family characteristics, psychological constructs, and suggestibility variables are reported in Table 1. It shows the mean of 135 respondents who assented to a suggestive question yield 1 or changed their answer to an item in response to negative feedback (shift) as well as the memory accuracy. The mean of participants who yielded to a given item prior to negative feedback (yield 1) was 8.577 (SD = 2.923). The mean of respondents who shifted was 6.925 (SD = 3.540).

Table 1 also summarizes the descriptive statistics of the psychological constructs. However, the mean percentage of respondents who accurately recalled the information was 16.903 (SD=4.240), which was lower than the mean of 19.700 (SD= 6.100) reported in the manual (Gudjonsson, 1997) in the UK sample (N= 83). The possible reason for that may be the age of the participants in the present study (participants all being grade 12 students, mean age was 18.960, range 18-21 years; SD= 0.680, while in the UK undergraduate students mean age was 30; range 16-69 years; SD= 8.800), with subjects derived from a group not particularly suggestible; on the other hand, if this is the case, it only adds rigor to the current findings.

Table 1. Descriptive Statistics of the Study Variables

Variable	Mean	Standard Deviation
Extraversion	14.733	3.524
Neuroticism	19.311	5.464
Conscientiousness	24.110	4.526
Agreeableness	22.851	3.833
Openness	25.288	2.801
Social Desirability	12.992	3.373
Memory Efficacy	50.096	10.005
Locus of Control	44.125	8.386
Memory Accuracy	16.903	4.240
Shift	6.925	3.540
Yield 1	8.577	2.923
Yield 2	9.511	3.291
Suggestibility	15.251	5.626

## 4.2 Interrelations among Variables

Results in Table 2 show interrelationships between parenting style ( $X_1$ ), parent's educational level ( $X_2$ ), extraversion ( $X_3$ ), neuroticism ( $X_4$ ), conscientiousness ( $X_5$ ), agreeableness ( $X_6$ ), openness to experience ( $X_7$ ), social desirability ( $X_8$ ), memory efficacy ( $X_9$ ), locus of control ( $X_{10}$ ) and memory accuracy ( $X_{11}$ ), yield 1 ( $Y_1$ ), yield 2 ( $Y_2$ ), shift (Shi) and suggestibility (Sugg). Parenting style was related significantly and negatively to conscientiousness, agreeableness, openness to experience, yield 1 and shift, but was related positively to memory accuracy. Parent's educational level was not related to the psychological constructs.

This study further revealed that late adolescents' personality traits do not correlate with suggestibility, yield 1 and shift. Similarly, indices of sense of perceived control variables were not significantly related to suggestibility variables with one exception: locus of control was related significantly and negatively to yield 2, shift and suggestibility. On the other hand, both

suggestibility and shift were related significantly and negatively to locus of control and memory accuracy, but were related positively to yield 1. Locus of control was related positively to conscientiousness, agreeableness, openness to experience and memory efficacy but was related negatively to neuroticism and social desirability.

Table 2. Intercorrelations among Variables

Variable	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	X <sub>6</sub>	X <sub>7</sub>	X <sub>8</sub>	X <sub>9</sub>	X <sub>10</sub>	X <sub>11</sub>	Y1	Y2	Shi	Sugg
X <sub>1</sub>	1.000														
X <sub>2</sub>	-0.020	1.000													
X <sub>3</sub>	0.032	-0.165	1.000												
X <sub>4</sub>	-0.159	-0.020	-0.116	1.000											
X <sub>5</sub>	-0.353*	-0.127	0.058	-0.150	1.000										
X <sub>6</sub>	-0.186*	-0.017	0.003	-0.125	-0.223*	1.000									
X <sub>7</sub>	-0.185*	-0.051	0.088	-0.032	0.177*	0.187*	1.000								
X <sub>8</sub>	-0.140	-0.011	0.057	-0.183*	0.373*	0.257*	0.015	1.000							
X <sub>9</sub>	0.045	-0.012	0.037	-0.108	0.081	0.145	0.066	0.100	1.000						
X <sub>10</sub>	0.001	0.006	-0.045	-0.214*	0.231*	0.243*	0.183*	-0.236*	0.324*	1.000					
X <sub>11</sub>	0.182*	-0.044	0.088	0.053	-0.096	-0.017	0.073	-0.103	0.189*	0.278*	1.000				
Y <sub>1</sub>	0.150	0.000	0.104	-0.045	0.016	-0.005	0.151	-0.039	-0.071	-0.137	-0.322*	1.000			
Y <sub>2</sub>	-0.285*	-0.030	0.107	-0.033	0.074	-0.007	0.156	0.077	-0.116	-0.132	-0.409*	0.701*	1.000		
Shi	-0.244*	-0.115	0.089	-0.115	0.076	0.013	0.018	0.164	-0.146	-0.231*	-0.392*	0.430*	0.669*	1.000	
Sugg	0.217*	-0.043	0.072	-0.148	.016	0.014	.071	0.059	-.166	-0.226*	-0.419*	0.770*	0.765*	0.852*	1.000

\* P &lt; 0.05

### 4.3. Family Characteristics and Psychological Constructs as Predictors of Suggestibility Variables

Multiple regression analysis was used to explore the independent predictors of suggestibility variables. As shown in Table 3, memory accuracy was a significant, independent, negative predictor of suggestibility, yield 1, and shift. However, results in Table 3 revealed that the personality traits and sense of perceived control variables were not independent predictors of suggestibility variables. The model explained 26 percent of the variance in suggestibility,  $F(11,123) = 3.932, P < 0.05$ ; 16.5 percent in yield 1,  $F(11, 123) = 2.203, P > 0.05$ ; and 27.4 percent in shift,  $F(11,123) = 4.213, P < 0.05$ .

Table 3. Results of Regressions on Suggestibility Variables

Variable	Suggestibility Variables		
	Suggestibility	Yield 1	Shift
Parenting style	-0.140	-0.089	-0.171
Parent's educational level	-0.058	0.004	-0.125
Extraversion	0.078	0.116	0.090
Neuroticism	-0.139	-0.024	-0.129
Conscientiousness	-0.103	-0.052	-0.073
Agreeableness	-0.005	-0.027	-0.026
Openness to experience	0.105	0.171	0.041
Social desirability	0.058	-0.048	0.169
Memory efficacy	-0.069	0.005	-0.053
Locuse of control	-0.138	-0.050	-0.178
Memory accuracy	-0.356*	-0.325*	-0.301*
Overall $R^2$	0.260*	0.165	0.274*

\*  $P < 0.05$

Initial evidence for moderating effects is most commonly introduced when there is a weak relationship between predictor and dependent variables (Baron & David, 1986). Stronger

evidence for moderator effects comes from moderated regression analysis of relations between psychological constructs and suggestibility variables as the function of family characteristics. The results of the moderated regression analyses performed between late adolescents' psychological constructs and suggestibility variables as the function of family characteristics is presented in section 4.4 below.

#### **4.4. Moderated Regression Analysis**

In testing the research questions relating to the moderating effects of family characteristics, the procedure recommended by Aiken and West (1991) and more recently by Irwin and McClellan (2001) was followed. Regression analysis was undertaken hierarchically to test for significant interaction effects over and above the simple effects of the independent variables. As per recommended practice, the independent and moderator variables were standardized prior to forming the interaction variables, to prevent the interaction variables from causing unacceptable levels of multicollinearity. Three hierarchical regression analyses were conducted using suggestibility, yield 1 and shift as dependent variables.

In order to facilitate interpretation of the interaction, the methods used to describe the nature of interactions in moderated regression analyses were used (Cohen & Cohen, 1983; Stone, 1988). Figures 1-11 provide illustration of statistically significant interactions. Moreover, a correlational subgroup approach (Jaccard et al., 1990) provided additional support for the nature of the interaction between family characteristics and psychological constructs.

In this study, parenting style and parent's educational level (moderator variables) are categorical variables and the psychological constructs (independent variables) are continuous variables. Parenting style and parent's educational level might moderate the effect of psychological constructs on interrogative suggestibility. The typical way to measure this type of moderator effect is to correlate psychological constructs with interrogative suggestibility variables separately for each parenting style or parent's educational level and then test the difference. Tests of the difference between regression coefficients should be performed first, before the

slopes of parenting style and parent's educational level are individually tested (Cohen & Cohen, 1983).

The moderator assumption is supported if the interaction is significant. There may also be significant main effects for the moderator and independent variables, but these are not directly relevant conceptually to testing the moderator assumption. In addition to these basic considerations for testing moderator effects, it is desirable that the moderator variables be uncorrelated with both the independent and the dependent variable to provide a clearly interpretable interaction term (Baron & Kenny, 1986).

While the incremental variance explained is often used as an index of importance in interaction effect sizes, there is some controversy on this issue (Stone, 1988). In fact, Champoux and Peters (1980) argue against using incremental  $R^2$  as an indicator of the importance of interaction effects, and propose instead that researchers focus on regression slopes and predicted values of the dependent variable.

#### **4.4.1. Parenting Style Moderating the Relationship between Personality Traits and Suggestibility Variables**

The moderated regression analysis between each of the personality traits and parenting style is described in this section. Specifically, this section presented the results of the moderated regression analysis performed between each of the personality traits and suggestibility variables namely, suggestibility, yied 1 and shift as the function of parenting style.

##### **4.4.1.1. Parenting Style Moderating the Relationship between Extraversion and Interrogative Suggestibility Variables**

As shown in Table 4 below, a hierarchical regression analysis was employed to assess the moderating effect of parenting style on extraversion. Extraversion was a statistically significant predictor of suggestibility and parenting style was not. The model explained 5.30 percent of the variance in suggestibility,  $F(2, 132) = 3.721, P < 0.05$ . The result of moderated multiple regression

analysis, also shown in Table 4, indicated that the interaction between parenting style and extraversion was a statistically nonsignificant negative predictor of suggestibility. The interaction explained a statistically nonsignificant incremental variance change of 1.70 percent in suggestibility,  $F(1,131) = 2.444$ ,  $P > 0.05$ .

Table 4. The Moderating Effect of Parenting Style on Extraversion

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Extraversion	-0.220*			0.109			0.097		
Parenting style	0.078	0.053*	-----	-0.153	0.034	-----	-0.247*	0.069*	-----
Extraversion X Parenting style	-0.661	0.071	0.017	-0.205	0.036	0.002	-0.909*	0.102	0.033*

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

A hierarchical regression analysis was employed to assess the moderating effect of parenting style on extraversion. The results shown in Table 4 revealed that neither parenting style nor extraversion was independent predictor of yield 1. The model explained 3.40 percent of the variance in yield 1,  $F(2, 132) = 2.341$ ,  $P > 0.05$ .

In the multiple regression analysis (Table 4) in which shift was treated as the dependent variable, parenting style had an independent effect but extraversion did not. The model explained 6.90 percent of the variance in shift,  $F(2,132) = 4.896$ ,  $P < 0.05$ . In addition, the interaction of parenting style and extraversion explained a statistically significant incremental variance change of 3.30 percent in shift,  $F(1, 131) = 4.784$ ,  $P < 0.05$ . Figure 1 describes the moderator effect of parenting style on the relationship between extraversion and shift.

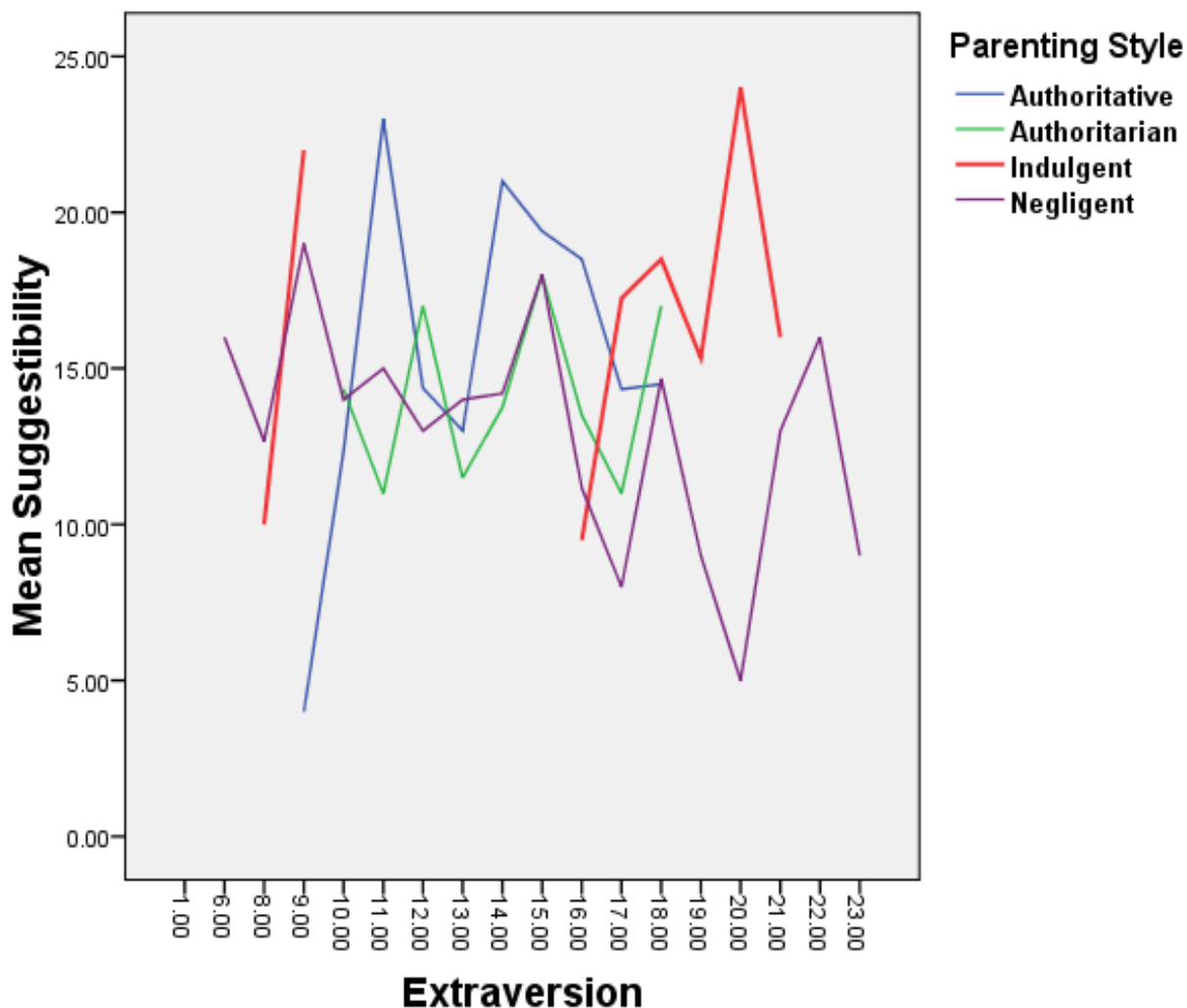


Figure 1: The moderating effect of parenting style in the relationship between extraversion and shift.

#### 4.4.1.2. Parenting Style Moderating the Relationship between Neuroticism and Suggestibility Variables

A hierarchical regression analysis was employed to assess the moderating effect of parenting style on neuroticism. According to the results shown in Table 5, parenting style was a statistically significant predictor of suggestibility, but neuroticism was not. Neuroticism and

parenting style together explained 6.10 percent of the variance in suggestibility,  $F(2,132) = 4.251, P < 0.05$ .

The result of moderated multiple regression analysis, also shown in Table 5, indicated that the interaction between parenting style and neuroticism was statistically not significant predictor of suggestibility. The results of moderated multiple regression analysis revealed that the interaction of parenting style and neuroticism explained a statistically nonsignificant incremental variance change of 0.10 percent in suggestibility,  $F(1,131) = 0.145, P > 0.05$ .

Table 5. The Interaction between Parenting Style and Neuroticism in the Prediction of Suggestibility Variables

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Neuroticism	-0.117			-0.021			-0.119		
Parenting style	-0.199*	0.061*	-----	-0.021	0.023	-----	-0.225	0.073*	-----
Neuroticism X Parenting style	-0.152	0.062	0.001	-0.028	0.023	0.000	0.113	0.074	0.001

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

Table 5 also presented the regression results predicting yield 1. Unlike the case with suggestibility, both parenting style and neuroticism were statistically not significant predictors of yield 1. The model explained 2.30 percent of the variance in yield 1,  $F(2,132) = 2.341, P > 0.05$ . Also consistent with the results for suggestibility, the interaction of parenting style and neuroticism was statistically not significant. The interaction did not raise the variance (0.00 percent) in yield 1,  $F(1,131) = 0.005, P > 0.05$ .

Furthermore, in the analysis in which shift was treated as a dependent variable, also shown in Table 5, parenting style was a negative predictor of shift. As was the case with yield 1 and suggestibility, neuroticism was statistically not significant predictor of shift. The regression model explained 7.30 percent of the variance in shift,  $F(2,132) = 5.227, P < 0.05$ .

Table 5 also presented the regression results of the interaction between parenting style and neuroticism. The interaction of parenting style and neuroticism explained 0.10 percent of the variance in shift,  $F(1, 131) = 0.001, P > 0.05$ .

#### 4.4.1.3. Parenting Style Moderating the Relationship between Conscientiousness and Suggestibility Variables

To examine changes in suggestibility with respect to change in parenting style and conscientiousness, a hierarchical regression was performed on conscientiousness and parenting style. Results in Table 6 showed that while the effect of parenting style on suggestibility was statistically significant and that of conscientiousness was not, and the model explained 5.10 percent of the variance in suggestibility,  $F(2, 132) = 3.583, P < 0.05$ .

Table 6. The Moderating Effect of Parenting Style on Conscientiousness

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Conscientiousness	-0.070			-0.042			-0.132		
Parenting style	-0.242*	0.051*	-----	-0.164	0.024	-----	-0.248*	0.060*	-----
Conscientiousness X Parenting style	0.954*	0.083	0.032*	0.455	0.031	0.007	0.937*	0.090	0.030*

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

The result of moderated multiple regression analysis, also shown in Table 6, indicated that the interaction between conscientiousness and parenting style was a statistically significant positive predictor of suggestibility. The table revealed that the interaction of conscientiousness and parenting style explained a statistically significant incremental variance change of 3.20 percent in suggestibility,  $F(1, 131) = 4.506, P < 0.05$ . Summary of the result of the regression analysis describing the significant moderator effect of parenting style on the impact of conscientiousness on suggestibility is depicted in Figure 2.

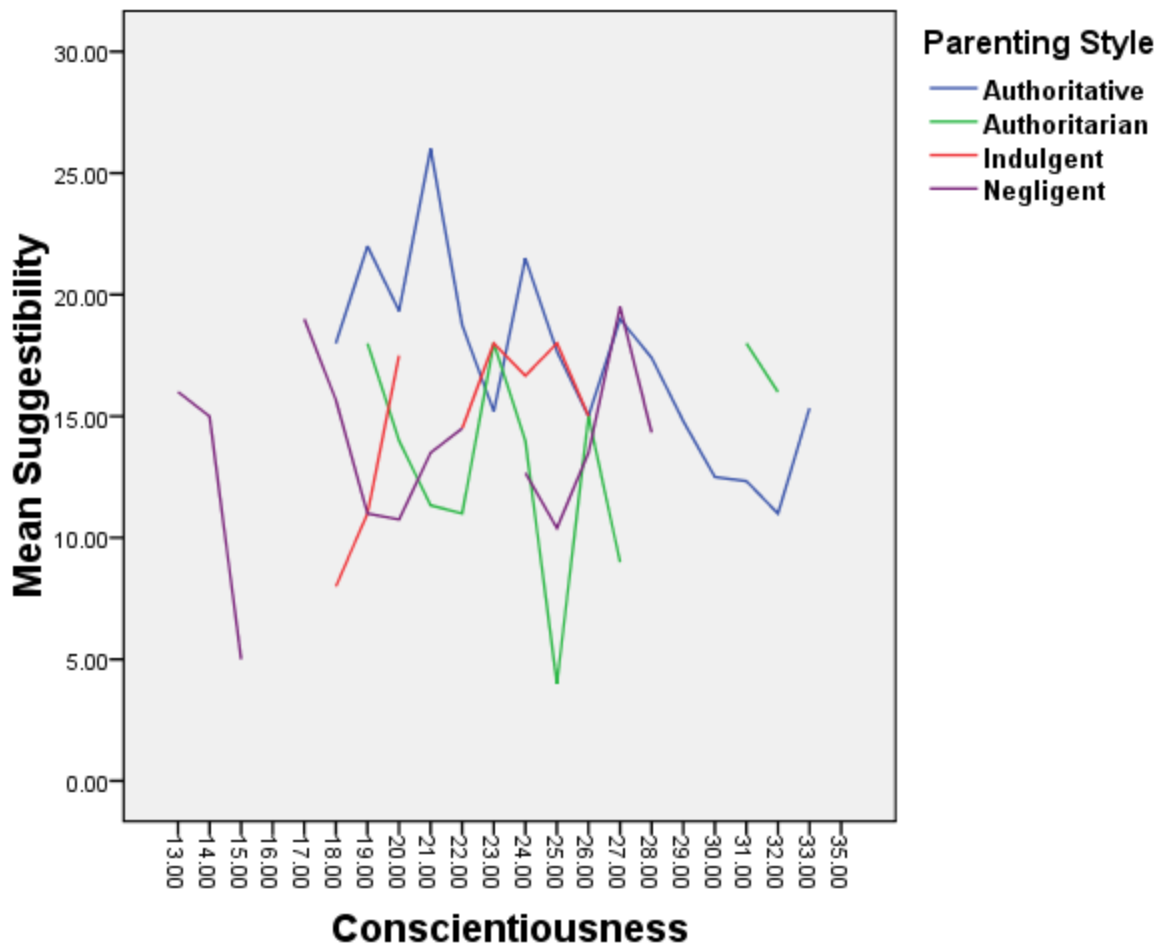


Figure 2: The moderating effect of parenting style in the relationship between conscientiousness and suggestibility.

Table 6 as well depicted on the regression results in predicting yield 1 and shift. Conscientiousness and parenting style were not significant predictors of yield 1. The model explained 2.40 percent of the variance in yield 1,  $F(2, 132) = 1.618, P > 0.05$ . Table 6 further showed that the interaction provided a statistically nonsignificant amount of incremental variance change of 0.70 percent in yield 1,  $F(1, 131) = 0.969, P > 0.05$ .

Included in Table 6 are the regression results regarding shift. Unlike the case in yield 1, parenting style was a negative predictor of shift while conscientiousness was not. The model explained 6.0 percent of the variance in shift,  $F(2, 132) = 4.194, P < 0.05$ .

Table 6 also indicated that the interaction between parenting style and conscientiousness was a significant positive predictor of shift. The interaction explained a statistically significant incremental variance change of 3 percent in shift,  $F(1, 131) = 4.382, P < 0.05$ . Figure 3 describes the significant moderator effect of parenting style on the relationship between conscientiousness and shift.

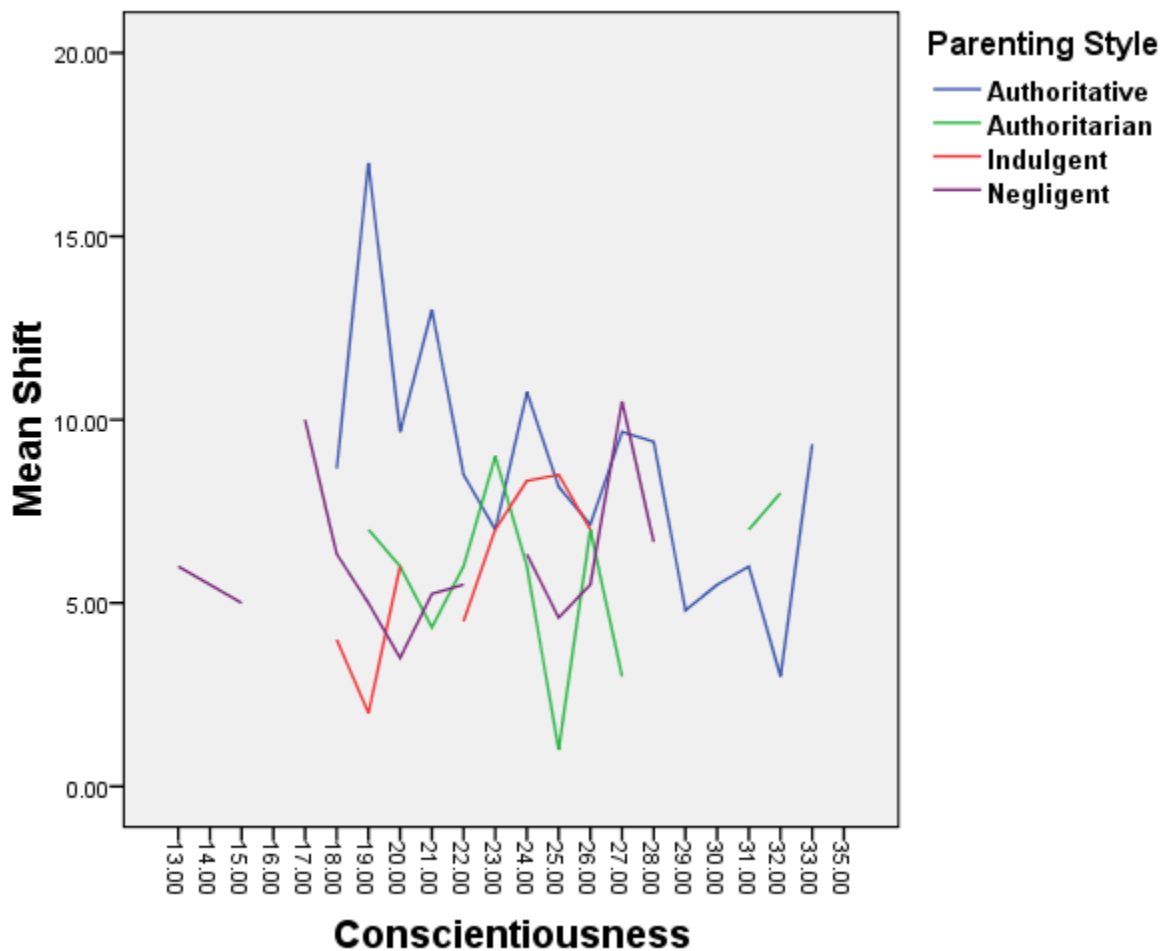


Figure 3: The moderating effect of parenting style in the relationship between conscientiousness and shift.

#### 4.4.1.4. Parenting Style Moderating the Relationship between Agreeableness and Suggestibility Variables

As shown in Table 7 below, when agreeableness and parenting style were entered in the regression equation, parenting style tuned a statistically significant predictor of suggestibility. Whereas agreeableness was statistically not significant negative predictor of suggestibility. The model explained 4.80 percent of the variance in suggestibility,  $F(2,132) = 3.323$ ,  $P < 0.05$ . The result of moderated multiple regression analysis, also shown in Table 7, indicated that the interaction between agreeableness and parenting style was statistically not significant predictor of suggestibility. The interaction of parenting style and agreeableness explained a statistically nonsignificant incremental variance change of 1.10 percent in suggestibility,  $F(1, 131) = 1.546$ ,  $P > 0.05$ .

Table 7. The Interaction between Parenting Style and Agreeableness in the Prediction of Suggestibility Variables

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Agreeableness	-0.027			-0.034			-0.033		
Parenting style	-0.222*	0.048*	-----	-0.156	0.023	-----	-0.250*	0.061*	-----
Agreeableness X Parenting style	0.649	0.059	0.011	0.488	0.030	0.007	0.416	0.065	0.005

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

In the analysis in which yield 1 functioned as the dependent variable, neither agreeableness nor parenting style made a significant contribution in predicting yield 1. The model explained 2.30 percent of the variance in yield 1,  $F(2, 132) = 1.588$ ,  $P > 0.05$ .

Table 7 indicated also that the interaction between agreeableness and parenting style was statistically not significant predictor of yield 1. The Table indicated that the interaction explained a statistically nonsignificant incremental variance change of 0.70 percent in yield 1,  $F(1, 131) = 0.846$ ,  $P > 0.05$ . Further examination of the independent effect of parenting style and

agreeableness on shift indicated that parenting style was a statistically significant negative predictor of shift while agreeableness did not turn a statistically significant predictor. The model explained 6.10 percent of the variance in shift,  $F(2,132) = 4.264, P < 0.05$ .

Table 7 further indicated that the interaction of agreeableness and parenting style was statistically not significant predictor of shift. The interaction explained a statistically nonsignificant incremental variance change of 0.50 percent in shift,  $F(1, 131) = 0.640, P > 0.05$ .

#### 4.4.1.5. Parenting Style Moderating the Relationship between Openness and Suggestibility Variables

Table 8 indicated the hierarchical moderated regression result predicting suggestibility. As the table indicated, neither parenting style nor openness to experience was a statistically significant independent predictor of suggestibility. The model explained 1.40 percent of the variance in suggestibility,  $F(2,132) = 3.323, P > 0.05$ . The table also indicated that the interaction between parenting style and openness to experience was a statistically nonsignificant predictor of suggestibility. The table indicated that the interaction did not raise the variance (0.000 percent) in suggestibility,  $F(1, 131) = 1.546, P > 0.05$ .

Table 8. The Moderating Effect of Parenting Style on Openness to Experience

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Openness	0.010			0.127			-0.028		
Parenting style	0.119	0.014	-----	-0.126	0.038*	-----	-0.249*	0.060*	-----
Openness X Parenting style	0.079	0.014	0.000	-0.274	0.039	0.001	0.594	0.065	0.004

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

Table 8 also indicated the hierarchical moderated regression result predicting yield 1. As the table indicated, both openness to experience and parenting style were statistically nonsignificant independent predictors of yield 1. The model explained 3.80 percent of the variance in yield 1,  $F$

(2,132) = 2.611,  $P > 0.05$ . The table also indicated that the interaction between parenting style and openness to experience was a statistically nonsignificant predictor of yield 1. The interaction explained a statistically nonsignificant incremental variance change of 0.10 percent in yield 1,  $F(1, 131) = 0.122$ ,  $P > 0.05$ .

As was the case with suggestibility, parenting style was a statistically significant negative predictor of shift while openness to experience did not predict significantly. The model explained 6 percent of the variance in shift,  $F(2, 132) = 4.242$ ,  $P < 0.05$ . The interaction between openness to experience and parenting style was a statistically nonsignificant predictor of shift. The interaction explained a statistically nonsignificant incremental variance change of 0.40 percent in shift,  $F(1, 131) = 0.591$ ,  $P > 0.05$ .

#### **4.4.2. Parenting Style Moderating the Relationship between Sense of Perceived Control and Suggestibility Variables**

The moderated regression analyses between each of the perceived control variables and parenting style is presented in this section. In this section, specifically, the role of parenting style as a moderator variable between each of the perceived control variables and suggestibility variables namely, suggestibility, yield 1 and shift is described.

##### **4.4.2.1. Parenting Style Moderating the Relationship between Social Desirability and Suggestibility Variables**

Table 9 indicated the hierarchical moderated regression results predicting suggestibility. As the table indicated, parenting style was statistically significant independent predictor of suggestibility. The model explained 4.80 percent of the variance in suggestibility,  $F(2,132) = 3.330$ ,  $P > 0.05$ . The table also indicated that the interaction between parenting style and suggestibility was a statistically nonsignificant predictor of suggestibility. The interaction explained a statistically nonsignificant incremental variance change of 1.80 percent in suggestibility,  $F(1, 131) = 2.595$ ,  $P > 0.05$ .

Table 9. The Interaction between Parenting Style and Social Desirability in the Prediction of Suggestibility Variables

Variable	Suggestibility			Yield 1			Shift		
	B	R <sup>2</sup>	$\Delta R^2$	$\beta$	R <sup>2</sup>	$\Delta R^2$	$\beta$	R <sup>2</sup>	$\Delta R^2$
Social desirability	0.029			-0.061			0.132		
Parenting style	-0.213*	0.048*	-----	-0.158	0.026	-----	-0.226*	0.077*	-----
Social desirability X Parenting style	0.582	0.067	0.018	0.339	0.032	0.006	0.642	0.099	0.022

\*P < 0.05;  $\Delta R^2$  refers to changes in R<sup>2</sup>

In the analysis in which yield 1 was entered as the dependent variable, neither social desirability nor parenting style predicted yield 1, and the model explained 2.60 percent of the variance in yield 1,  $F(2, 132) = 1.763$ ,  $P > 0.05$ . The interaction of social desirability and parenting style indicated a statistically nonsignificant predictor of yield 1. The interaction, also indicated in Table 9 explained a statistically nonsignificant incremental variance change of 0.60 percent in yield 1,  $F(1, 131) = 0.849$ ,  $P > 0.05$ .

The multiple regression results, also shown in Table 9, indicated that parenting style was a statistically significant negative predictor of shift while social desirability did not predict significantly. The model explained 7.70 percent of the variance in shift,  $F(2, 132) = 5.487$ ,  $P < 0.05$ .

Table 9 also indicated that the interaction between social desirability and parenting style was a statistically nonsignificant predictor of shift. The interaction explained a nonsignificant incremental variance change of 2.20 percent in shift,  $F(1, 131) = 3.272$ ,  $P > 0.05$ .

#### 4.4.2.2. Parenting Style Moderating the Relationship between Memory Efficacy and Suggestibility Variables

Table 10 displayed the hierarchical moderated regression results predicting suggestibility. As the table indicated, parenting style was statistically significant independent predictors of

suggestibility. The model explained 7.20 percent of the variance in suggestibility 1,  $F(2,132) = 5.089$ ,  $P > 0.05$ . The table also indicated that the interaction between parenting style and memory efficacy was a statistically nonsignificant predictor of suggestibility. The interaction explained a statistically nonsignificant incremental variance change of 1.40 percent in suggestibility,  $F(1, 131) = 1.947$ ,  $P > 0.05$ .

Table 10. The Moderating Effect of Parenting Style on Memory Efficacy

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Memory efficacy	-0.156			-0.065			-0.135		
Parenting style	-0.216*	0.072*	-----	-0.147	0.027	-----	-0.238*	0.078*	-----
Memory efficacy X Parenting style	0.672	0.085	0.014	0.112	0.027	0.000	0.545	0.087	0.009

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

The results in Table 10 further revealed the moderating effect of parenting style on the relationship between memory efficacy and yield 1. It was found out that neither memory efficacy nor parenting style predicted yield 1. The model explained 2.70 percent of the variance in yield 1,  $F(2, 132) = 1.800$ ,  $P > 0.05$ .

The results of moderated regression analysis also shown in Table 10 revealed that the interaction between parenting style and memory efficacy was a statistically nonsignificant predictor of yield 1. The table indicated that the interaction did not raise the variance (0.00 percent) in yield 1,  $F(1, 131) = 0.051$ ,  $P > 0.05$ .

The interaction between parenting style and shift was also displayed in Table 10 using hierarchical moderated regression. Accordingly, parenting style was a statistically significant negative predictor of shift while memory efficacy was not, and they explained 7.80 percent of the variance in shift,  $F(2,132) = 5.579$ ,  $P > 0.05$ . The interaction between memory efficacy and parenting style was a statistically nonsignificant predictor of shift. The interaction explained a

statistically nonsignificant incremental variance change of 0.90 percent in shift,  $F(1,131) = 1.281, P > 0.05$ .

#### 4.4.2.3. Parenting Style Moderating the Relationship between Locus of Control and Suggestibility Variables

Result of the hierarchical regression, shown in Table 11, suggested that locus of control and parenting style were statistically significant predictors of suggestibility. The model explained 9.80 percent of the variance in suggestibility,  $F(2, 132) = 7.184, P < 0.05$ .

The result of moderated multiple regression analysis, also shown in Table 11, indicated that the interaction between locus of control and parenting style was a statistically significant positive predictor of suggestibility. The interaction explained an incremental variance change of 4.00 percent in suggestibility,  $F(1, 131) = 6.068, P < 0.05$ . Figure 4 describes the significant moderator effect of parenting style on the relationship between locus of control and suggestibility.

Table 11. The Interaction between Parenting Style and Locus of Control in the Prediction of Suggestibility Variables

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Locus of Control	-0.226*			-0.137			-0.231*		
Parenting style	-0.217*	0.098*	-----	-0.149	0.041	-----	-0.244*	0.113*	-----
Locus of Control X Parenting style	1.124*	0.138	0.040*	0.709	0.057	0.016	1.079*	0.150	0.037*

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

The result of the moderated regression analysis of the effect of parenting style on locus of control, also shown in Table 11, revealed that neither parenting style nor locus of control was a significant predictor of yield 1. The model explained 4.10 percent of the variance in yield 1,  $F(2, 132) = 2.828, P > 0.05$ . Similarly, the interaction of parenting style and locus of control turned statistically nonsignificant predictor of yield 1. The interaction explained a statistically

nonsignificant incremental variance change of 1.60 percent in yield 1,  $F(1, 131) = 2.204, P > 0.05$ .

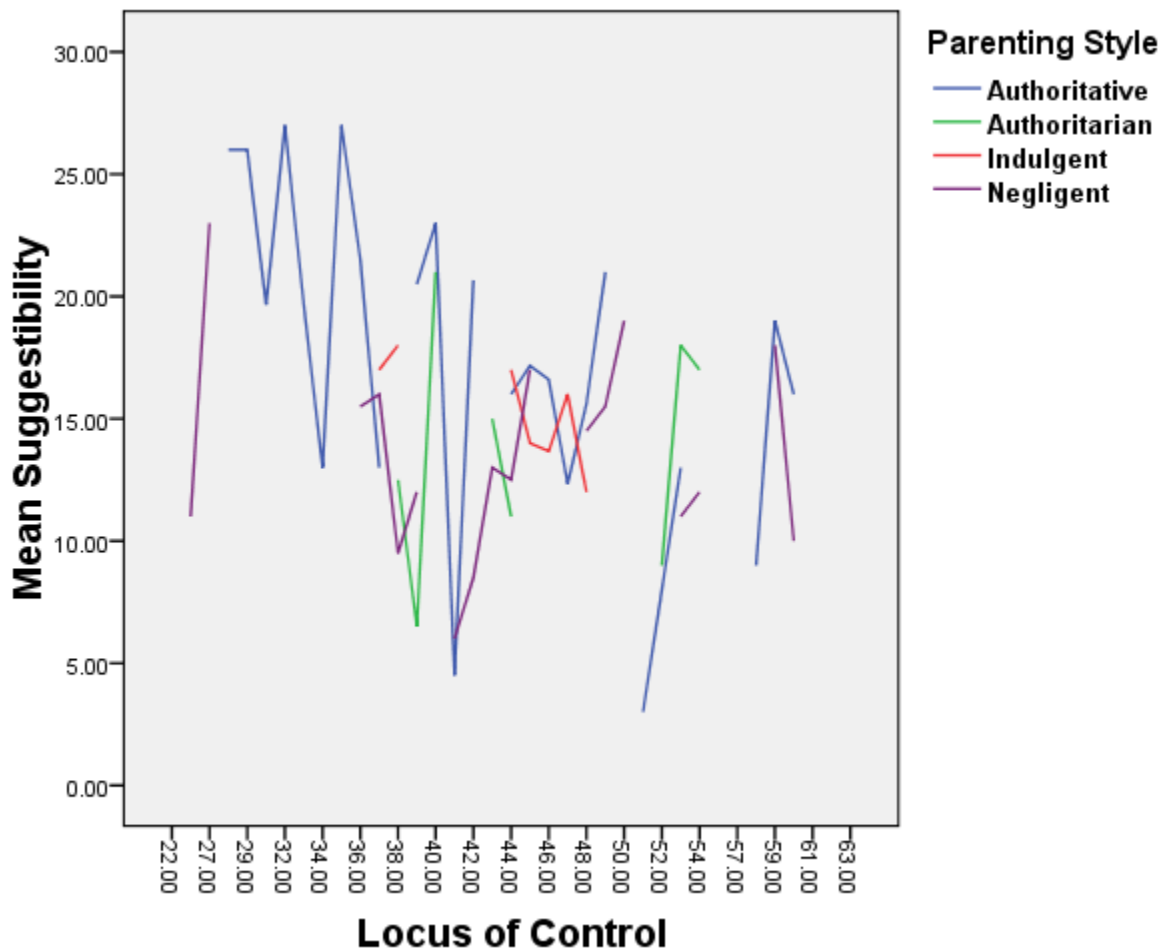


Figure 4: The moderating effect of parenting style in the relationship between locus of control and suggestibility.

Table 11 also presented the hierarchical moderated regression results predicting shift. As can be seen from the table, locus of control and parenting style were negative predictors of shift, and they explained 11.30 percent of the variance in shift,  $F(2, 132) = 8.416, P < 0.05$ . The interaction between parenting style and locus of control was a significant positive predictor of shift. The table also indicated that the interaction explained a statistically significant incremental variance change of 3.70 percent in shift,  $F(1, 131) = 5.664, P < 0.05$ . Figure 5 describes the significant moderator effect of parenting style on the relationship between locus of control and shift.

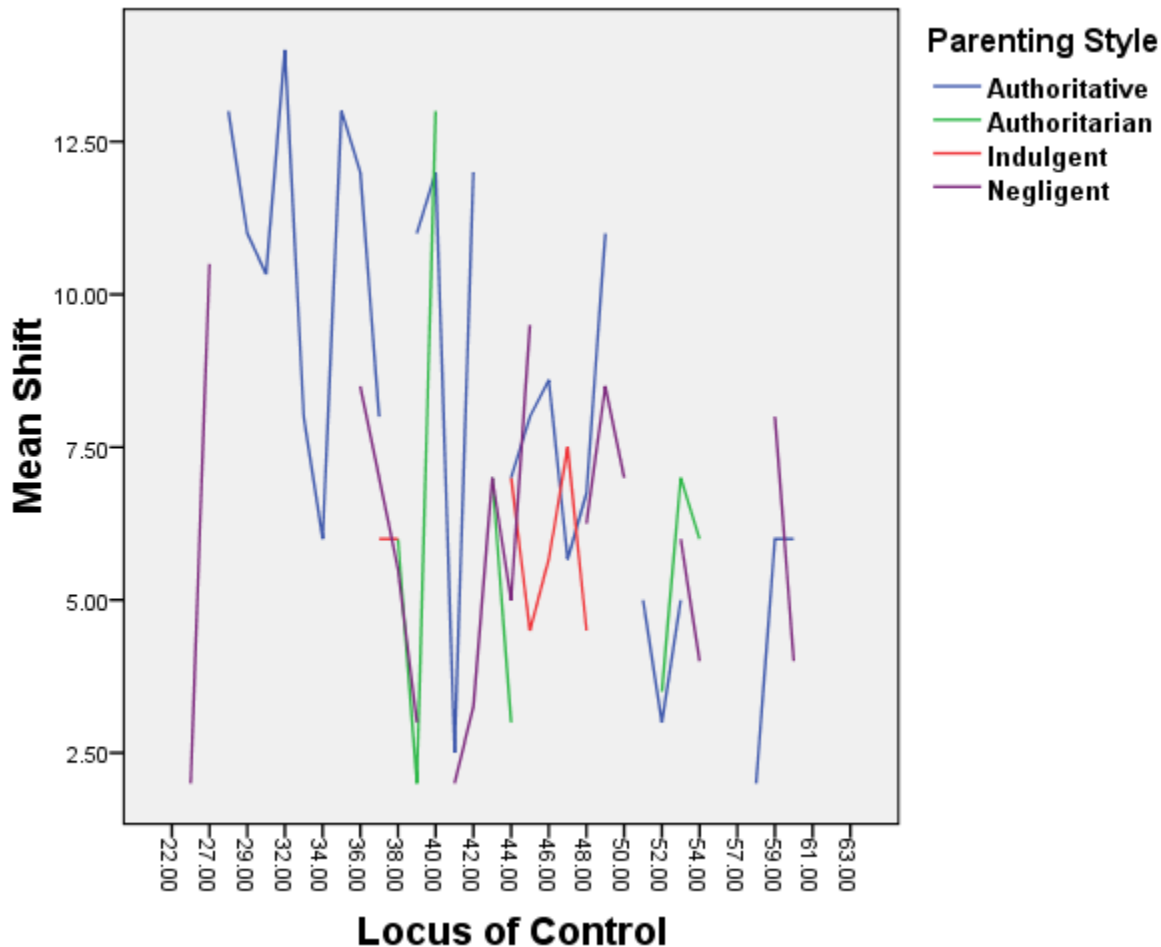


Figure 5: The moderating effect of parenting style in the relationship between locus of control and shift.

#### 4.4.3. Parenting Style Moderating the Relationship between Memory Accuracy and Suggestibility Variables

Findings from hierarchical regression analysis on parenting style and memory accuracy, shown in Table 12, indicated that memory accuracy was a statistically significant negative predictor of suggestibility while parenting style was not. Memory accuracy and parenting style together explained 19.60 percent of the variance in suggestibility,  $F(2,132) = 16.102, P < 0.05$ .

Table 12. The Interaction between Parenting Style and Memory Accuracy in the Prediction of Suggestibility Variables

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Memory accuracy	-0.392			-0.305*			-0.360*		
Parenting Style	-0.146*	0.196*	-----	-0.094*	0.112*	-----	-0.179*	0.185*	-----
Memory accuracy X Parenting style	1.012*	0.444	0.248*	0.819*	0.147	0.034*	0.615	0.204	0.019

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

The result of moderated multiple regression analysis, shown in Table 12 as well indicated that the interaction between memory accuracy and parenting style was a statistically significant positive predictor of suggestibility. The interaction provided a statistically significant incremental variance change of 24.80 percent in suggestibility,  $F(1,131) = 9.110$ ,  $P < 0.05$ . Figure 6 describes the significant moderator effect of parenting style on the relationship between memory accuracy and suggestibility.

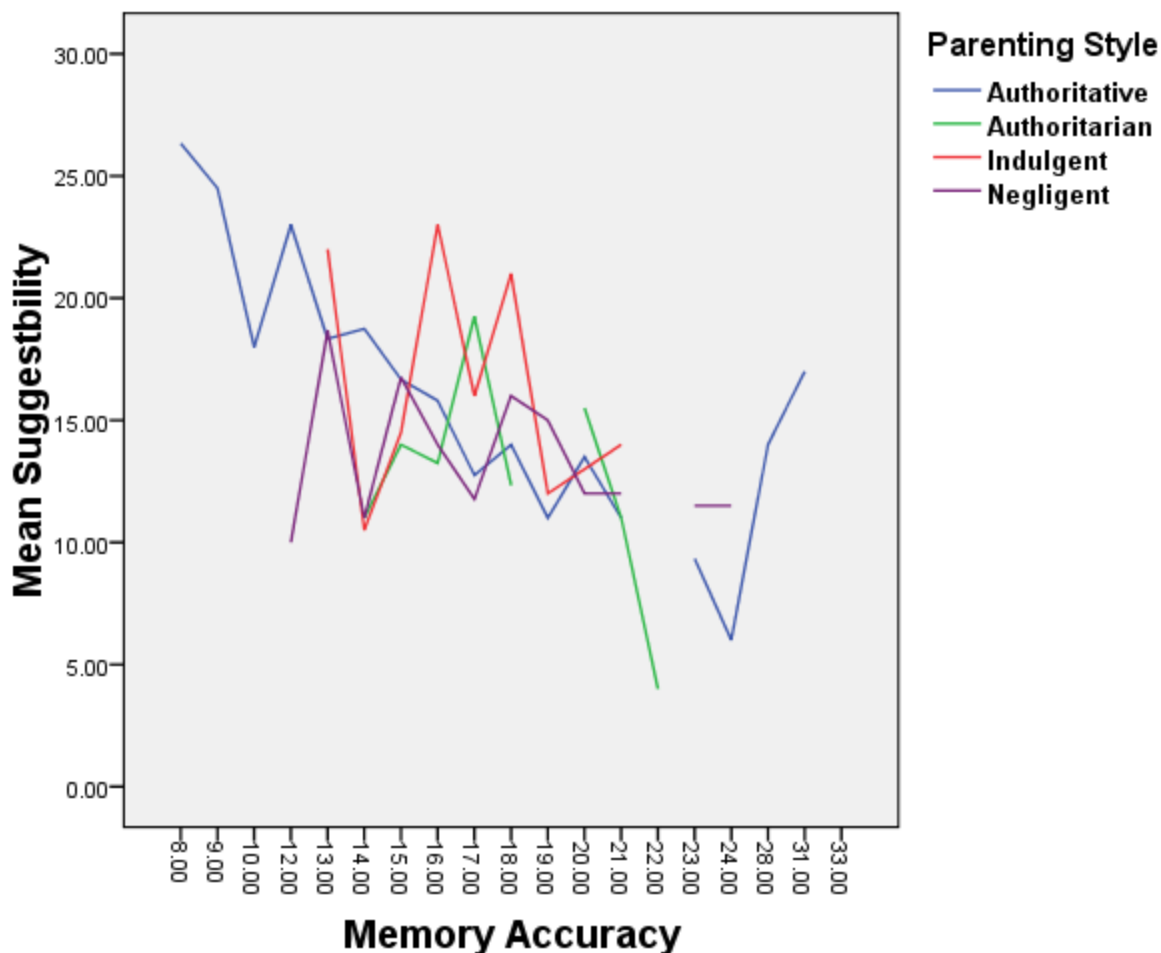


Figure 6: The moderating effect of parenting style in the relationship between memory accuracy and suggestibility.

Also consistent with the results for yield 1, parenting style and memory accuracy were significant negative predictors of shift, and they jointly explained 18.50 percent of the variance in shift,  $F(2,132) = 14.946, P < 0.05$ . The interaction between memory accuracy and parenting style was a statistically nonsignificant predictor of shift. In Table 12 it was also indicated that the interaction resulted in a statistically nonsignificant incremental variance change of 1.90 percent in shift,  $F(1, 131) = 3.182, P > 0.05$ .

Table 12 also presented the hierarchical moderated regression results predicting yield 1 and shift. The table indicated that memory accuracy and parenting style were significant negative predictors of yield 1, and they explained 11.20 percent of the variance in yield 1,  $F(2,132) =$

8.362,  $P < 0.05$ . The interaction between memory accuracy and parenting style, also shown in Table 12, turned a statistically significant positive predictor of yield 1. The interaction raised a statistically significant incremental variance change of 3.4 percent in yield 1,  $F(1, 131) = 5.259$ ,  $P > 0.05$ . Figure 7 describes the significant moderator effect of parenting style on the relationship between memory accuracy and yield 1.

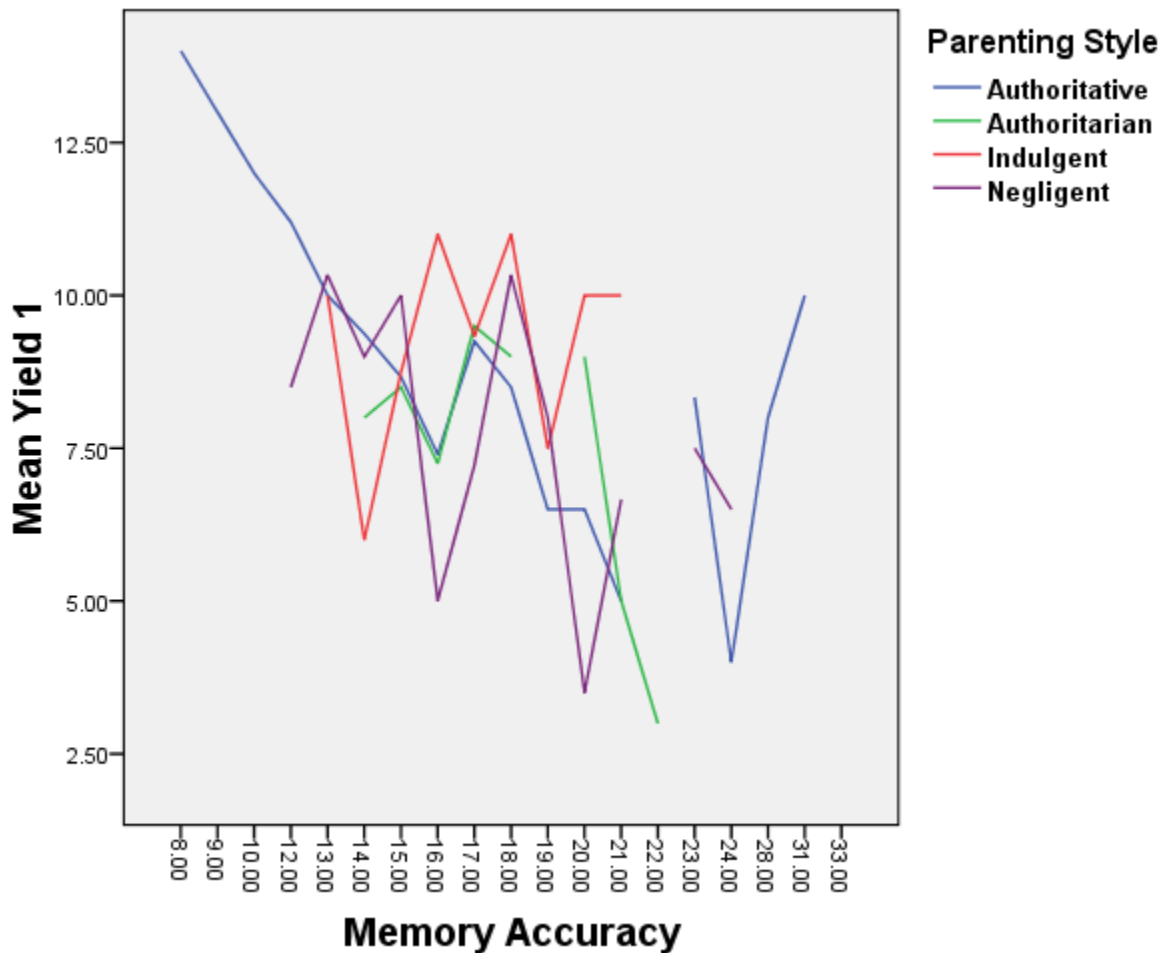


Figure 7: The moderating effect of parenting style in the relationship between memory accuracy and yield 1.

#### 4.4.4. Parent's Educational Level Moderating the Relationship between Personality Traits and Suggestibility Variables

This section presents results of the moderated regression analyses performed between late adolescents' personality traits and parenting style as the function of parent's educational level. Specifically, this section presented the role of parent's educational level as a moderator variable between each of the personality traits and suggestibility variables namely, suggestibility, yield 1 and shift.

##### 4.4.4.1. Parent's Educational Level Moderating the Relationship between Extraversion and Suggestibility Variables

Results shown in Table 13 below revealed that extraversion and parent's educational level were nonsignificant predictors of suggestibility. The model explained 0.60 percent of the variance in suggestibility,  $F(2,132) = 0.407, P > 0.05$ .

The result of moderated multiple regression analysis, also shown in Table 13, indicated that the interaction between extraversion and parent's educational level was a statistically nonsignificant positive predictor of suggestibility. The inclusion of this interaction in the regression equation produced a statistically nonsignificant incremental variance change of 0.10 percent in suggestibility,  $F(1, 131) = 0.084, P > 0.05$ .

Table 13. The Moderating Effect of Parent's Educational Level on Extraversion

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Extraversion	0.066			0.107			0.072		
Parent's educ. level	-0.032	0.006	-----	0.018	0.011	-----	-0.103	0.018	-----
Extraversion X Parent's edu. Level	0.099	0.007	0.001	-0.252	0.015	0.004	0.132	0.019	0.001

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

Furthermore, result from hierarchical regression analysis on parent's educational level and extraversion, shown in Table 13, indicated that neither parent's educational level nor extraversion was a significant predictor of yield 1. The model explained 1.10 percent of the variance in yield 1,  $F(2, 132) = 0.795, P > 0.05$ .

Table 13 also indicated that the interaction of parent's educational level and extraversion was a statistically nonsignificant predictor of yield 1. The interaction raised the coefficient of determination in producing yield 1 by just 0.40,  $F(1, 131) = 0.550, P > 0.05$ .

Further examination of the results of hierarchical regression analysis predicting shift, also shown in Table 13, revealed that both extraversion and parent's educational level were statistically nonsignificant predictors of shift, and they explained 1.80 percent of the variance in shift,  $F(2, 132) = 1.231, P > 0.05$ . The result of moderated multiple regression analysis, also shown in Table 13, revealed that the interaction of extraversion and parent's educational level produced a 0.10 percent in explaining the variance in shift, which was not statistically significant,  $F(1, 131) = 0.084, P > 0.05$ .

#### **4.4.4.2. Parent's Educational Level Moderating the Relationship between Neuroticism and Suggestibility Variables**

The result of the hierarchical analysis shown in Table 14 below indicated that parent's educational level and neuroticism were statistically nonsignificant negative predictors of suggestibility, and they explained 2.40 percent of the variance in suggestibility,  $F(2, 132) = 1.634, P > 0.05$ . The result of moderated multiple regression analysis, also shown in Table 14, indicated that the interaction between neuroticism and parent's educational level was a statistically nonsignificant positive predictor of suggestibility. The interaction of parent's educational level and neuroticism did not raise the variance (0.00 percent) in suggestibility,  $F(1, 131) = 0.005, P > 0.05$ .

Table 14. The Interaction between Parent's Educational Level and Neuroticism in the Prediction of Suggestibility Variables

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Neuroticism	-0.149			-0.045			-0.157		
Parent's educ. level	-0.046	0.024	-----	0.000	0.002	-----	-0.118	0.038	-----
Neuroticism X Parent's edu. level	0.026	0.024	0.000	-0.470	0.015	0.013	0.205	0.040	0.002

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

In the hierarchical regression analyses in which yield 1 and shift served as the dependent variables, neuroticism and parent's educational level did not make statistically significant contributions in predicting yield 1 and shift. Neuroticism and parent's educational level together explained only 0.20 percent of the variance in yield 1,  $F(2, 132) = 0.131$ ,  $P > 0.05$ , and 3.80 percent of the variance in shift,  $F(2, 132) = 0.078$ ,  $P > 0.05$ . Table 14 also indicated that the interaction of parent's educational level and neuroticism was nonsignificant predictor of yield 1 and shift. The interaction effect explained a statistically nonsignificant amount of incremental variance change of 1.30 percent in yield 1,  $F(1, 131) = 1.716$ ,  $P > 0.05$  and 0.20 percent in shift,  $F(1, 131) = 0.564$ ,  $P > 0.05$ .

#### 4.4.4.3. Parent's Educational Level Moderating the Relationship between Conscientiousness and Suggestibility Variables

The results shown in Table 15 revealed that conscientiousness and parent's educational level were statistically nonsignificant predictors of suggestibility, and they just explained 0.20 percent of the variance in suggestibility,  $F(2, 132) = 0.130$ ,  $P > 0.05$ . The result of moderated multiple regression analysis, also presented in Table 15, indicated that the interaction between conscientiousness and parent's educational level was a statistically nonsignificant negative predictor of suggestibility. The interaction of parent's educational level and conscientiousness explained a statistically nonsignificant incremental variance change of 0.40 percent in suggestibility,  $F(1, 131) = 0.468$ ,  $P > 0.05$ .

Table 15. The Moderating Effect of Parent's Educational Level on Conscientiousness

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Conscientiousness	0.010			0.016			0.062		
Parent's educ. level	-0.042	0.002	-----	0.002	0.000	-----	-0.107	0.017	-----
Conscientiousness X Parent's edu. level	-0.359	0.006	0.004	-0.298	0.003	0.002	-0.691	0.030	0.013

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

Table 15 presented the result of moderated regression analysis of the effect of parent's educational level and conscientiousness on yield 1. The table indicated that neither parent's educational level nor conscientiousness was significant predictors of yield 1, and they did not raise the variance ( 0.00 percent ) in yield 1,  $F(2, 132) = 0.017, P > 0.05$ .

Similarly the interaction of parent's educational level and conscientiousness was a nonsignificant negative predictor of yield 1. The table indicated that the interaction when entered in the regression equation increased the amount of variance in yield 1 accounted for by the predictor variables just by 0.20,  $F(1, 131) = 0.321, P > 0.05$ . As was the case with yield 1, parent's educational level and conscientiousness were nonsignificant predictors of shift. The model explained 1.70 percent of the variance in shift,  $F(2, 132) = 1.144, P > 0.05$ .

Table 15 also indicated that the interaction between parent's educational level and conscientiousness was a statistically nonsignificant predictor of shift. The interaction explained a statistically nonsignificant incremental variance change of 1.30 percent in shift,  $F(1, 131) = 1.779, P > 0.05$ .

#### 4.4.4.4. Parent's Educational Level Moderating the Relationship between Agreeableness and Suggestibility Variables

To examine the moderator effect of parent's educational level on agreeableness as a predictor of suggestibility variables hierarchical regression analysis was conducted. Results shown in Table 16, revealed that agreeableness and parent's educational level were statistically nonsignificant predictors of suggestibility, and they explained 0.20 percent of the variance in suggestibility,  $F(2,132)= 0.135, P>0.05$ .

The result of moderated multiple regression analysis, also shown in Table 16, indicated that the interaction between parent's educational level and agreeableness was a statistically nonsignificant negative predictor of suggestibility. The moderated multiple regression analysis, also shown in Table 16, revealed that the interaction of parent's educational level and agreeableness together did not raise the variance (0.00 percent) in suggestibility,  $F(1,131)=0.032, P>0.05$ .

Table 16. The Interaction between Parent's Educational Level and Agreeableness in the Prediction of Suggestibility Variables

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Agreeableness	0.013			-0.005			0.011		
Parent's educ. level	-0.043	0.002	-----	0.000	0.000	-----	-0.115	0.013	-----
Conscientiousness									
X Parent's edu. level	-0.110	0.002	0.000	-0.002	0.000	0.000	0.009	0.013	0.000

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

Table 16 also presented the regression results predicting yield 1 and shift. As was the case in suggestibility, parent's educational level and agreeableness were statistically nonsignificant predictors of yield 1 and shift. They did not raise the variance (0.00 percent) in yield 1,  $F(2, 132) = 0.000, P > 0.05$ ; and 1.30 percent of the variance in shift,  $F(2, 132) = 0.893, P > 0.05$ .

Table 16 further revealed that the interaction between parents' educational and agreeableness was a statistically nonsignificant predictor of yield 1. The interaction did not raise the variance (0.00 percent) in yield 1,  $F(1, 131) = 0.000, P > 0.05$ .

The result of the moderated regression analysis of the effect of parent's educational level of agreeableness, also shown in Table 16, revealed that neither parent's educational level nor agreeableness was statistically significant predictors of shift, and they merely explained 1.30 percent of the variance in shift,  $F(2, 132) = 0.893, P > 0.05$ . Similarly, the interaction between parent's educational level and agreeableness indicated that the interaction was a statistically nonsignificant predictor of shift. Table 16 also indicated that the interaction did not raise the variance (0.00 percent) in shift,  $F(1, 131) = 0.000, P > 0.05$ .

#### **4.4.4.5. Parent's Educational Level Moderating the Relationship between Openness to Experience and Suggestibility Variables**

To examine the moderating role of parent's educational level in explaining the relationship between openness to experience and suggestibility, hierarchical regression analysis was performed on openness to experience and parent's educational level. Results as presented in Table 17 revealed that parent's educational level and openness to experience were statistically nonsignificant predictors of suggestibility, and together they explained only 0.70 percent of the variance in suggestibility,  $F(2, 132) = 0.439, P > 0.05$ .

The result of moderated multiple regression analysis, also shown in Table 17, indicated that the interaction between parent's educational level and openness to experience was a statistically nonsignificant negative predictor of suggestibility. The interaction of parent's educational level and openness to experience provided an increase of 1.20 percent in suggestibility,  $F(1, 131) = 1.538, P > 0.05$ .

Table 17. The Moderating Effect of Parent's Educational Level on Openness to Experience

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	R <sup>2</sup>	$\Delta R^2$	$\beta$	R <sup>2</sup>	$\Delta R^2$	$\beta$	R <sup>2</sup>	$\Delta R^2$
Openness	0.069			0.151			0.012		
Parent's educ. level	-0.040	0.007	-----	0.008	0.023	-----	-0.114	0.013	-----
Openness X Parent's edu. Level	-1.035	0.018	0.012	-1.285	0.041	0.018	-0.819	0.021	0.007

\*P < 0.05;  $\Delta R^2$  refers to changes in R<sup>2</sup>

Also presented in Table 17 are the regression results in predicting yield 1 and shift. As the table indicated, parent's educational level and openness to experience were nonsignificant predictors of yield 1 and shift. The main effects together explained 2.30 percent of the variance in yield 1, F (2, 132) = 1.540, P > 0.05; and 1.30 percent of the variance in shift, F (2, 132) = 0.893, P > 0.05.

Table 17 also indicated that the interaction between parent's educational level and openness to experience was a statistically nonsignificant predictor of yield 1 and shift. The interaction explained a statistically nonsignificant additional amount of variance of 1.80 percent in yield 1, F (1, 131) = 2, 424, P > 0.05, and 0.70 percent in shift, F (1, 131) = 0.965, P > 0.05.

#### 4.4.5. Parent's Educational Level Moderating the Relationship between Sense of Perceived Control and Suggestibility Variables

This section presented results of the moderated regression analyses performed between late adolescents' sense of perceived control and suggestibility variables as the function of parent's educational level. Specifically, this section presented the role of parent's educational level as a moderator variable between each of the perceived control variables and suggestibility variables particularly to suggestibility, yield 1 and shift.

#### 4.4.5.1. Parent's Educational Level Moderating the Relationship between Social Desirability and Suggestibility Variables

Results of the hierarchical regression analysis, shown in Table 18, revealed that parent's educational level and social desirability were statistically nonsignificant predictors of suggestibility and together they only explained 0.50 percent of the variance in suggestibility,  $F(2,132) = 0.348, P > 0.05$ .

The result of moderated multiple regression analysis, also shown in Table 18, indicated that the interaction between parent's educational level and social desirability was a statistically significant positive predictor of suggestibility. This interaction explained a statistically significant amount of incremental variance change of 2.90 percent in suggestibility,  $F(1,131) = 3.943, P < 0.05$ . Summary of the result of the regression analysis describing the significant moderator effect of parent's educational level on the relationship between social desirability and suggestibility is depicted in Figure 8.

Table 18. The Moderating Effect of Parent's Educational Level on Social Desirability

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Social desirability	0.058			-0.039			0.162		
Parent's educ. level	-0.042	0.005	-----	0.000	0.002	-----	-0.113	0.040	-----
Social desirability X Parent's edu. Level	0.828*	0.034	0.029*	0.942*	0.039	0.038*	0.388	0.046	0.006

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

The result of hierarchical regression analysis on parent's educational level and social desirability, also shown in Table 18, indicated that neither social desirability nor parent's educational level was a significant predictor of yield 1, and the two variables jointly explained just 0.20 percent of the variance in yield 1,  $F(2, 132) = 0.100, P > 0.05$ .

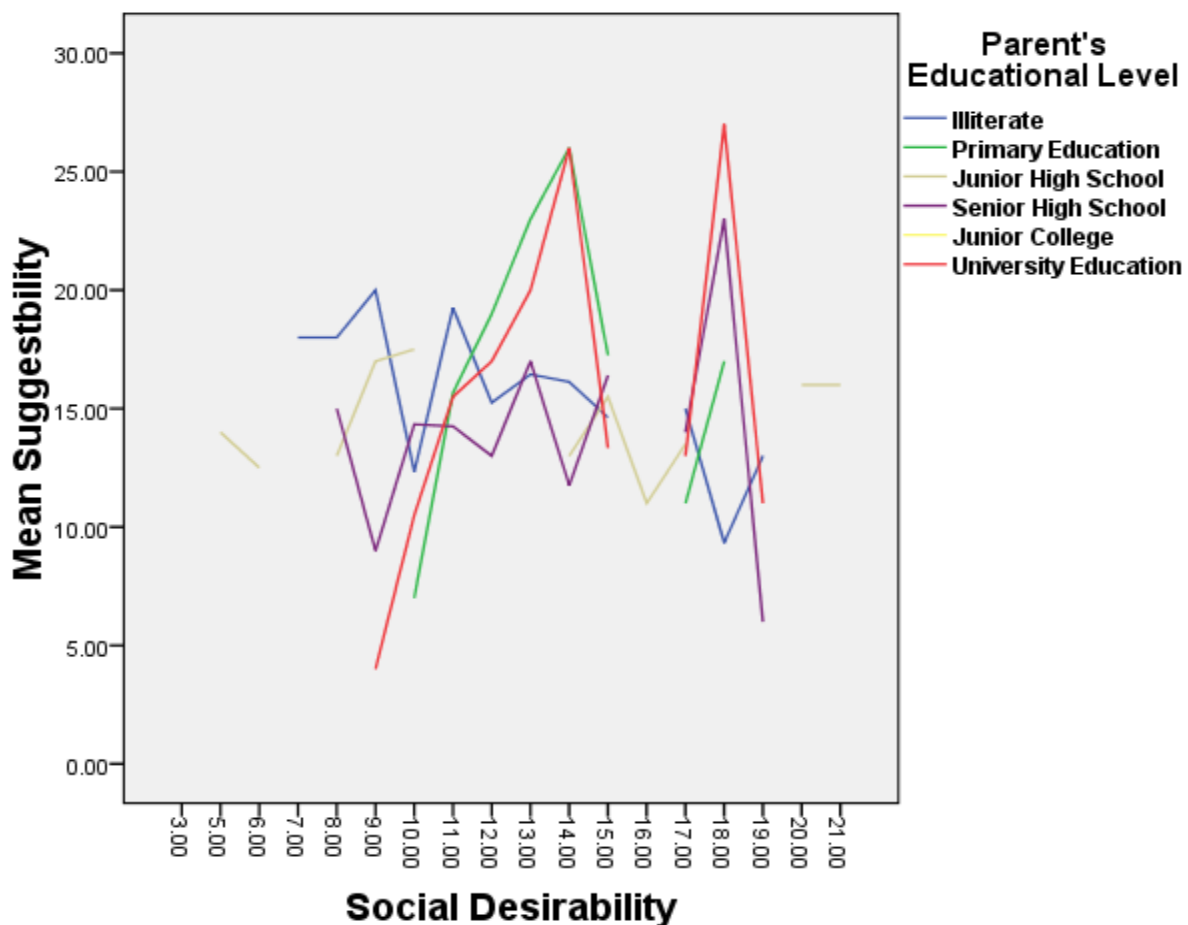


Figure 8: The moderating effect of parent's educational level in the relationship between social desirability and suggestibility.

Table 18 further indicated that the interaction between parent's educational level and social desirability was a statistically significant predictor of yield 1. The interaction resulted in a significant amount of explained incremental variance change of 3.80 percent in yield 1,  $F(1, 131) = 5.123, P < 0.05$ .

Table 18 presented the regression results predicting shift. As was the case with yield 1, parent's educational level and social desirability were statistically not significant predictors of shift, and together they explained 4 percent of the variance in shift,  $F(2, 132) = 2.720, P > 0.05$ . Unlike the case with yield 1, the interaction of parent's educational level and social desirability was a statistically nonsignificant predictor of shift. This interaction explained a statistically nonsignificant amount of incremental variance change of 0.60 percent in yield 1,  $F(1, 131) =$

0.875,  $P > 0.05$ . Summary of the result of the regression analysis describing the significant moderator effect of parent's educational level on the relationship between social desirability and yield 1 is depicted in Figure 9.

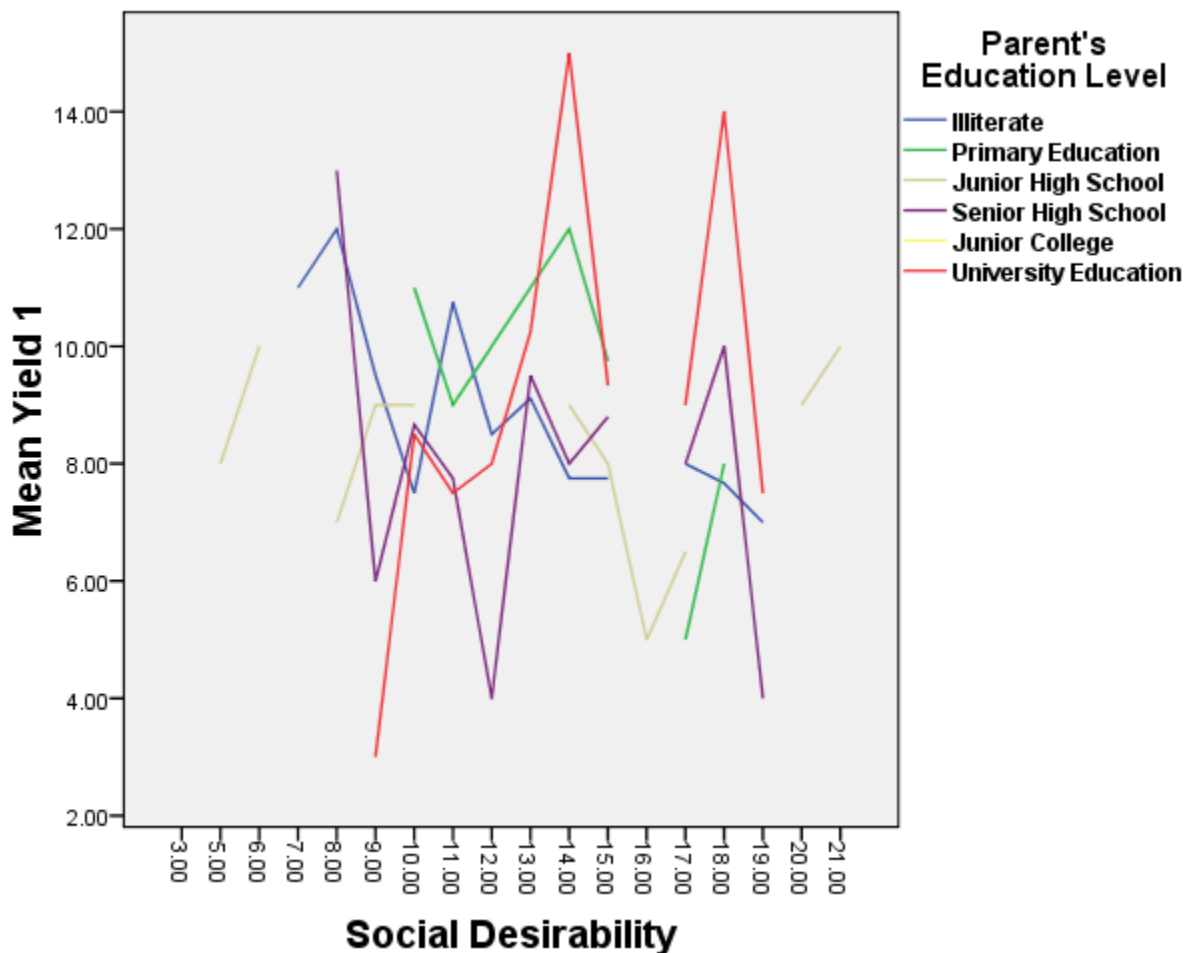


Figure 9: The moderating effect of parent's educational level in the relationship between social desirability and yield 1.

#### 4.4.5.2. Parent's Educational Level Moderating the Relationship between Memory Efficacy and Suggestibility Variables

To examine the moderating effect of parent's educational level in explaining relations between memory efficacy and suggestibility, a hierarchical regression analysis was performed on memory efficacy and parent's educational level. Results shown in Table 19 revealed that memory efficacy was a statistically significant negative predictor of suggestibility while parent's educational level

was not. The model explained a nonsignificant 3 percent of the variance in suggestibility,  $F(2, 132) = 2.006, P > 0.05$ .

Similarly, the result of moderated multiple regression analysis, also shown in Table 19, indicated that the interaction between parent's educational level and memory efficacy was a statistically nonsignificant positive predictor of suggestibility. The result of moderated multiple regression analysis revealed that the interaction of memory efficacy and parent's educational level explained a statistically nonsignificant incremental variance change of 1.80 percent in suggestibility,  $F(1, 131) = 2.449, P > 0.05$ .

Table 19. The Moderating Effect of Parent's Educational Level on Memory Efficacy

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Memory efficacy	-0.166			-0.071			-0.148		
Parent's educ. level	-0.045	0.030	-----	0.000	0.005	-----	-0.117	0.035	-----
Memory efficacy X Parent's edu. level	0.692	0.047	0.018	0.080	0.005	0.000	0.668	0.052	0.017

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

Table 19 also indicated the hierarchical moderated regression result predicting yield 1. As the table indicated, both memory efficacy and parent's educational level were statistically not significant independent predictors of yield 1. The model explained 0.50 percent of the variance in yield 1,  $F(2, 132) = 0.337, P > 0.05$ . Similarly, the interaction between parent's educational level and memory efficacy was a statistically nonsignificant predictor of yield 1. The interaction did not raise the variance (0.00 percent) in yield 1,  $F(1, 131) = 0.032, P > 0.05$ .

Table 19 further presented the regression results predicting shift. Parent's educational level and memory efficacy were not significant predictors of shift. The main effects together explained 3.50 percent of the variance in shift,  $F(2, 132) = 2.394, P > 0.05$ . The table also indicated that the interaction between parent's educational level and memory efficacy was not significant predictor of shift. The interaction explained a statistically nonsignificant incremental variance change of 1.70 percent in shift,  $F(1, 131) = 2.292, P > 0.05$ .

#### **4.4.5.3. Parent's Educational Level Moderating the Relationship between Locus of Control and Suggestibility Variables**

To examine the moderating effect of parent's educational level on locus of control, hierarchical regression analysis was performed on parent's educational level and locus of control. Results shown in Table 20 below revealed that locus of control was a statistically significant negative predictor of suggestibility while parent's educational level did not turn to be a significant predictor. The model explained 5.30 percent of the variance in suggestibility,  $F(2, 132) = 3.677$ ,  $P > 0.05$ .

The result of moderated multiple regression analysis, also shown in Table 20, indicated that the interaction between parent's educational level and locus of control was a statistically significant negative predictor of suggestibility. This interaction raised the amount of explained variance in suggestibility by 3 percent,  $F(1, 131) = 4.322$ ,  $P < 0.05$ . Figure 10 describes the significant moderator effect of parent's educational level on the relationship between locus of control and suggestibility.

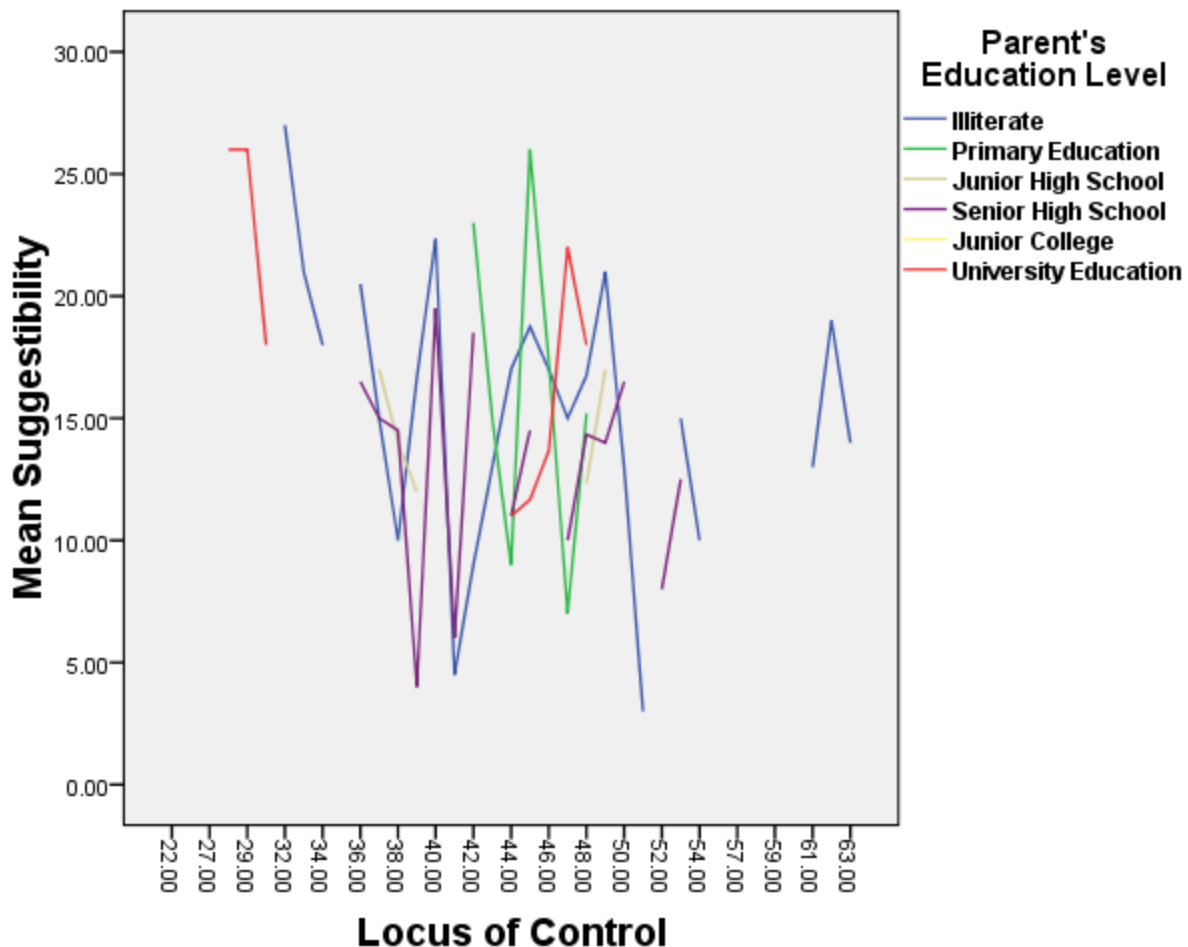


Figure 10: The moderating effect of parent's educational level in the relationship between locus of control and suggestibility

Table 20 further indicated that the interaction between parent's educational level and locus of control was a statistically nonsignificant predictor of yield 1. The interaction explained a nonsignificant amount of incremental variance change of 1.90 percent in yield 1,  $F(2, 132) = 1.261, P > 0.05$ . Table 20 indicated that the interaction between parent's educational level and locus of control was a statistically nonsignificant predictor of yield 1. The interaction explained a statistically nonsignificant amount of incremental variance change of 2 percent in yield 1,  $F(1, 131) = 2.777, P > 0.05$ .

Table 20. The Interaction between Parent's Educational Level and Locus of Control in the Prediction of Suggestibility Variables

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Locus of control	-0.226*			-0.137			-0.231*		
Parent's educ. level	-0.042	0.053*	-----	-0.001	0.019	-----	-0.114	0.066*	-----
Locus of control X Parent's edu. Level	0.947*	0.083	0.030*	-0.777	0.039	0.020	0.974*	0.098	0.032*

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

Table 20 presented the regression results predicting shift. Unlike the case with yield 1, locus of control was statistically significant predictor of shift and parent's educational level was not, and they explained 6.60 percent of the variance in shift,  $F(2, 132) = 4.700$ ,  $P > 0.05$ . Unlike the case with yield 1, the interaction of parent's educational level and locus of control was a statistically significant negative predictor of shift. The table indicated that the interaction explained a significant amount of incremental variance change of 3.20 percent in shift,  $F(1, 131) = 4.644$ ,  $P < 0.05$ . Figure 11 describes the significant moderator effect of parent's educational level on the relationship between locus of control and shift.

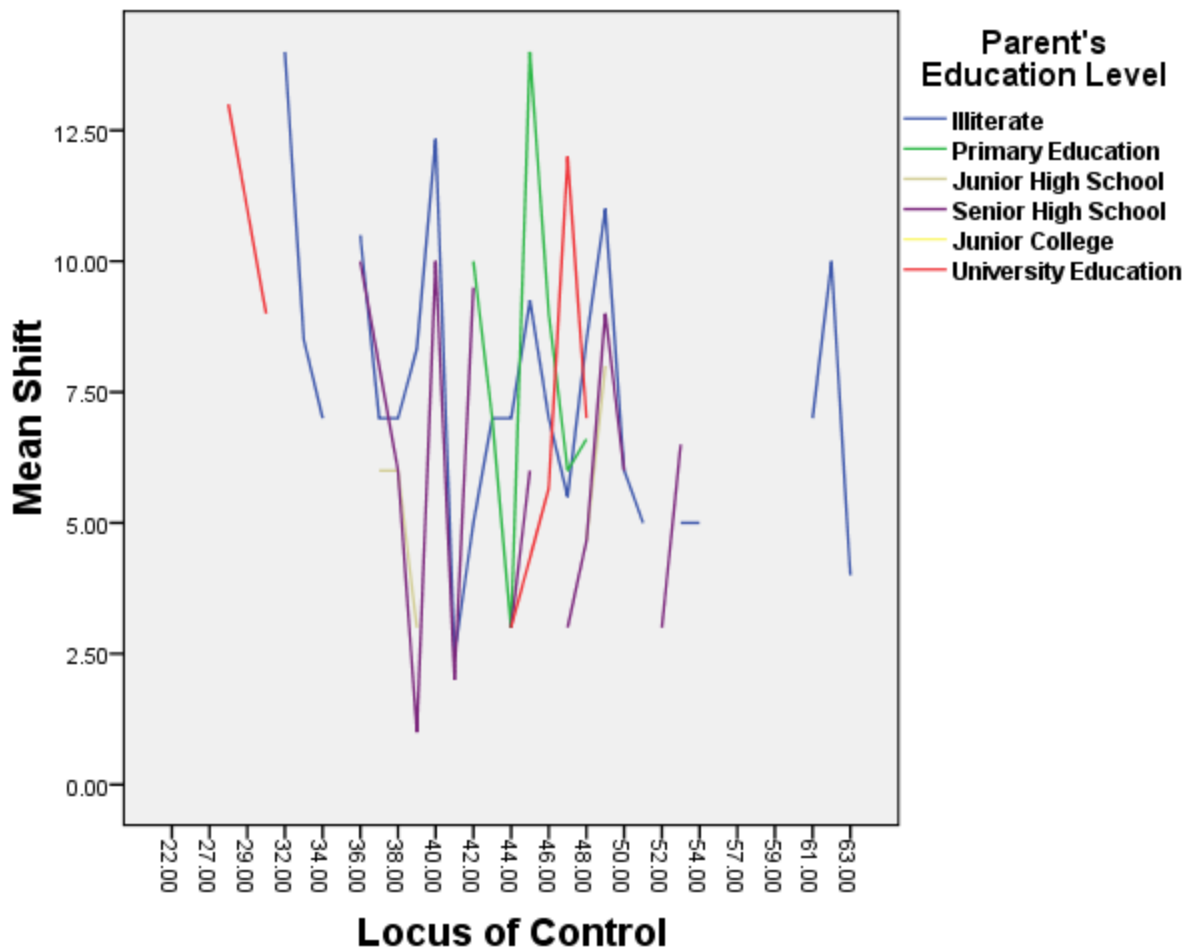


Figure 11: The moderating effect of parent's educational level in the relationship between locus of control and shift.

#### 4.4.6. Parent's Educational Level Moderating the Relationship between Memory Accuracy and Suggestibility Variables

To examine the moderating effect of parent's educational level in explaining relations between memory accuracy and suggestibility, hierarchical regression analysis was performed on parent's educational level and memory accuracy. Results shown in Table 21 revealed that memory accuracy was a statistically significant predictor of suggestibility while parent's educational level was not. The model explained 17.90 percent of the variance in suggestibility,  $F(2,132) = 14.428$ ,  $P < 0.05$ .

The result of moderated multiple regression analysis, also shown in Table 21, indicated that the interaction between parent's educational level and memory accuracy was a statistically nonsignificant negative predictor of suggestibility. The result of the moderated regression analysis revealed that the interaction of parent's educational level and memory accuracy explained a statistically nonsignificant incremental variance change of 1.50 percent in suggestibility,  $F(1, 131) = 2.453, P > 0.05$ .

Table 21. The Moderating Effect of Parent's Educational Level on Memory Accuracy

Variable	Suggestibility			Yield 1			Shift		
	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$	$\beta$	$R^2$	$\Delta R^2$
Memory accuracy	-0.422*			-0.323*			-0.398*		
Parent's educ. level	-0.062	0.179*	-----	-0.014	0.104*	-----	-0.132	0.171*	-----
Memory accuracy X Parent's edu. Level	-0.523	0.194	0.015	-0.470	0.116	0.012	-0.417	0.181	0.010

\* $P < 0.05$ ;  $\Delta R^2$  refers to changes in  $R^2$

Table 21 further indicated that memory accuracy was a statistically significant negative predictor of yield 1 while parent's educational level tuned to be a nonsignificant predictor. The model explained 10.40 percent of the variance in yield 1,  $F(2, 132) = 7.671, P > 0.05$ .

Like the case with yield 1, memory efficacy was a statistically significant negative predictor of shift while parent's educational level was not, and they explained 17.10 percent of the variance in shift,  $F(2, 132) = 13.645, P > 0.05$ . Result in Table 21 also revealed that the interaction of parent's educational level and memory accuracy was a statistically nonsignificant negative predictor of shift. The table indicated that the interaction between memory accuracy and parent's educational level explained a significant amount of incremental variance change of 1 percent in shift,  $F(1, 131) = 1.529, P < 0.05$ .

#### 4.4.7. Subgroup Analyses

In order to facilitate interpretation of the interaction, the subgroup analysis method was used to describe the nature of the interactions in moderated regression analyses (Cohen & Cohen, 1975; Stone, 1988). Specifically the significant interaction indicates that the effects of psychological constructs on suggestibility variables depend on family characteristics. Figures 1-11 provide illustration of the interaction (refer section 4.4). To provide additional support for the nature of the interaction between family characteristic variables and psychological constructs, results of the correlational subgroup analyses are presented in this section (as suggested by Jaccard et al., 1990; Sharma et al., 1981). For descriptive purposes, parenting style was split at the median into four groups namely authoritative (n=58), authoritarian (n = 19), indulgent (n = 20) and negligent (n = 38).

With respect to parent's educational level the sample was split into six groups in terms of the highest educational level attained by the parents: Illiterate (n=50), primary education level (n = 16), Junior high school level (n = 18), senior high school (n = 28), Junior college level (n = 2), and university education (n = 21). No correlation analysis was tested in junior college level because the number of participants in Junior college level was low despite a reasonably large sample size of the study (n= 135).

##### 4.4.7.1. Parenting Style and Suggestibility Variables

To assess the interaction between parenting style and late adolescents' psychological constructs in predicting suggestibility variables, the relationship between psychological constructs and suggestibility variables was assessed separately for the four groups: authoritative, authoritarian, indulgent and negligent parents. Results in Table 22, revealed that for late adolescents living with authoritative parents, conscientiousness was negatively related to suggestibility ( $r = -0.294$ ,  $P < 0.05$ ) and shift ( $r = -0.283$ ,  $P < 0.5$ ). In contrast, for late adolescents who are living with authoritarian, indulgent, and negligent parents, conscientiousness was not related to suggestibility variables. Similarly, for late adolescents who are living either with authoritarian, indulgent or negligent parents extraversion was not also related to suggestibility variables.

Results also shown in Table 22 revealed that, for late adolescents who are living with authoritative parents, locus of control was negatively related to suggestibility variables particularly to suggestibility ( $r = -0.441, P < 0.05$ ), yield 1 ( $r = -0.297, P < 0.05$ ) and shift ( $r = 0.458, P < 0.05$ ). In contrast, for late adolescents who are living with authoritarian and indulgent parents, locus of control was not related to suggestibility variables.

The results in Table 22, further showed that for late adolescents who are living with authoritative parents, memory accuracy was negatively related to suggestibility ( $r = -0.578, P < 0.05$ ), yield 1 ( $r = -0.512, P < 0.05$ ) and shift ( $r = -0.470, P < 0.05$ ). Similarly, for late adolescents who are living with authoritarian parents, memory accuracy was negatively related to suggestibility ( $r = 0.304, P < 0.05$ ). In contrast, for adolescents who are living with indulgent and negligent parents, memory accuracy was not related to suggestibility variables.

Table 22. Relationship among Psychological Constructs and Parenting Style Variables

Variable	Authoritative parents			Authoritarian Parents			Indulgent Parents			Negligent parents		
	<b>Suggest- Ibilitty</b>	<b>Yield 1</b>	<b>Shift</b>	<b>Suggest- ibility</b>	<b>Yield 1</b>	<b>Shift</b>	<b>Suggest -ibility</b>	<b>Yield 1</b>	<b>Shift</b>	<b>Suggest -ibility</b>	<b>Yield 1</b>	<b>Shift</b>
Extraversion	0.094	-0.067	0.178	0.329	0.163	0.330	0.258	0.332	0.140	-0.151	-0.022	-0.229
Conscientiousness	-0.294*	-0.128	-0.283*	0.029	-0.304	0.247	0.169	0.124	0.152	0.160	0.032	0.323
Locus of Control	-0.441*	-0.297*	-0.456*	-0.045	-0.192	0.071	-0.033	0.180	-0.161	-0.057	-0.047	-0.040
Memory accuracy	-0.578*	-0.512*	-0.470*	-0.304*	-0.400	-0.135	-0.010	0.332	-0.227	-0.246	-0.126	-0.266

\* P &lt; 0.05

#### **4.4.7.2. Parent's Educational Level and Suggestibility Variables**

To assess the interaction between parent's educational level and late adolescents' psychological constructs in predicting suggestibility variables, the relationship between psychological constructs and suggestibility variables was assessed for the five groups: Illiterate, primary education level, Junior high school level, senior high school level and university education.

Table 23. Relationship among Psychological Constructs and Parent's Educational Level

Variable	Illiterate parents			Primary education level			Junior high school level			Senior high school level			University education		
	Sugg	Y <sub>1</sub>	Shi	Sugg	Y <sub>1</sub>	Shi	Sugg	Y <sub>1</sub>	Shi	Sugg	Y <sub>1</sub>	Shi	Sugg	Y <sub>1</sub>	Shi
Social desirability	-0.177	-0.163	-0.035	0.154	-0.215	0.267	0.057	-0.124	0.237	0.360	0.130	0.440*	0.173	0.272	0.075
Locus of Control	-0.062	0.020	-0.068	-0.293	-0.248	0.207	-0.257	-0.487	0.134	-0.090	0.086	-0.192	-0.594*	-0.377	-0.646*

\* P &lt; 0.05

Results in Table 23 revealed that, for late adolescents living with parents having senior high school educational level, social desirability was positively related to shift score ( $r = 0.440$ ,  $P < 0.05$ ). The table also indicated that for late adolescents living with parents having university education, locus of control was negatively related to suggestibility ( $r = -0.594$ ,  $P < 0.05$ ) and shift ( $r = -0.646$ ,  $P < 0.05$ ).

## CHAPTER FIVE

### DISCUSSION

The central research problem in this study has been to explore the moderating role of family characteristics in explaining relations between psychological constructs and suggestibility variables. The discussion regarding this central issue is presented along the following three sections. This chapter begins with the discussion of family characteristics and psychological constructs as predictors of suggestibility variables, followed by discussion of the moderating role of parenting style in explaining relations between psychological constructs and suggestibility variables in section two. Finally, the discussion of parents' educational level moderating the relationship between psychological constructs and suggestibility variables is presented in the third section.

#### **5.1. Family Characteristics and Psychological Constructs as Predictors of Suggestibility Variables**

This study examined the question of whether psychological constructs are significant predictors by investigating their relationship to suggestibility variables; and whether family characteristics moderate the relationships between psychological constructs and suggestibility variables. Prior research studies into interrogative suggestibility have focused attention on the effects of psychological constructs on interrogative suggestibility (Bruck et al., 1997) with primary focus on the association of suggestibility with cognitive, psychosocial and to a lesser degree, demographic variables. This study in contrast ventured to consider suggestibility variables as the dependent variables and psychological constructs as the predictors. In addition, it provides significant insights into the influences of family characteristics on the relationship between psychological constructs and suggestibility variables. In essence, it lends to the criticism supported by McFarlane et al. (2002) and Bruck and Melnyk (2004). They argue that psychological constructs alone are inadequate in explaining suggestibility.

Suggestibility is not related to a single cognitive or psychosocial domain, but may in fact be related to a combination of the two. Accordingly, this study incorporated variables from different levels of analysis including psychological constructs, suggestibility variables and family characteristics. In this regard, examination of the relation of family characteristics and psychological constructs of suggestibility variables might help to understand the influence of family characteristics and psychological constructs on suggestibility variables.

Results in the correlational analysis revealed that parenting style was related significantly and negatively to conscientiousness, agreeableness, openness to experience, yield 1 and shift, but was related positively to memory accuracy. Both suggestibility and shift were related significantly and negatively to extraversion, locus of control, and memory accuracy but were related positively to yield 1.

The data showed that scores derived from the specified family characteristics, psychological constructs and suggestibility variables were significant in 33 of 103 computed correlation coefficients. The results provided general support for the relative efficacy of different family characteristics and psychological constructs correlated to suggestibility. Hence, the family characteristics and psychological constructs are important in understanding interrogative suggestibility variables.

Closer examination of the correlation analysis shows that locus of control was positively related to conscientiousness, agreeableness, openness to experience, memory accuracy and memory efficacy, but negatively related to neuroticism and social desirability. In this study, therefore, only memory accuracy appear to be the source of individual differences in suggestibility variables, namely, suggestibility, yield 1, and shift. The results from this study therefore support Gudjonsson and Clark's (1986) argument that interrogative suggestibility is negatively correlated with memory.

The negative relationship of suggestibility with memory functioning is well established in adolescent samples (Gudjonsson & Clark, 1986). Therefore, both adolescents and late adolescents with poor memory tend to be particularly prone to accepting suggestions in an

interrogative situation. These results indicate that free recall or suggestibility is mediated by memory in those age groups. The results from this study therefore provide confirmation that memory recall correlate negatively and significantly with interrogative suggestibility. However, this conclusion was challenged by Liebman et al. (2002) stating that suggestibility was predicted by facets of the extraversion and conscientiousness domains (activity and competence, respectively), which have the common denominator of activity patterns (Costa & McCrae, 1992). Specifically, individuals who yielded to leading questions tended to be more leisurely and relaxed in tempo, while individuals who shifted in response to negative feedback tended to have a low opinion of their abilities. Chae (2004) found that high emotionality was correlated with high suggestibility in a sample of Korean children; however, after controlling for age, the relationship was found to be nonsignificant. Chen (2002) and Scullin (1997) unexpectedly found that high emotionality was related to low suggestibility scores. Thus temperament, as measured in this section, does not correlate with children's suggestibility.

Unlike the findings of this study, some other studies produced a mixed picture. A substantial relationship between memory and suggestibility has been established for adults (Gudjonsson, 1983; Singh & Gudjonsson, 1984) and the same was confirmed for 8-, 10- and 12-year-old children, except for yield suggestibility in 8 year-old children. In 6-year-old children, memory did not correlate significantly with suggestibility, although all the correlations were negative. Unlike adults, 6-year-old children either have problems in processing the story, articulating their free recall or that suggestibility is not mediated by memory in those age groups.

The failure to find a consistent relationship between memory accuracy and suggestibility warrants further explanation. A possible explanation for these results indicates that the samples of subjects differed somewhat across studies. As for Gudjonsson (1983) and Singh and Gudjonsson (1984), since they tested mainly 8-, 10- and 12-year-old children, their results are not easily comparable with those obtained in this study.

Further examination of the correlational analysis revealed that none of the personality traits was related to the Shift, Yield 2, Yield 1 and total suggestibility scores. This result may suggest that different kinds of suggestibility exist. Gudjonsson and Clark (1986) emphasized that the

necessary conditions for the suggestibility to occur are uncertainty about the correct answer, trust in the interviewer, and the reluctance to decelerate the uncertainty. In addition, low sense of efficacy may increase the suggestibility of a person by making the interviewee more prone to try to please the interviewer as well as more vulnerable to any negative social feedback. Similarly, Nurmoja (2005) reported that the only correlation between suggestibility and personality variables that proved to be significant was between Yield 2 and Shift of suggestibility. Furthermore, Nurmoja (2005) reported that respondents who have low sense of self-esteem are prone to be more suggestible in terms of interrogative suggestibility, especially when leading questions are asked and negative feedback is given.

The patterns of correlations in this study indicate that suggestibility is not a homogenous construct but consists of at least two different components namely, individual factor and situational influences. One component might be interpreted as individual factor, if it is significantly correlated with locus of control and is represented most clearly by shift and suggestibility. The second component, represented by shift, yield 1, yield 2, and suggestibility and the low correlations with the other personality variables and the low reliability coefficient point to situational influences. Thus, auditory and visual suggestibility scale has the advantage of measuring the impact of both suggestive questions (Yield) and interpersonal pressure (Shift).

Similar to the findings of the study by Liebman et al. (2002) this study reported nonsignificant correlations between suggestibility scores and the four personality factors from the NEO-PI-R (Costa & McCrae, 1992). This indicates that interrogative suggestibility may be independent from the basic personality traits. This outcome replicates the finding by Liebman et al. (2002) who correlated scores on the NEO-PI-R (Costa & McCrae, 1992) questionnaire with the suggestibility and reported only four significant correlations, out of the 140 computed. Neither Liebman et al. (2002) nor this study however found any correlation between neuroticism and interrogative suggestibility. In contrast, Wolfradt (2003) reported a positive correlation between interrogative suggestibility and the Neuroticism scale from the NEO-FFI questionnaire. Some technical reasons may partially account for these discrepancies. That is some instruments used in the present study were different than in the experiments mentioned above. In preceding research, the Eysenck Personality Questionnaire was commonly used for assessing neuroticism

(Watson & Friend, 1969), whereas in this study, the NEO-FFI (Costa & McCrae, 1992) was used as measure of personality. Another explanation for the lack of replication of some previously reported results may simply be the fact that correlations between interrogative suggestibility and personality traits are usually weak and might not prove significant in all studies. Only a meta-analysis can bring more conclusive evidence in this case.

Based on results of the correlational analysis, both suggestibility and shift were related significantly and negatively to locus of control. Similarly, Liebman et al. (2002) emphasized that college students with an external locus of control tended to yield to leading questions. This relationship between external locus of control and suggestibility was also found by Gudjonsson and Lister (1984) and Paddock et al. (1998). Studies by Gudjonsson and Lister (1984) as well as Paddock et al. (1998) found that individuals with an external locus of control were more suggestible than individuals with an internal locus of control. This conclusion was however challenged by Polczyk (2005) who found nonsignificant correlation between interrogative suggestibility and locus of control. One possible technical explanation may partially account for this discrepancy. In this study, where a significant correlation between locus of control and interrogative suggestibility was found, an adapted form of Levenson (1981) locus of control scale was used as measure of locus of control, whereas in Polczyk's (2005) study the Internal-external locus of control scale by Rotter (cited in Polczyk, 2005) was applied.

Results from the multiple regression analysis revealed that memory accuracy was a significant, independent, negative predictor of suggestibility, yield 1, and shift. Both family characteristics and psychological constructs together explained 26 percent of the variance in suggestibility, 16.5 percent in yield 1 and 27.4 percent in shift. Still 74 percent of the distribution of suggestibility, 83.5 percent of the distribution of yield 1 and 72.6 percent of the distribution of shift scores were left unexplained. These figures demonstrate that the construct of suggestibility is complex and multidimensional; and hence, it is determined by overlapping effects among numerous variables, many of which are yet to be determined. From an applied perspective, knowing the individual factors that make an individual vulnerable to suggestion has far reaching implications to court. As new findings arise, researchers will be in a position to develop more complex theoretical models which can explain the specific individual factors that gave rise to suggestibility effects in

late adolescents and consequently form the basis of recommendations for investigative interviewers, lawyers and other forensic professionals. This type of individual differences approach has great potential to contribute to theory development in eyewitness memory and suggestibility research.

Other variables not examined in this research might, however, explain significant relations between family characteristics, psychological constructs and suggestibility variables. In this case, such family characteristics and psychological constructs as intelligence, learned helplessness, self-concept, anxiety, self-esteem, income, and occupational status might play a role. For example, Gudjonsson and Clark (1986) provide evidence supporting the cognitive variables influencing interrogative suggestibility. They provide confirmation that intellectual functioning correlate negatively and significantly with interrogative suggestibility. Similar to the findings of this study, multiple regression analysis results showed that memory was the variable that explained most of the distribution of suggestibility scores (Danielsdottir et al., 1993). Still 82 percent of the distribution of yield and total suggestibility scores and 89 percent of shift suggestibility were left unexplained. Furthermore, Hansdottir et al. (1990) in an Icelandic study found that anxiety manipulation significantly affected suggestibility. Gudjonsson (1988) has observed that suggestibility correlated positively with high social-evaluative anxiety and negatively with state anxiety.

## **5.2. The Moderating Role of Parenting Style in Explaining Relations between Psychological Constructs and Suggestibility Variables**

One of the goals of this study was to examine the moderating role of parenting style that could lead to understand the relation between late adolescents' psychological constructs and suggestibility variables. In this study, an interaction between parenting style, defined as late adolescents' perception of their parents with respect to parental warmth and parental control dimension, and each of the personality traits were expected to be moderating to suggestibility. However, little support was found for the proposition that parenting style moderated the relationship between personality traits and suggestibility variables more specifically suggestibility, yield 1 and shift.

The moderating effects of parenting style are generally inconclusive. However, there was some support for parenting style being considered a predictor of suggestibility variables. The results of this study indicated that the interaction between parenting style and extraversion was a significant predictor of shift. One of the most interesting findings in this study was that the interaction of parenting style and extraversion made a statistically significant contribution to shift, accounting for 3.3 percent of the variance in shift. Further findings that emerged from the subgroup analysis revealed that the negative effect of extraversion on shift was not different for late adolescents living with different parents. This finding is important given that it is the first case in which parenting style has been found to moderate relations between extraversion and shift in a late adolescent group. As new findings emerge and researchers gain a better understanding of the moderating role of parenting style in explaining relations between psychological constructs and suggestibility, more effective interview techniques can be developed. The result of this study has implications for investigative interviewers as the result showed that knowledge about parenting style may be helpful in determining the late adolescents' capacity to provide accurate details of an event and to resist misleading information provided by an interviewer.

As was predicted in this study, the interaction between parenting style and conscientiousness was a significant predictor of suggestibility and shift. The result of the subgroup analysis revealed that, for late adolescents who experienced high levels of parental control and acceptance, conscientiousness was negatively related to suggestibility and shift. Accordingly, high parental control and acceptance make statistically significant contributions in explaining suggestibility and shift. Consistent with the initial expectation, the interaction of parenting style and conscientiousness made a significant contribution to suggestibility and shift, accounting for 3.2 percent of the variance in suggestibility and 3 percent of the variance in shift. Further examination of the results of this study revealed that for late adolescents who had high levels of parental acceptance and control, conscientiousness was negatively related to suggestibility and shift. High levels of parental control and acceptance make significant contributions in explaining relations between conscientiousness and suggestibility variables particularly to suggestibility and shift. This finding is important for the purpose of the study in which parenting style has been

found to moderate the effect of conscientiousness on suggestibility and shift in a late adolescent sample. However, the finding of the subgroup analysis is contravened with the study done by Crossman (2001) who found that authoritative mothering was associated with high suggestibility. On the other hand, Burgwyn-Bailes et al. (2001) found that permissive parenting was associated with suggestibility (only in young preschoolers), and Imhoff and Baker-Ward (1999) found no relationships at all. Findings of this study are also inconsistent with Clarke-Stewart et al. (2004) which concluded traditional parenting by fathers but not mothers was associated with children's suggestibility. Although all these studies in this group used similar measures to tap authoritative, traditional, and permissive styles of parenting, included children of the same age range (3 to 7 year olds), and used misleading questions as the suggestibility measure, the results were not consistent.

A possible explanation for the disparity of the obtained results indicated that the samples of subjects differed somewhat across studies. As for Crossman (2001), Burgwyn-Bailes et al. (2001), Imhoff and Baker-Ward (1999) and Clarke-Stewart et al. (2004), their results are not easily comparable with those obtained in this study, since they tested mainly children of the same age range (3 to 7 year olds).

The results of the moderated regression analysis revealed that parenting style was a significant predictor of suggestibility in explaining relations between personality constructs and suggestibility variables, more precisely suggestibility and shift. The results further showed that parenting style is a significant predictor of suggestibility and shift, rather than moderating the effect of openness to experience, neuroticism, extraversion and agreeableness on them. Similar to the findings of this study, Clarke-Stewart et al. (2004) reported that children were significantly more suggestible if their parents held more traditional views; that is, if they believed that the most important thing to teach children was obedience to authority.

The results of this study also indicated that parenting style was identified as moderator in explaining the relationship between locus of control and suggestibility and shift. The results of the subgroup analysis specifically revealed that, sense of control was negatively related to

suggestibility, yield 1 and shift for late adolescents who experienced low levels of parental control and acceptance.

Further examination of the regression analysis also brought to light that parenting style was a significant predictor of suggestibility in explaining relations between locus of control, suggestibility and shift. The result implied that parenting style is a moderator of suggestibility and shift. In a similar vein, parenting style was found to have direct effect on suggestibility, yield 1, and shift. Burgwyn-Bailes et al. (2001) emphasized that children's suggestibility is related to their parent's disciplinary strictness. They reported a significant relationship between stricter parenting (more traditional, authoritarian attitudes) and lower levels of suggestibility. However, this association was not found in another study (Imhoff & Baker-Ward, 1999). Moreover, aspect of parenting style, typically associated with more traditional, authoritarian views on child-rearing, predicted higher levels of suggestibility (Alexander et al., 2002; Geddie et al., 2000; McFarlane et al., 2002).

There are ample evidences in this study that show the moderating role of parenting style in explaining relations between memory accuracy and suggestibility variables. The results of this study indicated that the interaction between parenting style and memory accuracy was a significant positive predictor of suggestibility and yield 1. The interaction explained a significant amount of incremental variance in suggestibility and yield 1. Parenting style made a significant contribution to suggestibility and yield 1, accounting for 24.8 percent of the variance in suggestibility and 3.4 percent of the variance in yield 1. These findings were important given they were the pioneering case in which parenting style has been found to moderate suggestibility and yield 1 in the late adolescent sample. However, parenting style was found to significantly influence shift. This indicated that parenting style is a significant predictor of shift, rather than moderating the relationship between memory accuracy and shift. On the other hand, the result of this study provides new evidence that parenting style has been found to moderate suggestibility and yield 1 in the late adolescent sample. This is by far a new finding that actually demonstrates that parenting style moderates the effect of memory accuracy on suggestibility and yield 1. This finding therefore highlights the necessity for research work focusing on how well the individual factors are moderated by parenting style in the future.

### **5.3. Parent's Educational Level Moderating the Relationship between Psychological Constructs and Suggestibility Variables**

In this study, the second moderator of the relationship between psychological constructs and suggestibility variables examined was parent's educational level. The interaction between parent's educational level, defined in terms of the highest educational level attained by parents and late adolescents' personality constructs was expected to be significant in this study. However, results revealed that parent's educational level was neither a predictor nor a moderator variable. Parent's educational level thus makes no significant contribution in explaining relations between late adolescents' personality traits and suggestibility variables. Similarly, Pollard (2004) emphasized that interrogative suggestibility was found to be unrelated to socioeconomic groupings as determined by occupational status or years of education on a sample of US citizens.

Further results of this study however indicated that the interaction between parent's educational level and social desirability was a significant predictor of suggestibility and yield 1. Parent's educational level makes a significant contribution in explaining relations between social desirability and yield 1. In this regard, parent's educational level is a moderator, rather than a predictor in explaining relations between social desirability and suggestibility variables. On the other hand, parent's educational level made a significant contribution to suggestibility (accounting for 2.9 percent of the variance in suggestibility) and to yield 1 (accounting for 3.8 percent of the variance in yield 1). The subgroup analysis revealed that the positive effects of social desirability on suggestibility and yield 1 were not different for late adolescents living with parents with different educational level. This finding was important for the purpose of the study in which parent's educational level has been found to moderate relations between the effects of social desirability on suggestibility and yield 1 in late adolescent group. This finding therefore highlights the necessity for further research work focusing on how well the individual factors are moderated by parent's educational level in the future.

Further examination of the interaction effect of parent's educational level and late adolescent's sense of control revealed that parent's educational level is a significant predictor of suggestibility and shift. The result specifically indicated that late adolescents living with parents having

university education, sense of control was negatively related with suggestibility and shift. Parent's educational level makes a significant contribution in explaining relations between late adolescents' sense of control and suggestibility variables namely suggestibility and shift. One of the most interesting findings in this study was that parent's educational level made a significant contribution to suggestibility and shift, accounting for 3 percent of the variance in suggestibility and 3.2 percent of the variance in shift. The subgroup analysis revealed that for late adolescents living with parents having university education, sense of control was negatively correlated with suggestibility and shift. This finding is, therefore, important given that it is the first case in which parent's educational level has been found to moderate the effect of late adolescents' sense of control on suggestibility and shift . Since this is presumably the first study to report the moderating effect of parent's educational level on the relationship between sense of control and suggestibility, it is imperative that further research need to be conducted to see if this finding can be verified.

This study also predicted that an interaction between parent's educational level and late adolescents' memory accuracy was expected. However, no support was found for the assumption that parent's educational level moderated the relationship between memory accuracy and suggestibility variables. Parent's educational level was neither predictor nor moderator in explaining relations between late adolescents' memory accuracy and suggestibility variables. Similar to the findings of this study Geddie et al. (2000) also failed to find a significant relationship between SES (where SES is measured on the basis of education and occupation category alone) and suggestibility using a preschool sample.

In sum, the most important implication emerged in the findings of this study partially support the assumption that psychological constructs would be moderated by parenting style and parent's educational level. Since this is the first study to examine the moderating effect of parenting style and parent's education level on the relationship between psychological constructs and suggestibility variables in a late adolescent sample in Bahir Dar city administration, care must be taken when using the results.

## **CHAPTER SIX**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

This chapter provides a summary of the major findings, conclusions and recommendations of the study. The first section of the chapter begins with a brief overview of the study, followed by summary of the empirical findings vis-à-vis the research questions posed in chapter 1 and conclusions of the study. Finally recommendations are drawn in section 2.

#### **6.1. Summary and Conclusions**

The purpose of this study was to examine the moderating role of family characteristics in explaining relations between psychological constructs and interrogative suggestibility variables. Accordingly, the following research questions were raised in the study:

1. Are memory efficacy, social desirability, and locus of control (all of them are sense of perceived control variables) significantly relate to late adolescents' memory accuracy and interrogative suggestibility variables?
2. Do adolescents' conscientiousness, agreeableness, extraversion, neuroticism, and openness to experience (all of them are personality traits) significantly relate to late adolescents' memory accuracy and interrogative suggestibility variables?
3. Is there a significant relationship among parenting style, parents' educational level (both of them are family characteristics), sense of perceived control and personality traits?
4. Does each of the specified family characteristics, sense of perceived control, personality traits, and memory accuracy significantly predict interrogative suggestibility variables?
5. Does each of the specified family characteristics moderate the relationship between personality traits and interrogative suggestibility variables?
6. Does each of the specified family characteristics moderate the relationship between sense of perceived control variables and interrogative suggestibility variables?
7. Does each of the specified family characteristics moderate the relationship between memory accuracy and interrogative suggestibility variables?

Data for the study were drawn from 135 Bahir Dar Preparatory School students. Data pertaining to family characteristics, psychological constructs and suggestibility variables were collected from the respondents using questionnaire and scales. The Gudjonsson Suggestibility Scale was adapted to collect data from preparatory school students about memory accuracy and suggestibility when the context is a bimodal event. The perceived control self-report inventories were used to measure the perceptions of individuals about their abilities and competencies. Buchanan's Five Factor Personality Inventory was adapted to measure personality traits. Besides, background information questionnaire was used to collect data about parenting style and parents' educational level.

Accordingly, the study employed correlational, multiple regression and hierarchical regression analyses in line with the specific purposes of the study. Initially, correlational analysis was employed to make an overview of possible overlaps among predictor variables and also to have an idea about variables most related to suggestibility variables. Multiple regression analysis was employed to examine the independent effect of family characteristics and psychological constructs on suggestibility variables. Moreover, regression analysis was undertaken hierarchically to test for significant interaction effects of family characteristics and psychological constructs over and above the simple effects of the family characteristics and psychological constructs. Finally, a subgroup analysis was employed to provide additional insight into the nature of the interaction between family characteristic variables and psychological constructs.

Closer examination of the findings of this study revealed the following specific points.

1. Parenting style was related significantly and negatively to conscientiousness, agreeableness, openness to experience, yield 1 and shift but was related positively to memory accuracy. On the other hand, parents' educational level was not related to the psychological constructs and suggestibility variables.
2. Indices of psychological constructs were not significantly related to suggestibility variables with two exceptions: that is, locus of control and memory accuracy were related

significantly and negatively to shift and suggestibility. Memory accuracy significantly predicts suggestibility, yield 1, and shift.

3. Parenting style moderates the relationship between extraversion and shift.
4. Parenting style moderates the relationship between conscientiousness and locus of control and suggestibility variables namely suggestibility and shift.
5. Parenting style moderates the relationship between memory accuracy and suggestibility variables particularly to suggestibility and yield 1.
6. Parent's educational level moderates the relationship between social desirability and suggestibility variables such as suggestibility and yield 1.
7. Parent's educational level moderates the relationship between locus of control and suggestibility variables particularly to suggestibility and shift.

The study was conducted on a late adolescent group in Bahir Dar city administration. The participants of this study came from 135 Amharic speaking families. Considering this representative sample size and the homogeneity of the population, the limited generalizability of the finding should be considered when concluding the results. Therefore, the general conclusion of this study is that family characteristics are found to be important to understand the dynamics of suggestibility variables. This study has clearly shown the effects of family characteristics on the relations between psychological constructs and suggestibility variables. The findings clarify the conditions under which family characteristics and psychological constructs can influence late adolescents' interrogative suggestibility.

Closer examination of the correlation analysis revealed that late adolescents' personality traits did not correlate with suggestibility, yield 1 and shift. Similarly, indices of sense of perceived control variables were not significantly related to suggestibility variables with one exception: that is locus of control, which was related significantly and negatively to shift and suggestibility. The conclusion that further emerged indicated that memory accuracy significantly predicts suggestibility, yield 1, and shift. Thus the patterns of correlations in this study showed that suggestibility is not a homogenous construct but consists of at least two different components namely, individual factor and situational influences. One component might be interpreted as

individual factor, as it is significantly correlated with locus of control which is represented most clearly by shift and suggestibility.

The second component is represented by shift, yield 1, yield 2, and suggestibility but the low correlations with the other personality variables and the low reliability coefficient point to situational influences. Thus, auditory and visual suggestibility scale has the advantage of measuring the impact of both suggestive questions (Yield) and interpersonal pressure (Shift).

Furthermore, evidence for the moderator effect of family characteristics were shown by moderated regression analysis of the relationship between psychological constructs and suggestibility variables. Accordingly, the specific conclusions drawn from the findings are:

1. Parenting style was found to moderate relations between personality constructs and suggestibility variables, in a late adolescent group. The interaction between parenting style and personality constructs namely extraversion and conscientiousness was a significant predictor of suggestibility and shift. Specifically, parenting style was found to moderate relations between extraversion and shift in a late adolescent group. However, the negative effect of extraversion on shift was not different for late adolescents who live with different parents. On the other hand, parenting style was found to have a moderator effect on suggestibility and shift. Thus, for late adolescents who experienced high levels of parental control and acceptance, conscientiousness was negatively related to suggestibility and shift. The relationship between conscientiousness and suggestibility variables particularly to suggestibility and shift is more negative for late adolescents who experienced high levels of parental control and acceptance than for late adolescents who experienced either high level of parental control and low level of acceptance, low level of parental control and high level of acceptance, or low levels of parental control and acceptance.
2. Parenting style was also identified as a moderator variable in explaining relations between locus of control and suggestibility, yield 1 and shift. Specifically, for late

adolescents who experienced low levels of parental control and acceptance, sense of control was negatively related to suggestibility, yield 1 and shift. The relationship between locus of control and suggestibility variables such as suggestibility and shift is more negative for late adolescents who experienced low levels of parental control and acceptance than for late adolescents who experienced either high level of parental control and low level of acceptance, low level of parental control and high level of acceptance or low levels of parental control and high level of acceptance.

3. Parenting style moderated relations between memory accuracy and suggestibility variables particularly to suggestibility and yield 1 in the late adolescent group. The results of the study indicated that the interaction between parenting style and memory accuracy was a significant positive predictor of suggestibility and yield 1. The interaction explained a significant amount of incremental variance change in suggestibility and yield 1. Thus, the positive effects of memory accuracy on suggestibility and yield 1 were not different for late adolescents living with parents who employed different types of parenting styles.
4. Parent's educational level was found to moderate relations between sense of perceived control variables and suggestibility variables. Specifically, parents' educational level was a moderator in explaining relations between social desirability and suggestibility variables such as suggestibility and yield 1. However, the positive effects of social desirability on suggestibility and yield 1 were not different for late adolescents living with parents having different educational level. On the other hand, the interaction effect of parent's educational level and late adolescent's sense of control revealed that parents' educational level was a significant predictor of suggestibility and shift. The result indicated that for late adolescents living with parents having university education, sense of control was negatively related with suggestibility and shift. The relationship between late adolescents' sense of control and suggestibility variables particularly to suggestibility and shift is more negative for late adolescents living with parents

having university education than for late adolescents living with parents having either primary education, junior high school education, senior high school education, junior college education, or with illiterate parents.

## **6.2. Recommendations**

Based on the findings of this study, the following recommendations are forwarded to improve forensic applications of family characteristics and psychological constructs:

1. Although the moderating effects of family characteristics are generally inconclusive, there was some support to consider family characteristics as the moderator of suggestibility variables. This study revealed that the interaction between family characteristics and psychological constructs is significant, but it does not attempt to explain the cause of the interaction. Some of the process variables that should be studied were identified earlier in this study (in section 1.3). It is likely that these processes are interrelated. The identification of the interaction is an important first step in the understanding of the relationship between family characteristics and psychological constructs in affecting suggestibility. Then, the investigation of the cause of the interaction between family characteristics and psychological constructs should be the logical next step in the future.
2. In Ethiopian context, parents' trends of upbringing children can be influenced by several factors such as family size, socio-economic status, gender and religion. In the future, further study must determine the moderating effects of family size, socio-economic status, gender and religion on suggestibility.
3. Since clinicians, police and the courts mostly deal with testimony encoded from visual and auditory perspectives; the visual and auditory suggestibility scale for adolescents should be one of the instruments for measuring interrogative suggestibility. Further study must determine whether the visual and auditory suggestibility scale for late adolescents can be used as a reliable measure of late adolescents' suggestibility. Moreover, further

research should explore whether or not qualitative differences exist between late adolescents' inaccurate reports of true events and their reports of events that are only suggested.

4. In order to determine how family characteristics and psychological constructs are related to late adolescents' memory performance in forensic-style interview situations about both real and imagined events, further investigation of the individual differences in late adolescents' suggestibility should be addressed in a fairly large-scale study. Toward this end, this study has made a good start.
5. Forensic clinicians, police, legal practitioners and the court mostly deal with testimony encoded from visual and auditory perspectives. Therefore, in order to produce relevant research that will have forensic application, it is crucial to use the visual and auditory suggestibility scale on interrogative suggestibility and assess how interrogative suggestibility operates when the context is a real life event. To accomplish this, the experimental and individual difference paradigms need to complement each other by incorporating the basic research knowledge base with the applied pragmatics of the individual differences approach. Collaboration by these two perspectives has great potential to develop clinical tools that could assist clinicians who are providing forensic evaluations and testimony. This issue highlights the necessity for further research work focusing on how well the experimental and individual differences paradigms support the assumption that psychological constructs can be moderated by family characteristic variables. The experimental and individual differences research has the potential to provide even more information to theory development in eyewitness testimony and suggestibility research.
6. In this study, psychological constructs were assessed by analyzing responses offered during the administration of a relatively long psychological constructs (84 items), whereas the memory interview was rather brief (24 questions). Future research should examine the link between psychological constructs and suggestibility variables and/or contradictions made during lengthy memory interviews. Long memory interviews may

provide a better real life analogue to lengthy interrogations used in the real world and should create a clearer picture of the relations between psychological constructs and interrogative suggestibility.

7. Finally, some important difficulties to this study should be noted. Because some items on the personality traits inventory were dropped due to lack of clarity and inconsistencies in the procedures, the group of items was not balanced for items in the five main personality dimensions .It would have been more desirable to have balanced the groups of items for personality dimensions to control for response biases. Also, when assessing the moderating effects of parenting style and parents' educational level in the relationships between psychological constructs and suggestibility variables, it would be more desirable to work with balanced groups of parents in terms of parenting style and educational level, rather than inferring about the moderating effects if the group of parents in the four parenting style and in the six educational level were not balanced.

## REFERENCES

- Abesha Kassie (2011). The influence of parental education and parenting style on students' academic achievement and psychosocial adjustment: with particular reference to Atse Becafa elementary school. Unpublished M. A. Thesis, Bahir Dar University, Bahir Dar.
- Abraham Hussien (1996). Child rearing practices in Silteigna community: Impact on the development of independence and social responsibility, in Habtaum Wondimu (ed.), *Research Papers on the situations of Children and Adolescents in Ethiopia*. Addis Ababa.
- Aiken, L., and West, S. (1986). Use and interpretation of regression analysis models containing interactions and power polynomials [Electronic version]. Unpublished Manuscript, Arizona State University, Tempe.
- Alexander, K., Goodman, G., Schaaf, J., Edelstein, R., Quas, J., and Shaver, P. (2002). The role of attachment and cognitive inhibition in children's memory and suggestibility for a stressful event [Electronic version]. *Journal of Experimental Child Psychology*, 83, 262–290.
- Ambachew Mulalem (2011). The relationships between parenting styles, socio-economic status and academic achievement in Gondar town primary schools. Unpublished M. A. Thesis, Bahir Dar University, Bahir Dar.
- American Academy of Child and Adolescent Psychiatry (1997). Practice parameters for the forensic evaluation of children and adolescents who may have been physically or sexually abused. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36, 423–442.
- American Professional Society on the Abuse of Children (1990). *Guidelines for psychosexual evaluation of childhood sexual abuse in young children*. Chicago, IL: Author.
- Amina, M., Alder, V., and Ray, B. (1998). *Psychology and Law: Truthfulness, Accuracy and Credibility*. England: McGraw-Hill-Publishing Company.
- Ann, D., and Stephen, L. (2001). Children's eyewitness reports after exposure to misinformation from parents [Electronic version]. *Journal of Experimental Psychology*, 7, 27-50.
- Ballantina, J. (1989). *The sociology of education*. Upper Saddle River, NJ: Prentice Hall.

- Baron, R., and Kenny, D. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations [Electronic version]. *Journal of Personality and Social Psychology*, Vol. 51, No. 6.
- Bartol, C. (1983). *Psychology and the American Law*. Wadsworth, Belmont, CA.
- Bjorklund, D. (2000). *Children's thinking: Developmental function and individual differences* (3<sup>rd</sup> ed.). Belmont, CA: Wadsworth.
- Brandon, R., and Davies, C. (1973). *Wrongful imprisonment, mistaken convictions and their consequences*. Hamden Conn.: Archon Books.
- Brown, E., Deffenbacher, K., and Sturgill, W. (1977). Memory for faces and the circumstances of the encounter [Electronic version]. *Journal of Applied Psychology*, 62, 311-318.
- Bruck, M., and Melnyk, L. (2004). Individual Differences in Children's Suggestibility: A Review and Synthesis [Electronic version]. *Applied Cognitive Psychology*, 18: 947-996
- Bruck, M., Ceci, S., and Melnyk, L. (1997). External and internal sources of variation in the creation of false reports in children [Electronic version]. *Learning and Individual Differences*, 9, 289-316.
- Buchmanan, T., Johnson, J., and Goldberg, L. (2005). Implementing a five factor personality inventory for use in the internet [Electronic version]. *European Journal of Psychological Assessment*, 21(2); 116-128.
- Buckhour, R. (1974). Eyewitness testimony [Electronic version]. *Scientific American*, 3, 23-31.
- Bull, R. (1995). Interviewing children in legal contexts, in Bull, R., and Carson, D. (Eds.), *Handbook of Psychology in Legal Contexts*. John Wiley and Sons, Inc., 235-246.
- Burgwyn-Bailes, E., Baker-Ward, L., Gordon, B., and Ornstein, P. (2001). Children's memory for emergency medical treatment after one year: the impact of individual difference variables on recall and suggestibility [Electronic version]. *Applied Cognitive Psychology*, 15, 25-48.
- Calicchia, J., and Sebastian, S. (2004). The assessment of interrogative suggestibility in adolescents: Modalities, gender, and cognitive control. *North American Journal of Psychology*, Vol. 6, 1, 1-12.

- Candel, I., Merckelbach, H., and Muris, P. (2000). Measuring interrogative suggestibility in children: Reliability and Validity of the Bonn Test of Statement Suggestibility [Electronic version]. *Psychology, Crime and Law*, 6, 61–70.
- Cassell, W., and Bjorklund, D. (1995). Developmental patterns of eyewitness memory and suggestibility [Electronic version]. *Law and Human Behavior*, 19, 507-532.
- Cassel, W., Roebbers, C., and Bjorklund, D. (1996). Developmental patterns of eyewitness responses to repeated and increasingly suggestive questions [Electronic version]. *Journal of Experimental Child Psychology*, 61, 116–133.
- Ceci, S., Ross, D., and Toglia, M. (1987). Suggestibility of children's memories: psycho- legal implications [Electronic version]. *Journal of Experimental Psychology: General*, 116, 38–49.
- Ceci, S., and Bruck, M. (1993). Suggestibility of the child witness: A historical review and synthesis [Electronic version]. *Psychological Bulletin*, 113, 403–439.
- Ceci, S., and Bruck, M. (1995). *Jeopardy in the courtroom: A scientific analysis of children's testimony*. Washington, DC: American Psychological Association.
- . Ceci, S., and Bruck, M. (1999). The suggestibility of children's memory [Electronic version]. *Annual Review of Psychology*, 50, 419–439.
- Ceci, S., and Friedman, R. (2000). The suggestibility of children: Scientific research and legal implications. *Cornell Law Review*, 86, 33–108.
- Ceci, S., and Huffman, M. (1997). How suggestible are preschool children? Cognitive and social factors in suggestibility [Electronic version]. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36, 948–956.
- Ceci, S., Loftus, E., Leichtman, M., and Bruck, M. (1994). The possible role of source misattributions in the creation of false beliefs among preschoolers [Electronic version]. *International Journal of Clinical Experimental Hypnosis*, 42, 304–320.
- Champoux, J., and Peters, W. (1980). Applications of moderated regression in job design research [Electronic version]. *Personnel Psychology*, 33, 759-783.

- Chao, R. (1994). Beyond parental control and authoritarian parenting style: Understanding Chinese parenting through the cultural notion of training [Electronic version]. *Child Development*, 65, 1111-1119.
- Chen, X., Dong, Q., and Zhou, H. (1997). Authoritative and authoritarian parenting practices and social and school performance in Chinese children. *International Journal of Behavioral Development*, 21, (4), 855-873.
- Clarke-Stewart, A., Thompson, W., and Lepore, S. (1989, April). Manipulating children's interpretations through interrogation, in Goodman, G., (ed.), *Can children provide accurate eyewitness reports?* Symposium conducted at the biannual meeting of the Society for Research in Child Development, Kansas City, MO.
- Clarke-Stewart, K., Malloy, L., and Allhusen, V. (2004). Verbal ability, self-control, and close relationships with parents protect children against misleading questions [Electronic version]. *Applied Cognitive Psychology*, 18, 1037-1058.
- Clifford, B., and Scott, J. (1978). Individual and situational factors in eyewitness testimony [Electronic version]. *Journal of Applied Psychology*, 63, 352-359.
- Coffin, T. (1941). Some conditions of suggestion and suggestibility: a study of certain attitudinal and situational factors influencing the process of suggestion [Electronic version]. *Psychology Monograph*, 53, I-121.
- Cohen, J., and Cohen, P. (1983). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (2<sup>nd</sup> Ed.). Hillsdale, N J: Erlbaum.
- Cohen, R. and Harnick, M.(1980). The susceptibility of child witnesses to suggestion [Electronic version]. *Law and Human Behavior*, 4, 201-210.
- Cohen, G., & Faulkner, D. (1989). Age differences in source forgetting: effects on reality monitoring and eyewitness testimony [Electronic version]. *Psychology and Aging*, 4, 10-17.
- Cunningham, J. (1988). Contributions to the history of psychology: XLVL. The Pioneer work of Alfred Binet on children as eyewitnesses [Electronic version]. *Psychological Reports*, 62, 271-277.

- Danielsdottir, G., Sigurgeirsdottir, S., Einarsdottir, H., and Haraldsson, E. (1993). Interrogative suggestibility in children and its relationship with memory and vocabulary [Electronic version]. *Personality and Individual Differences*, 14, 499–502.
- Darling, N. (1999). Parenting style and its correlate. ERIC Clearinghouse on Elementary and Early childhood Education Champaign IL <<http://eric.faculty.net/databases/Eric-Digests/ed427896>>.
- Daro, D., and Mitchel, L. (1990). *Current trends in child abuse reporting and fatalities: The results of the 1989 Annual 50 States Survey*. Washington, DC: National Commission for the Prevention of Child Abuse.
- Davis, S., and Bottoms, B. (2002). Effects of social support on children's eyewitness reports: a test of the underlying mechanism [Electronic version]. *Law and Human Behavior*, 26, 185–215.
- Deccio, G., Horner, W., and Wilson, D. (1994). High-risk neighborhoods and high-risk families: Replication research related to the human ecology of child maltreatment [Electronic version]. *Journal of Social Service Research*, 18, 123-137.
- Dodd, D., and Bradshaw, W. (1980). Leading questions and memory: pragmatic constraints [Electronic version]. *Journal of Verbal Learning and Verbal Behaviour*, 19, 695-704.
- Duncan, E., Whitney, P., and Kunen, S. (1982). Integration of visual and verbal information in children's memories [Electronic version]. *Child Development*, 53, 1215-1223.
- Eggen, P., and Kauchak, D. (1994). *Educational Psychology* (2<sup>nd</sup> Ed). Englewood Cliff: Simon and Schuster.
- Eisen, M., Danielle, Y., and Laura, M. (2002). Individual differences in eyewitness memory and suggestibility: examining relations between acquiescence, dissociation and resistance to misleading information [Electronic version]. *Personality and Individual Differences*, 33, 553-571.

- Endres, J. (1997). Suggestibility of the child witness: the role of individual differences and their assessment [Electronic version]. *The Journal of Reliability Assessment and Witness Psychology*, 1, 44–67
- Endres, J., Poggenpohl, C., and Erben, C. (1999). Repetitions, warnings, and video: cognitive and motivational components in preschool children's suggestibility [Electronic version]. *Legal and Criminological Psychology*, 4, 129–146.
- Feldman, R. and White, J. (1980). Detecting deception in children. *Journal of Communication*, 30, 121-128.
- Feldman, R., Jenkins, L., and Popoola, O. (1979). Detection of deception in adults and children via facial expressions. *Child Development*, 50, 350-355.
- Flammer, A.(1981).Towards a theory of question asking . *Psychological Research*, 43, 407-420.
- Flin, R., Boon, J., Knox, A., and Bull, R. (1992). Children's memories following a five-month delay. *British Journal of Psychology*, 83,323-336.
- Foley, M., and Johnson, M. (1985). Confusions between memories for performed and imagined actions. A developmental comparison [Electronic version]. *Child Development*, 56, 1145–1155.
- Foley, M., Johnson, M., and Raye, L. (1983). Age-related changes in confusion between memories for thoughts and memories for speech [Electronic version]. *Child Development*, 54, 51–60.
- Foley, M., and Ratner, H. (1998). Distinguishing between memories for thoughts and deeds: The role of prospective processing in children's source monitoring [Electronic version]. *British Journal of Developmental Psychology*, 16, 465–484.
- Geddie, L., Fradin, S., and Beer, J. (2000). Child characteristics which impact accuracy of recall and suggestibility in preschoolers: Is age the best predictor? [Electronic version]. *Child Abuse and Neglect*, 24, 223–235.

- Gheorghiu, V. (1989). The development of research on suggestibility: critical considerations, in Gheorghiu, V., Netter, P., Eysenck, H., and Rosenthal, R. (Eds.), *Suggestion and suggestibility: Theory and research* (pp. 3–56). Berlin: Springer Verlag.
- Gilles, E., and Martine, B. (2009). A psychometric evaluation of the Gudjonsson suggestibility scales: Problems associated with measuring suggestibility as a difference score composite [Electronic version]. *Personality and Individual Differences*, 46; 88–93.
- Goodman, G., and Clark-Stewart, A. (1991). Suggestibility in children's testimony. Implications for child sexual abuse investigations, in Doris, J. (Ed.), *The suggestibility of children's recollections* (pp.92-105). Washington DC: American Psychological Association.
- Goodman, G., and Quas, J. (1997). Trauma and memory: Individual differences in children's recounting of a stressful experience, in Stein, N., Ornstein, P., Tversky, B., and Brainerd J. , (Eds.), *Memory for everyday and emotional events* (pp. 267–294). Hillsdale, NJ: Erlbaum.
- Goodman, G., Rudy, L., Bottoms, B., and Aman, C. (1990). Children's concerns and memory: issues of ecological validity in the study of children's eyewitness testimony, in Fivush, R., and Hudson, J. (Eds.), *Knowing and remembering in young children* (pp. 249–284). New York: Cambridge University Press.
- Gordon, B., Ornstein, P., Nida, R., Follmer, A., Crenshaw, M., and Albert, G. (1993). Does the use of dolls facilitate children's memory of visits to the doctor [Electronic version]? *Applied Cognitive Psychology*, 7, 1–16.
- Gordon, B., Lynne, B., and Peter, A. (2001 ). Children's testimony: A review of research on memory for past experiences [Electronic version]. *Clinical Child and Family Psychology Review*, 4, 2, 157-181.
- Greene, E., Flynn, M., and Loftus, E. (1982). Inducing resistance to misleading information. *Journal of Verbal Learning and Verbal Behavior*, 21, 207–219.
- Greenstock, J., and Pipe, M. (1996). Interviewing children about past events: The influence of peer support and misleading questions [Electronic version]. *Child Abuse and Neglect*, 20, 69–80.

- Grisso, T. (1986). *Evaluating Competencies: Forensic Assessments and Instruments*. Plenum Press, London.
- Gudjonsson, G. (1983). Suggestibility, intelligence, memory recall and personality: an experimental study [Electronic version]. *British Journal of Psychiatry*, 142, 35–37.
- Gudjonsson, G. (1984). A new scale of interrogative suggestibility [Electronic version]. *Personality and Individual Differences*, 5, 303–314.
- Gudjonsson, G. (1986). The relationship between interrogative suggestibility and acquiescence: empirical findings and theoretical implications [Electronic version]. *Personality and Individual Differences*, 7, 195–199.
- Gudjonsson, G. (1987). Historical background to suggestibility: How interrogative suggestibility differs from other types of suggestibility [Electronic version]. *Personality and Individual Differences*, 8, 3.
- Gudjonsson, G. (1988). Interrogative suggestibility: its relationship with assertiveness, social-evaluative anxiety, state anxiety and method of coping [Electronic version]. *British Journal of Clinical Psychology*, 27, 159–166.
- Gudjonsson, G. (1992). *The Psychology of Interrogations, Confessions, and Testimony*. Chichester England: Wiley and Sons LTD.
- Gudjonsson, G. (1997). *The Gudjonsson Suggestibility Scales Manual*. East Sussex, UK: Psychology Press.
- Gudjonsson, G. (2003). *The Psychology of Interrogations and Confessions. A Handbook*. Chichester: Wiley.
- Gudjonsson, G., and Gunn, J. (1982). The competence and reliability of a witness in a criminal court: a case report [Electronic version]. *British Journal of Psychiatry*, 141, 624–627.
- Gudjonsson, G., and Lister, S. (1984). Interrogative suggestibility and its relationship with perceptions of self-concept and control [Electronic version]. *Journal of the Forensic Science Society*, 24, 99–110.

- Gudjonsson, G., and Singh, K. (1984). Interrogative suggestibility and delinquent boys: an empirical validation study [Electronic version]. *Personality and Individual Differences*, 5, 425–430.
- Gudjonsson, G., and Clark, N. (1986). Suggestibility in police interrogation: A social psychological model [Electronic version]. *Social Behavior*, 1, 83–104.
- Gudjonsson, G. and Clark, N. (1995). The relationship between confabulation and intellectual ability, memory, interrogative suggestibility and acquiescence. A parallel form of the Gudjonsson suggestibility scale [Electronic version]. *Personality and Individual Differences*, 19, 333-338.
- Habtamu Wondimu (1979). Child Rearing Practices at Bahir Dar and its Surroundings. Addis Ababa University. (Amharic)
- Haraldson, E. (1985). Interrogative suggestibility and its relationship with personality, perceptual defensiveness and extraordinary beliefs [Electronic version]. *Personality and Individual Differences*, 6, 765-767.
- Hedderman, C. (1987). Children's evidence: the need for corroboration. *Research and Planning. Unit Paper 41*. London: Home Office.
- Hess, R., and McDevitt, T. (1984). Some cognitive consequences of material intervention techniques . A longitudinal study. *Child Development*, 55, 2017-2020.
- Hetherington, E., and Parke, R. (1993). *Child Psychology (4<sup>th</sup>ed.)*. A Contemporary View Point. New York: McGraw Hill Book Company.
- Hilgard, E., and Loftus, E. (1979). Effective interrogation of the eyewitness. *International Journal of Clinical and Experimental Hypnosis*, 27, 342-357.
- Hollingshead, E. (1975). The four factor index of social status. Unpublished Manuscript, Yale.
- Hosch, H., and Platz, S. (1984). Self-monitoring and eyewitness accuracy [Electronic version]. *Personality and Social Psychology Bulletin*, 10, 283-289.

- Hosch, H., Leippe, M., Marchioni, P., and Cooper, D. (1984). Victimization, selfmonitoring, and eyewitness identification [Electronic version]. *Journal of Applied Psychology*, 69, 280-288.
- Howie, P., and Dowd, J. (1996). Self-esteem and the perceived obligation to respond: Effects on children's testimony [Electronic version]. *Legal and Crimological Psychology*, 1, 197-209.
- Hurlock, E. (1978). *Child Development*. Singapore: McGraw-Hill Book Co.
- Heydon, J. (1984). *Evidence, Causes, and Materials*. London: Butterworths.
- Irwin, J., and McClelland, G. (2001). Misleading heuristics and moderated multiple regression models [Electronic version]. *Journal of Marketing Research*, 38(1), 100-109.
- Imhoff, M., and Baker-Ward, L. (1999). Preschoolers' suggestibility: effects of developmentally appropriate language and interviewer supportiveness [Electronic version]. *Journal of Applied Developmental Psychology*, 20, 407-429.
- Jaccard, J., Wan, C., and Turrisi, R. (1990). The detection and interpretation of interaction effects between continuous Variables in multiple regression [Electronic version]. *Multivariate Behavioral Research*, 25 (4), 467-478
- Jackson, S., and Crockenberg, S. (1998). A comparison of suggestibility in 4-year-old girls in response to parental or stranger misinformation [Electronic version]. *Journal of Applied Developmental Psychology*, 19, 527-542.
- Johnsson, M., and Foly, M. (1984). Differentiating fact from reality: the reliability of children's memory. *Journal of Social Issues*, 40, 33-50.
- Kinde Getachew and Mekonnen Sintayehu (2000). Types, magnitude, predictors and controlling mechanisms of aggression in secondary schools of Jimma zone [Electronic version]. *Ethiopian Journal of Education and Science*, Vol .2, No.2, 47-60.
- King, M., and Yuille, J. (1987). Suggestibility and the child witness, in Ceci, S., Toglia, M., and Ross, D.(Eds.), *Children's eyewitness memory* (pp. 24-35).New York: Springer-Verlag.

- Kochanska, G., Kuczynski, L., and Radke-Yarrow, M. (1989). Correspondence between mothers' self-reported and observed child-rearing practices [Electronic version]. *Child Development*, 60, 56-63:
- Leichtman, M., and Ceci, S. (1995). The effects of stereotypes and suggestions on preschooler's reports [Electronic version]. *Developmental Psychology*, 31, 568-578.
- Leseman, P., and Sijtsling, F. (1996). Cooperation and instruction in practical problem solving. Differences in interaction styles of mother-child dyads as related to socio-economic background and cognitive development [Electronic version]. *Learning and Instruction*, 6, 307-323.
- Levenson, H. (1981). Differentiating among internality, powerful others, and chance, in Lefcourt, H. (Ed.), *Research with the Locus of Control Construct*. New York: Academic Press, pp. 15-63.
- Liebman, J., Marcia, J., McKinley-Pace, A., Laura, A., Casey, L., Mary, E., and Elyse, B. (2002). Cognitive and psychological correlates of adults' eyewitness accuracy and suggestibility [Electronic version]. *Personality and Individual Differences*, 33, 49-66.
- Lindsay, D., Johnson, M., and Kwon, P. (1991). Developmental changes in memory source monitoring [Electronic version]. *Journal of Experimental Child Psychology*, 52, 297-318.
- Lipton, J. (1977). On the psychology of eyewitness testimony. *Journal of Applied Psychology*, 66, 79-89.
- Loftus, E. (1979). *Eyewitness testimony*. Cambridge, MA: Harvard University Press.
- Loftus, E., and Palmer, J. (1974). Reconstruction of automobile destruction: An example of the interaction between language and memory [Electronic version]. *Journal of Verbal Learning and Verbal Behavior*, 13, 585-589.
- Loftus, E., Miller, D., and Burns, H. (1978). Semantic integration of verbal information into visual memory [Electronic version]. *Journal of Experimental Psychology*, 4, 19-31.

- Loftus, E., Levidow, B., and Duensing, S. (1992). Who remembers best? Individual differences in memory for events that occurred in a science museum [Electronic version]. *Applied Cognitive Psychology*, 6, 93-107.
- Mandler, J. (1990). Recall and its verbal expression, in Fivush R., and Hudson, J. (Eds.), *Knowing and remembering in young children* (pp. 317–330). New York: Cambridge University Press.
- Manshel, I. (1990). *Nap time*. New York: Kensington Publishing.
- Marche, T. (1999). Memory strength affects reporting of misinformation [Electronic version]. *Journal of Experimental Child Psychology*, 73, 45–71.
- Marche, T., and Howe, L. (1995). Preschoolers report misinformation despite accurate memory [Electronic version]. *Developmental Psychology*, 31, 554–567.
- Marin, B., Holmes, D., Guth, M., and Kovac, P. (1979). The potential of children as eyewitnesses [Electronic version]. *Law and Human Behaviour*, 3, 295-305.
- Markos Tadesse (1996). *The Relationship between Parenting Style and School Performance among High School Students in Makalle*. Unpublished M.A. Thesis, Addis Ababa University, Addis Ababa.
- Mazzoni, G. (1998). Memory suggestibility and metacognition in child eyewitness testimony: The roles of source monitoring and self-efficacy [Electronic version]. *European Journal of Psychology of Education*, 13, 43–60.
- McCloskey, M. and Zaragoza, M. (1985). Misleading postevent information and memory for events: Arguments and evidence against the memory impairment hypothesis. *Journal of Experimental Psychology: General*, 114, 1–16.
- McFarlane, F., Powell, M., and Dudgeon, P. (2002). An examination of the degree to which IQ, memory performance, socio-economic status and gender predict young children's suggestibility [Electronic version]. *Legal and Criminological Psychology*, 7, 227–239.
- Melton, G., and Limber, S. (1989). Psychologist's involvement in cases of child maltreatment. *American Psychologist*, 44, 1225-1233.

- Melton, G., and Thomson, R. (1987). Getting out of the rut: Detours to less travelled paths in child witness research, in Ceci, S., Toglia, M., and Ross, D.(Eds.), *Children's Eyewitness Memory* (pp.209-229).New York: Press.
- Merritt, K., Ornstein, P., and Spicker, B. (1994). Children's memory for a salient medical procedure. Implication for testimony [Electronic version]. *Pediatrics*, 94, 17-23.
- Meissner, C., and Brigham, J. (2001). Twenty years of investigating the own-race bias in memory for faces: A meta-analytic review [Electronic version]. *Psychology, Public Policy, and Law*, 7, 3-35.
- Miller, N., Cowan, P., Cowan, C., and Hetherington, E. (1993). Externalizing in preschoolers and early adolescents: A cross-study replication of a family model [Electronic version]. *Developmental Psychology*, 29, 3-18.
- Murch, C., and Slater, A. (1996). *The relation of self-esteem to the suggestibility of child witnesses*. Unpublished Manuscript, Yale.
- Myers, D. (1983). *Social Psychology*. New York: McGraw-Hill Company.
- Muir-Broadbudd, J., King, T., Downey, D., and Petersen, M. (1998). Conservation as a predictor of individual differences in children's susceptibility to leading questions [Electronic version]. *Psychonomic Bulletin and Review*, 5, 454-458.
- Neisser, U., Boodoo, G., Bouchard, T., Boykin, W., Brody, N., Ceci, S., Halpern, D., Loehlin, J., Perloff, R., Steinberg R., and Urbina, S. (1996). Intelligence: Knowns and unknowns [Electronic version]. *American Psychologist*, 51, 77-101.
- Nelson, K. (1993). The psychological and social origins of autobiographical memory. *Psychological Science*, 4, 1-8.
- Nowicki, S., and Bonnie, R. (1973). A locus of control scale for children [Electronic version]. *Journal of Consulting and Clinical Psychology*, 40, 148-154.
- Nurmoja, M. (2005). *Interrogative suggestibility, trait-related and morpho-featural characteristics of human phenotype* [Electronic version]. Unpublished Master's Thesis, University of Tartu.

- Oates, K., and Shrimpton, S. (1991). Children's memories for stressful and nonstressful events [Electronic version]. *Medicine, Science and the Law*, 31, 4-10.
- Olson, H., and DeFrain, J. (2000). *Marriage and the family: Diversity and Strength (3<sup>rd</sup> ed.)*. New York: MayField Publishing Company.
- Orbach, Y., Hershkowitz, I., Lamb, M., Sternberg, K., Esplin, P., and Horowitz, D. (2000). Assessing the value of structured protocols for forensic interviews of alleged abuse victims. *Child Abuse and Neglect*, 24, 733-752.
- Ornstein, P., Shapiro, L., Clubb, P., Follmer, A., and Baker-Ward, L. (1997). The influence of prior knowledge on children's memory for salient medical experiences, in Stein, N., Ornstein, A., Tversky, B. and Brainerd, J. (Eds.), *Memory for everyday and emotional events* (pp. 83-111). Mahwah, NJ: Erlbaum.
- Paddock, J., Joseph, A., Chan, F., Terranova . S., Manning, C., and Loftus, E. (1998). When guided visualization procedures may backfire: imagination inflation and predicting individual differences in suggestibility [Electronic version]. *Applied Cognitive Psychology*, 12, 563-575.
- Pezdek, K., and Greene, J. (1993). Testing eyewitness memory: Developing a measure that is more resistant to suggestibility. *Law and Human Behavior*, 17, 361-369.
- Pezdek, K., and Roe, C. (1995). The effect of memory trace strength on suggestibility [Electronic version]. *Journal of Experimental Child Psychology*, 60, 116-128.
- Polczyk, R., Bogumila, W., Agnieszka, G., Iwona, M., Magdalena, S., and Ewabomba, B. (2004). Age Differences in Interrogative Suggestibility: A Comparison between Young and Older Adults. *Applied Cognitive Psychology*, 18, 1097-1107.
- Pollard, R., Trowbridge, B., Slade, P., Streissguth, A., Laktonen, A., and Townes, B. (2004). Interrogative suggestibility in a US context: Some preliminary data on normal subjects [Electronic version]. *Personality and Individual Differences*, 37, 1101-1108.
- Poluha, E. (2004). *The power of continuity: Ethiopia through the eyes of its children*. Stockholm: Printed in Sweden by Elanders Gotab.

- Poole, D., and Lamb, M. (1998). *Investigative interviews of children: A guide for helping professionals*. Washington, DC: American Psychological Association.
- Powers, P., Andriks J. and Loftus E. (1979). Eyewitness accounts of females and males [Electronic version]. *Journal of Applied Psychology*, 64, 339-347.
- Principle, G., Ornstein, P., Baker-ward, L., and Gordon, B. (2000). The effects of intervening experiences on children's memory for a physical examination [Electronic version]. *Applied Cognitive Psychology*, 14, 59-80.
- Quas, J., and Schaaf, J. (2002). Children's memories of experienced and nonexperienced events following repeated interviews [Electronic version]. *Journal of Experimental Child Psychology*, 83, 304–338.
- Quas, J., Quin, J., Schaaf, J., and Goodman, G. (1997). Individual differences in children's and adults' suggestibility and false event memory [Electronic version]. *Learning and Individual Differences*, 9, 359–390.
- Reese, E., Haden, C., and Fivush, R. (1993). Mother–child conversations about the past: Relationships of style and memory over time [Electronic version]. *Cognitive Development*, 8, 403-430.
- Richardson, G., and Kelly, T. (1995). The relationship between intelligence, memory and interrogative suggestibility in young offenders [Electronic version]. *Psychology, Crime and Law*, 1, 283–290.
- Richardson, G., and Kelly T. (2004). A study in the relationship between interrogative suggestibility, compliance and social desirability in institutionalized adolescents [Electronic version]. *Personality and Individual Differences*, 36 485–494.
- Roberts, K., Lamb, M., Sternberg, K., Beresford, J., Domenici-Lake, P., and Heiges, K. (1997, April). *The effect of a delay on the incorporation of postevent information into children's eyewitness memory*. Paper presented at the biannual meeting of the Society for Research in Child Development, Washington, DC.

- Roberts, K., and Powell, M. (1999). *The roles of inhibition and interference on children's eyewitness memory and suggestibility*. Unpublished Manuscript.
- Roebbers, C., and Schneider, W. (2001). Memory for an observed event in the presence of prior misinformation: Developmental patterns in free recall and identification accuracy [Electronic version]. *British Journal of Developmental Psychology*, *19*, 507–524.
- Rudy, I., and Goodman, G. (1991). Effects of participation on children's reports: Implications for children's testimony [Electronic version]. *Developmental Psychology*, *27*, 527-538.
- Sah, A. (1973). Perceptual suggestibility as a function of age, sex, and education [Electronic version]. *Indian Journal of Experimental Psychology*, *7*, 21-25.
- Santrock, J. (2001). *Child Development (9<sup>th</sup> Ed.)*. Boston: McGraw-Hill.
- Saywitz, K., Nathanson, R., and Snyder, L. (1993). Credibility of child witnesses: The role of communicative competence. *Topics in Language Disorders*, *13*, 59–78.
- Saywitz, K., Goodman, G., Nicholas, G., and Moan, S. (1991). Children's memory for genital exam: Implications for child sexual abuse [Electronic version]. *Journal of Consulting and Clinical Psychology*, *59*, 682-691.
- Schaefer, E., and Edgerton, M. (1985). Parental and child correlates of parental modernity, in Sigel I. (Ed.), *Parental belief systems: The psychological consequences for children* (pp. 287–318). Hillsdale, NJ: Lawrence Erlbaum.
- Schacter, D. (1992). Understanding implicit memory: A cognitive neuroscience approach. *American Psychologist*, *47*, 559–569.
- Schacter, D., Kagan, J., and Leichtman, M. (1995). True and false memories in children and adults: a cognitive Neuroscience perspective [Electronic version]. *Psychology, Public Policy, and Law*, *1*, 411–428.
- Schooler, J., and Loftus, E. (1986). Individual differences and experimentation: complementary approaches to interrogative suggestibility [Electronic version]. *Social Behavior*, *1*, 105–112.

- Schooler, J., and Loftus, E. (1993). Multiple mechanisms mediate individual differences in eyewitness accuracy and suggestibility, in Puckett, J., and Reese, H. (Eds.), *Mechanisms of Everyday Cognition* (pp. 177–203). Hillsdale, NJ: Erlbaum.
- Scullin, M., and Ceci, S. (2001). A suggestibility scale for children [Electronic version]. *Personality and Individual Differences*, 30, 843-856.
- Scullin, M., and Hembrooke, H. (1998). *Development and validation of a suggestibility scale for children. Paper presented at the meeting of the American Psychology-Law and Society*. Redondo Beach, CA.
- Scullin, M., Kanaya, T., and Ceci, S. (2002). *Assessment of preschoolers' suggestibility in a repeated interview design* [Electronic version]. Unpublished Raw Data.
- Sdorow, L. (1998). *Psychology* (4<sup>th</sup> Ed.). Boston: McGraw-Hill Company.
- Sedler, R. (1968). *Ethiopian Civil Procedure*. Unpublished, Addis Ababa University, Addis Ababa.
- Shaffer, D. (1999). *Developmental Psychology: Childhood and Adolescence* (5<sup>th</sup> Ed.). New York: Brooks/Cole Publishing Company.
- Shapiro, P., and Penrod, S. (1986). Meta-analysis of racial identification studies [Electronic version]. *Psychological Bulletin*, 100, 139-156.
- Shapiro, L., Blackford, C., and Chen, C. (2005). Eyewitness memory for a simulated misdemeanor crime: The role of age and temperament in suggestibility [Electronic version]. *Applied Cognitive Psychology*, 19, 267-289.
- Sharma, S., Durand, R., and Gur-Arie, O. (1981). Identification and analysis of moderator variables. *Journal of Marketing Research*, Vol. XVIII, 291-300.
- Sheehan P., and Tilden J. (1983). Effects of suggestibility and hypnosis on accurate and distorted retrieval from memory [Electronic version]. *Journal of Experimental Psychology, Learning, Memory and Cognition*, 9, 283-293.

- Simpson, C., and Guttentag, R. (1996, March). Suggestibility of children's remembering: Effects of interviewer credibility. Poster presented at the Conference on Human Development, Birmingham, AL.
- Smith, V., and Ellsworth, P. (1987). The social psychology of eyewitness accuracy: Misleading questions and communicator expertise [Electronic version]. *Journal of Applied Psychology*, 72, 294-300.
- Strage, A. (1998). Family context variables and the development of self-regulation in college students [Electronic version]. *Adolescence*, 33 (129), 17-31.
- Steinberg, L. (1989). *Adolescence* (2<sup>nd</sup> Ed.). New York: McGraw Hill Book Company.
- Stone, E. (1988). Moderator variables in research: A review and analysis of conceptual and methodological issues, in Ferris, G., and Rowland, K. (Eds.), *Research in personnel and human resources management* (Vol. 6, pp. 191-229) [Electronic version]. Greenwich, CT: JAI Press.
- Tabachnick, B., and Fidell, L. (1996). *Using multivariate statistics* (3<sup>rd</sup> Ed.). New York: HarperCollins.
- Teka Zewdie (2002). Maternal knowledge, involvement and integrative early child development programs in Ethiopia. *The Ethiopian Journal of Education*, XXII (1), 58-68.
- Templeton, L., and Hunt, V. (1997, April). *The effects of misleading information and level or authority of interviewer on children's eyewitness memory*. Poster presented at the biannual meeting of the Society for Research in Child Development, Washington, DC.
- Templeton, L., and Wilcox, S. (2000). A tale of two representations: the misinformation effect and children's developing theory of mind [Electronic version]. *Child Development*, 71, 402-416.
- Tilahun Gidey (2002). *The interrelationship among parenting style, psychosocial adjustment and academic performance of students*. Unpublished MA Thesis, Addis Ababa University, Addis Ababa.

- Toglia, M., and Ross, D. (1991, April). *Children's suggestibility: The role of biaser credibility*. Paper presented at the biannual meeting of the Society for Research in Child Development, Seattle, WA.
- Tousignant, J., Hall, D. and Loftus, E. (1986). Discrepancy detection and vulnerability to misleading post-event information [Electronic version]. *Memory and Cognition*, 14, 329-338.
- Tulving, E. (1983). *Elements of episodic memory*. Oxford, UK: Oxford University Press.
- Underwager, R., and Wakefield, H. (1990). *The real world of child interrogation*. Springfield, IL: Charles C. Thomas.
- Vrij, A., and Bush, N. (2000). Differences in suggestibility between 5–6 and 10–11 year olds: The relationship with self confidence [Electronic version]. *Psychology, Crime and Law*, 6, 127–138.
- Walberg, H. (1991). Improving school science in advanced and developing *countries*. *Review of Educational Research*, 61, 25-70.
- Ward, R., and Loftus, E. (1985). Eyewitness performance in different psychological types [Electronic version]. *The Journal of General Psychology*, 112, 191–200.
- Warren, A., Hulse-Trotter, K., and Tubbs, E. (1991). Inducing resistance to suggestibility in children. *Law and Human Behavior*, 15, 273–285.
- Warren, A., Lane, P., Snyder-Boggs, C., and Blevins, P. (1995). Suggestibility and repeated questioning. Unpublished Raw Data.
- Weiss, L., and Schwarz, J. (1996). The relationship between parenting types and older adolescents' personality, academic achievement, adjustment, and substance use [Electronic version], *Child Development*, 67(5), 2101-2114.
- Welch-Ross, M., Diecidue, K., and Miller, S. (1997). Young children understands of conflicting mental representation predicts suggestibility [Electronic version]. *Developmental Psychology*, 33, 43– 53.

Wolfner,G.,and Gelles, R.(1993). A profile of violence towards children: A national study [Electronic version]. *Child Abuse and Neglect*, 17, 197–212.

Yalew Endaweke (2006). *Basic research principles and their implication*. Addis Ababa: Alpha Publishing Agency. (Amharic)

Young, K., Powell, M., and Dudgeon, P. (2003). Individual differences in children's suggestibility: A comparison between intellectually disabled and mainstream samples [Electronic version]. *Personality and Individual Differences*, 35, 31–49.

**APPENDICES**  
**ADDIS ABABA UNIVERSITY**  
**INSTITUTE OF PSYCHOLOGY**

***Direction:** This instrument is used to collect data on family characteristics and late adolescents' psychological constructs. This instrument is of two types: (1) Background Information Questionnaire, and (2) Scales. Please read the instructions carefully enough to be sure you understand them. There are no "Right" or "Wrong" answers to the statements that will find described in this booklet. Each item has different responses. The information collected via the questionnaire and scales below will be used for academic ends, and are thus confidential. The results to be arrived at and the conclusions to be made about the issue heavily rely on the care you take while responding to each item. Hence, you are kindly requested to complete the forms set forth, honestly and carefully.*

*Thank You in Advance!*

## APPENDIX A: BACKGROUND INFORMATION QUESTIONNAIRE

**Direction:** The purpose of this questionnaire is to get relevant information about your background information and family characteristics. In some of the open-ended items, you are required to write the necessary information on the blank space provided. In situations where alternatives are provided to questions, please indicate your response by encircling the appropriate answer(s).

1. Sex \_\_\_\_\_ 2. Grade \_\_\_\_\_

3. Age \_\_\_\_\_ 4. Ethnicity \_\_\_\_\_

5. Which parent or guardian do you live with?

A. Both natural parents-----

B. Only natural mother-----

C. Natural mother and stepfather-----

D. Only natural father-----

E. Natural father and stepmother-----

F. Other (specify) -----

6. What is the highest level of education completed by your parents or guardians?

### **6.1. Father's (male guardian):**

1= illiterate: \_\_\_\_\_

2=primary education level (Grade 1-6): \_\_\_\_\_

3= junior high school level (Grade 7 and 8): \_\_\_\_\_

4= senior high school level (Grade 9-12): \_\_\_\_\_

5= junior college level (Grade 12 +1, 12+ 2 and 12+ 3): \_\_\_\_\_

6= University education (12+4 years and above): \_\_\_\_\_

### **6. 2. Mother's (female guardian):**

1= illiterate: \_\_\_\_\_

2=primary education level (Grade 1-6): \_\_\_\_\_

3= junior high school level (Grade 7 and 8): \_\_\_\_\_

4= senior high school level (Grade 9-12): \_\_\_\_\_

5= junior college level (Grade 12 +1, 12+ 2 and 12+ 3): \_\_\_\_\_

6=University education (12+4 years and above): \_\_\_\_\_

## APPENDIX B: SUGGESTIBILITY SCALE

Direction: Please watch the film very carefully. When you are finished I want you to tell me everything you remember about the story. The story reads as follows.

One day/ a man named Mohammed Hussien / was counting some money, / and after waving his hands to someone, / he started riding away on a bike. / Across the road, / a boy named Yiehune Yassin/ who had been watching the man/ was tempted/ and excitedly said, / ‘Alas!’ The old man ‘Shebaw’ is carrying this much birr.’ /Immediately, he borrowed a bike/ and followed the man. /He caught up with him in a minute /and started to ride very close to his side ./ Suddenly the boy; shouted at the man as if he had an accident / turned the wheel/ and bumped into the man’s bike./ Both fell off their bikes /on the sidewalk./ While the man was complaining that the boy did not keep his way,/ the boy gabbling apologetically pretended to be helping the man;/ but his hands were busy ransacking the man’s pocket./ The man took a grip of the boy’s hand with the money in it./ Though the man tried hard to dispossess the money,/ the boy forcefully snatched himself from the man’s grip/ and ran away./ The man chasing the boy/ cried out for help/ and a pair of policemen named Ayele Belete and Belachew Abebe/ who were vigilantly keeping eyes on the area/ heard the shout/ and ran after the man to help./ Then the policemen decided that one of them should take a different route while the other chased the boy directly ./ No sooner had Belachew caught the boy /around the corner of the block/ than Ayele/ and the man arrived./ Caught red-handed, /Ayele told the boy to return the money to the man/. The boy admitted / and returned the money to the man,/ who would have beaten the boy / if the policemen had not stopped him./ The boy/ was taken to the police station,/ where the man was also told to report to./ The man/ told the policemen/ that he came out of his home/ that Friday/ to go to the Customs and Revenue Office/ to pay tax/ when the boy pushed him into a road-side ditch./ He thankfully kissed/Ayele’s forehead/ for helping him get his money back./ To signify that it was their duty to protect the safety of the community/, Ayele remarked that they had saved their own salaries/.

---

**Direction:** Below are 24 questions (6 nonsuggestive /NS/ and 18 suggestive/S/) about the content of the film. Please listen to each of the questions carefully and tell the appropriate answer.

**'Yield' answers**

1	Did the man set out on his ride to pay tax?(NS)	Not scored
2	Did the man get out of a bank? (S)	Yes
3	Did the boy pay some money to hire a bike? (S)	Yes
4	Did the man give the boy a slap or a punch on the face? (S)	A slap/ a punch
5	Was the man told to report to the police station? (NS)	Not scored
6	Did the boy put in his pocket the money he had stolen? (S)	Yes
7	Did the man confirm that it was the duty of the police to protect people like	Yes
8	Was the boy wearing a green or a white shirt? (S)	Green/ White
9	Did the man receive his money safely? (NS)	Not scored
10	Was the man hurt on the neck during the fight? (S)	Yes
11	Did the policemen advise the man to be more careful in the future ? (S)	Yes
12	Were one of the policemen armed with a pistol or a walkie-talkie? (S)	Pistol/ walkie-talkie
13	Was the boy taken to a police station? (NS)	Not scored
14	Was the name of the man 'Shebaw'? (S)	Yes
15	Was the man robbed on Monday? (S)	Yes
16	Was the man's cell phone taken with the money or did it slip out from his pocket during the struggle? (S)	With the money/ slip out of pocket
17	Did the policemen run in different directions to catch the boy? (NS)	Not scored
18	Did the boy cry for help when he was beaten? (S)	Yes
19	Did the man pay some money for tax? (S)	Yes
20	Was the boy's or the man's bike severely damaged? (S)	The boy's/ the man's
21	Was the boy's name Youhune Hussen? (NS)	Not scored
22	Did the boy try to frighten the man by shouting at him?(S)	Yes
23	Was one of the policemen called Mohammed Hussen? (S)	Yes
24	Did the first or the second policemen beat the boy? (S)	The first/ the second

### APPENDIX C: PERSONALITY SCALE

Direction: Following are phrases describing people's behaviors. Please use the rating scale below to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then fill in the box the right - mark '√' that corresponds to your reply.

No.	Items	<i>Very Inaccurate</i> (1)	<i>Moderately Inaccurate</i> (2)	<i>Neither Inaccurate nor Accurate</i> (3)	<i>Moderately Accurate</i> (4)	<i>Very Accurate</i> (5)
1	I am the life of the party. + keyed	1	2	3	4	5
2	I know how to attract people. + keyed	1	2	3	4	5
3	I have little to say. – keyed	1	2	3	4	5
4	I don't like to draw attention to myself. – keyed	1	2	3	4	5
5	I would describe my experiences as somewhat dull. – keyed	1	2	3	4	5
6	I often feel depressed. + keyed	1	2	3	4	5
7	I am often down in the dumps. + keyed	1	2	3	4	5
8	I dislike myself. + keyed	1	2	3	4	5
9	I have frequent mood swings. + keyed	1	2	3	4	5
10	I panic easily. + keyed	1	2	3	4	5
11	I seldom feel depressed. – keyed	1	2	3	4	5
12	I am very pleased with myself. – keyed	1	2	3	4	5
13	I am not easily bothered by things. – keyed	1	2	3	4	5
14	I make plans and stick to them. + keyed	1	2	3	4	5

15	I carry out my plans. + keyed	1	2	3	4	5
16	I get everyday jobs done right away. + keyed	1	2	3	4	5
17	I pay attention to detail points or information. + keyed	1	2	3	4	5
18	I find it difficult to get down to work. – keyed	1	2	3	4	5
19	I avoid my duties. – keyed	1	2	3	4	5
20	I waste my time. – keyed	1	2	3	4	5
21	I have a good word for everyone. + keyed	1	2	3	4	5
22	I respect others. + keyed	1	2	3	4	5
23	I accept people as they are. + keyed	1	2	3	4	5
24	I make people feel at ease. + keyed	1	2	3	4	5
25	I have a sharp tongue. – keyed	1	2	3	4	5
26	I get back at others. – keyed	1	2	3	4	5
27	I believe in the importance of art. + keyed	1	2	3	4	5
28	I have a vivid imagination. + keyed	1	2	3	4	5
29	I enjoy hearing new ideas. + keyed	1	2	3	4	5
30	I carry the conversion to a higher level. + keyed	1	2	3	4	5
31	I do not like art. – keyed	1	2	3	4	5
32	I do not enjoy going to art museums. – keyed	1	2	3	4	5
33	I avoid truth-seeking discussions. – keyed	1	2	3	4	5

+ =+ keyed; - =- keyed

### APPENDIX D: SOCIAL DESIRABILITY SCALE

Direction: Listed below are a number of statements concerning personal attitudes and trait. Read each item and decide whether the statement is true (1) or false (0) as it pertains to you personally.

No	Items	False (0)	True (1)
1	It is sometimes hard for me to go on with my work if I am not encouraged. - keyed	0	1
2	I have never intensely disliked anyone. + keyed	0	1
3	On occasion I have had doubts about my ability to succeed in life. – keyed	0	1
4	I sometimes feel angry when I don't get my way. – keyed	0	1
5	If I could get into a movie without paying and be sure I was not seen I would probably do it. – keyed	0	1
6	I like to gossip at times. – keyed	0	1
7	There have been times when I felt like rebelling against people in authority (such as teachers, principals, and unit leaders) even though I knew they were right. – keyed	0	1
8	No matter who I'm talking to, I'm always a good listener. + keyed	0	1
9	I can remember "singing sick" to get out of something. – keyed	0	1
10	There have been occasions when I took advantage of someone. – keyed	0	1
11	I'm always willing to admit it when I make a mistake. + keyed	0	1
12	I always try to practice what I speak. + keyed	0	1
13	I don't find it particularly difficult to get along with loud mouthed, horrible people. + keyed	0	1
14	I am always polite, even to people who are disagreeable. + keyed	0	1
15	There have been occasions when I felt like smashing things. – keyed	0	1
16	I never hate being asked to return a favor. + keyed	0	1
17	I have never been annoyed when people expressed ideas very different from my own. + keyed	0	1
18	I never make a long trip without checking, the safety of the trip. + keyed	0	1

19	There have been times when I was quite Jealous of the good fortune of others. – keyed	0	1
20	I have almost never felt the urge to tell someone off. + keyed	0	1
21	I have never felt that I was punished without cause in my life. + keyed	0	1
22	I sometimes think when people have a misfortune they only got what they deserved. – keyed	0	1
23	I have never deliberately said something that hurt someone's feelings. + keyed	0	1

+ =+ keyed; - =- keyed

## APPENDIX E: MEMORY EFFICACY SCALE

Direction: Below are items related to your sense of memory competency to a number of different situations. Please read each of the items carefully and rate the alternative on a 5-point Likert type scale that you think expresses your own memory competency. The numbers indicate 5=Strongly Agree, 4=Agree, 3=Undecided, 2=Disagree and 1=Strongly Disagree.

No	Items	Strongly Disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Strongly Agree (5)
1	I have no problem remembering phone numbers. + keyed	1	2	3	4	5
2	I have no problem remembering information explicitly presented in the story. + keyed	1	2	3	4	5
3	I have no problem remembering the name of a person just introduced to me. + keyed	1	2	3	4	5
4	I have no problem remembering objects (such as keys) where I put in the home. + keyed	1	2	3	4	5
5	I have no problem remembering location of places I have visited once. + keyed	1	2	3	4	5
6	Remembering meanings of words I once knew fairly well is one of my stronger skills. + keyed	1	2	3	4	5
7	I have no problem remembering the name of a person just introduced to me. + keyed	1	2	3	4	5
8	I have no problem remembering a word I wish to use. + keyed	1	2	3	4	5
9	I have no problem remembering the point someone else is making during a conversation. + keyed	1	2	3	4	5
10	I have no problem remembering an appointment that is very important to me. + keyed	1	2	3	4	5

11	Remembering points of what I have learnt in previous lessons is one of my stronger skills. + keyed	1	2	3	4	5
12	I have no problem remembering tasks that are challenging.+ keyed	1	2	3	4	5
13	I am proud of my memory ability to solve ambitious tasks. + keyed	1	2	3	4	5
14	I am capable of remembering information that are challenging for me. +keyed	1	2	3	4	5

+ =+ keyed

## APPENDIX F: LOCUS OF CONTROL SCALE

Direction: Below are items related to your sense of control and reactions to a number of different situations. Please read each of the items carefully and rate the alternative on a 5-point Likert type scale that you think expresses your own feeling. The numbers indicate 5=Strongly Agree, 4=Agree, 3=Undecided, 2=Disagree and 1=Strongly Disagree.

No	Items	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	To a great extent my life is controlled by accidental happenings. – keyed	1	2	3	4	5
2	Whether or not I get to be a leader depends mostly on my ability. + keyed	1	2	3	4	5
3	Often there is no chance of protecting my personal interests from bad luck happenings. – keyed	1	2	3	4	5
4	When I get what I want, it is usually because I'm lucky. – keyed	1	2	3	4	5
5	Although I might have good ability, I will not be given prizes without appealing to my teachers. – keyed	1	2	3	4	5
6	My life is chiefly controlled by powerful others. – keyed	1	2	3	4	5
7	Whether or not I get into a car accident is mostly a matter of luck.– keyed	1	2	3	4	5
8	People like me have very little chance of protecting personal interests when they conflict with those of strong pressure groups. – keyed	1	2	3	4	5
9	Getting what I want requires pleasing those people (such as teachers, elders, and parents) above me. – keyed	1	2	3	4	5
10	Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time. – keyed	1	2	3	4	5
11	I can pretty much determine what will happen in my life. + keyed	1	2	3	4	5
12	Whether or not I get into a car accident depends mostly on the other driver. – keyed	1	2	3	4	5

13	My life is determined by my own actions. + keyed	1	2	3	4	5
14	It's chiefly a matter of fate whether or not I have a few friends or many friends. - keyed	1	2	3	4	5

+ =+ keyed; - =- keyed

### APPENDIX G: PARENTING STYLE SCALE.

Direction: This part contains nine statements (1-9) and six questions (10-13). For the statements (1-9) indicate the degree of your agreement to each of the statements by circling one of the five given alternative numbers. The numbers indicate 5=Strongly Agree, 4=Agree, 3=Undecided, 2=Disagree and 1=Strongly Disagree.

No	Items	Male Parent/ Guardian	Female Parent/ Guardian
1	I can count on my parents to help me out, if I have some kind of problems.	5 4 3 2 1	5 4 3 2 1
2	My parents keep pushing me to do my best in whatever I do.	5 4 3 2 1	5 4 3 2 1
3	My parents allow me to tell them if I think my ideas are better than theirs.	5 4 3 2 1	5 4 3 2 1
4	My parents always speak to me with a warm and friendly voice.	5 4 3 2 1	5 4 3 2 1
5	When my parents want me to do something, they explain why.	5 4 3 2 1	5 4 3 2 1
6	When I get a poor grade in school, my parents encourage me to try harder.	5 4 3 2 1	5 4 3 2 1
7	My parents know who my friends are.	5 4 3 2 1	5 4 3 2 1
8	My parents spend time just talking with me.	5 4 3 2 1	5 4 3 2 1
9	My parents enjoy staying home with me more than going out with friends.	5 4 3 2 1	5 4 3 2 1

**Direction:** For the questions (10-13) choose the letter of your choice provided for each of them that most closely matches to your response.

—10. How much do your parents try to know whether you go to school or not?

**Male parent/guardian**

- a. Doesn't try
- b. Tries a little
- c. Tries a lot

**Female parent/guardian**

- a. Doesn't try
- b. Tries a little
- c. Tries a lot

—11. How much do your parents try to know what you do with your free time?

**Male parent/guardian**

- a. Doesn't try
- b. Tries a little
- c. Tries a lot

**Female parent/guardian**

- a. Doesn't try
- b. Tries a little
- c. Tries a lot

—12. How much do your parents try to know where you spend your time after school?

**Male parent/guardian**

- a. Doesn't try
- b. Tries a little
- c. Tries a lot

**Female parent/guardian**

- a. Doesn't try
- b. Tries a little
- c. Tries a lot

—13. How much do your parents try to know what you do with your money (when you have)?

**Male parent/guardian**

- a. Doesn't try
- b. Tries a little
- c. Tries a lot

**Female parent/guardian**

- a. Doesn't try
- b. Tries a little
- c. Tries a lot

## APPENDIX H: SUGGESTIBILITY RATING FORM

(TO BE COMPLETED BY TEACHERS)

Name of the participant \_\_\_\_\_

Grade level \_\_\_\_\_

Name of the rater \_\_\_\_\_

Date \_\_\_\_\_

Direction: Read each statement below and circle the number that best indicates your rating of the participant's behavior. Please rate the participant on the basis of your observations of his or her behavior.

No	Items	<i>Never</i> (1)	<i>Sometimes</i> (2)	<i>Usually</i> (3)	<i>Always</i> (4)
1	How commonly this student might likely to go along with suggestions made by teachers?	1	3	4	5
2	<i>How commonly this student might likely to go along with suggestions made by other students?</i>	1	3	4	5
3	<i>How commonly this student might likely to deny things he/she had done wrong?</i>	1	3	4	5
4	<i>How commonly this student might likely to admit to things he/she had not done?</i>	1	3	4	5
5	<i>How commonly this student might stand up for things he/she believed in?</i>	1	3	4	5
6	<i>How commonly this student might take a leading role when in the company of other students?</i>	1	3	4	5
7	<i>How commonly this student might readily accept what he/she is told?</i>	1	3	4	5

### አባሪዎች

በ አዲስ አበባ ዩኒቨርሲቲ

የ ሳይኮሎጅ ኢንስቲትዩት

### በ ተማሪዎች የሚሞላ መጠይቅ

መመሪያ፣ይህ ጥናት በቤተሰብ ባህሪያትና በእድሜ ክፍ ባሉ ጎልማሶች መሰረታዊ የስነልቦና አወቃቀር ላይ ያተኮሩ ጉዳዮችን ለመመርመር ያለመ ነው። ለዚህም ሲባል ሁለት አይነት መጠይቆች ተዘጋጅተዋል። (1) አጠቃላይ የግላዊና ቤተሰባዊ ዳራ መጠይቅ እና (2) የምዘና መስፈርት መጠይቆች።እባክህን(ሽን) በእያንዳንዱ ክፍል የተሰጡትን መመሪያዎች በጥሞና በማንበብ ሃሳቦቹን በትክክል መረዳትህን(ሽን) አረጋግጥ(ጭ)። በእነዚህ መጠይቆች የቀረቡት ማናቸውም ጥያቄዎች “ትክክል” ወይም “ስህተት” የሚባል ምላሽ የላቸውም። እያንዳንዱ ጥያቄ እንደመላሹ የተለያየ መልስ ሊኖረው ይችላል። በመጠይቆቹ የሚሰበሰበው መረጃ ሙሉ ለሙሉ ለትምህርታዊ ጠቀሜታ ብቻ የሚውል ነው። በመሆኑም አንተ(ች) የምትሰጠው(ጭው) መረጃ በከፍተኛ ሚስጥርነት ይጠበቃል።አንተ(ች) ለእያንዳንዱ ጥያቄ ምላሽ በምትሰጥበት(ጭበት) ወቅት የምትወስደው(ጅው) ጥንቃቄ በጥናቱ የሚገኙ ውጤቶችንና የጥናቱን ድምዳሜዎች በእጅጉ ይወስናል። ስለሆነም መጠይቆቹን በታማኝነትና በከፍተኛ ጥንቃቄ ትሞላ(ይ) ዘንድ አጥኝው በአክብሮት ይጠይቃል።

ለትብብርህ(ሽ) ከወዲሁ አመሰግናለሁ!

**አባሪ ሀ፣ ዳራዊ መረጃዎች**

መመሪያ፡ የዚህ መጠይቅ አላማ ስለ አንተ(ቺ) ግላዊና ቤተሰባዊ ሁኔታ መረጃ ማግኘት ነው። እባክህን(ሽን) ለተወሰኑ ልቅ ጥያቄዎች ተገቢውን መልስ በተሰጡት ባዶ ቦታዎች ላይ አስፍር(ሪ)። ቀሪዎቹን ዝግ ጥያቄዎች ከቀረቡት አማራጮች ውስጥ ይበልጥ ተስማሚ ነው የሚሉትን በማክበብ አመልክት(ች)።

1. ያታ፡ ወንድ \_\_\_\_\_ ሴት \_\_\_\_\_

2. የትምህርት ደረጃ/ክፍል \_\_\_\_\_

3. ዕድሜ \_\_\_\_\_

4. ብሄር \_\_\_\_\_

5. ከማን ጋር ነው የምትኖረው/ሪው/? **አንዱን ምርጫ ብቻ በማክበብ መልስ/ሽ።**

- ሀ. ከወላጅ አባቴና ከወላጅ እናቴ ጋር
- ለ. ከወላጅ እናቴ ጋር
- ሐ. ከወላጅ እናቴና ከእንጀራ አባቴ ጋር
- መ. ከወላጅ አባቴ ጋር
- ሰ. ከወላጅ አባቴና ከእንጀራ እናቴ ጋር

ረ. መልስህ/ሽ/ ከእነዚህ ውጭ ከሆነ ግለጽ/ጭ/ \_\_\_\_\_

6. የወላጅ አባትህ/ሽ/ ወይም የእንጀራ አባትህ/ሽ/ የትምህርት ደረጃ \_\_\_\_\_

7. የወላጅ እናትህ/ሽ/ ወይም የእንጀራ እናትህ/ሽ/ የትምህርት ደረጃ \_\_\_\_\_

8. ወላጆቻችሁ/ሽ/ ስንት ልጆች አሏቸው? ወንድ \_\_\_\_\_ ሴት \_\_\_\_\_

9. አንተ/ች/ ለቤተሰቦችህ/ሽ/ ስንተኛ ልጅ ነህ/ሽ/? \_\_\_\_\_

10. ወላጆቻችሁ/ሽ/ በአሁኑ ሰዓት በጋብቻ ተጣምረው ነው የሚገኙት?

- ሀ. አዎ
- ለ. አይደለም

## አባሪ ለ ፣ የአቋም ጽናት አመለካኛ መጠይቅ

መመሪያ፣ እባክህን(ሽን) ከዚህ ቀጥሎ የሚቀርበውን ፊልም በጥሞና ተከታተል(ይ)። ፊልሙን ተመልክተህ(ሽ) እንደጨረሰክ(ሽ) ከተመለከትከው(ሽው) ፊልም ውስጥ የምታስታውሰውን(ሽውን) ታሪክ ዝርዝር ንገረኝ(ሪኝ)።

---

One day/ a man named Mohammed Hussen / was counting some money, / and after waving his hands to someone, / he started riding away on a bike. / Across the road, / a boy named Yiehune Yassin/ who had been watching the man/ was tempted/ and excitedly said, / ‘Alas!’ The old man ‘Shebaw’ is carrying this much birr.’ /Immediately, he borrowed a bike/ and followed the man. /He caught up with him in a minute /and started to ride very close to his side ./ Suddenly the boy; shouted at the man as if he had an accident/ turned the wheel/ and bumped into the man’s bike./ Both fell off their bikes /on the sidewalk./ While the man was complaining that the boy did not keep his way,/ the boy gabbling apologetically pretended to be helping the man;/ but his hands were busy ransacking the man’s pocket./ The man took a grip of the boy’s hand with the money in it./ Though the man tried hard to dispossess the money,/ the boy forcefully snatched himself from the man’s grip/ and ran away./ The man chasing the boy/ cried out for help/ and a pair of policemen named Ayele Belete and Belachew Abebe/ who were vigilantly keeping eyes on the area/ heard the shout/ and ran after the man to help./ Then the policemen decided that one of them should take a different route while the other chased the boy directly ./ No sooner had Belachew caught the boy /around the corner of the block/ than Ayele/ and the man arrived./ Caught red-handed, /Ayele told the boy to return the money to the man./ The boy admitted / and returned the money to the man,/ who would have beaten the boy / if the policemen had not stopped him./ The boy/ was taken to the police station,/ where the man was also told to report to./ The man/ told the policemen/ that he came out of his home/ that Friday/ to go to the Customs and Revenue Office/ to pay tax/ when the boy pushed him into a road-side ditch./ He thankfully kissed/Ayele’s forehead/ for helping him get his money back./ To signify that it was their duty to protect the safety of the community/, Ayele remarked that they had saved their own salaries/.

---

መመሪያ፣ ከዚህ በታች ለተዘረዘሩት ሃያ አራት ጥያቄዎች (ስድስት ኢ-አመላካችና አሥራ ስምንት አመላካች) ትክክለኛ መልስ ስጥ(ጭ)።

1. ገንዘቡን የተዘረፈው ሰውዬ በብስክሌት ይጓዝ የነበረው ግብር ለመክፈል ነበርን?
2. ገንዘብ የተዘረፈው ሰውዬ የወጣው ከባንክ ነበርን?
3. ከሰውየው ገንዘብ የነጠቀው ልጅ ለዘረፋ የተጠቀመበትን ብስክሌት ኪራይ ከፍሏልን?
4. ገንዘቡን የተዘረፈው ሰውዬ በፖሊስ ቁጥጥር ስር የዋለውን ልጅ የመታው በጥፊ ነበር ወይስ በቦክስ?
5. ገንዘቡን የተዘረፈው ሰውዬ ወደ ህግ ቦታ ሂዶ ቃል እንዲሰጥ ተነግሮታልን?
6. ገንዘብ የነጠቀው ልጅ ለእርዳታ በመጡት ፖሊሶች ቁጥጥር ሥር ሲውል ከሰውዬው የነጠቀውን ገንዘብ ኪሱ ከቶት ነበርን?
7. ገንዘቡን የተዘረፈው ሰውዬ ብስክሌቱን ለመንዳት ሲሰናዳ እጁን እያወዛወዘ ሰላምታ የሰጠው ለባንክ ቤት ጥበቃዎች ነበርን?
8. ከሰውየው ገንዘብ የነጠቀው ልጅ ከላይ ለብሶት የነበረው ሸሚዝ ቀለም አረንጓዴ ነበር ወይስ ነጭ?
9. ሰውየው በልጁ ተነጥቆ የነበረውን ገንዘብ ተመልሶታልን?
10. ገንዘብ የነጠቀው ልጅ በድብድቡ ጊዜ በሰውዬው አንገት ላይ ጉዳት አድርጏልን?
11. ለእርዳታ የመጡት ፖሊሶች ገንዘብ የተዘረፈውን ሰውዬ ለወደፊቱ ከዘራፊዎች እንዲጠነቀቅ መክረውታልን?
12. ለእርዳታ የመጡት ፖሊሶች አንዱ ይዘት የነበረው ሽጉጥ ወይስ ቴሌግራም መነጋገሪያ?
13. ገንዘብ የነጠቀው ልጅ ለእርዳታ በመጡት ፖሊሶች አማካኝነት ወደ ህግ ቦታ ተወስዷልን?
14. ገንዘቡን የተነጠቀው ሰውዬ መጠሪያ ስሙ ‘ሸባው’ ነውን?
15. ሰውዬው ገንዘቡን የተነጠቀበት እለት ሰኞ ነውን?
16. በድብድቡ ወቅት የሰውዬው ሞባይል ስልክ ከገንዘቡ ጋር አብሮ ተወስዷል ወይስ ከኪሱ ነው ወድቆ የጠፋው?
17. ፖሊሶቹ ገንዘቡን የነጠቀውን ልጅ ለመያዝ የሮጡት በተለያዩ አቅጣጫ ነበርን?
18. ገንዘቡን የነጠቀው ልጅ በፖሊሶቹ ቁጥጥር ስር ሲውል የድረሱልኝ ጩኸት አሰምቶ ነበርን?
19. ሰውየው ዘረፋ በተፈጸመበት ዕለት የሚጠበቅበትን ግብር ከፍሏልን?
20. በግጭቱ ወቅት ከባድ ብልሽት የደረሰበት ገንዘቡን የነጠቀው ልጅ ብስክሌት ነው ወይስ የሰውዬው?
21. ገንዘብ የነጠቀው ልጅ መጠሪያ ስሙ “ይሁኔ ሁሴን” ነውን?
22. ልጁ ገንዘቡን ሲነጥቅ ሰውየው ላይ በመጮህ ማስፈራራት ሞክሯልን?
23. ለእርዳታ ከመጡት ፖሊሶች የአንዱ ፖሊስ መጠሪያ ስም “መሃመድ አሊ” ነውን?
24. ገንዘብ የነጠቀውን ልጅ የመታው ቀድሞ በቁጥጥር ስር ያዋለው ፖሊስ ነውን ወይስ ዘግይቶ የደረሰው ፖሊስ?

**አባሪ ሐ ፣ የሱብዕና መጠይቅ**

መመሪያ፡ ከዚህ ቀጥሎ የተዘረዘሩት ዓረፊተ ነገሮች የሰዎችን ስብዕና ይገልጻሉ። እባክህን(ሽን) የሚከተለውን የመመዘኛ መስፈርት በመጠቀም እያንዳንዱ ዐረፍተ ነገር ምን ያህል የአንተን(ችን) ስብዕና እንደሚገልጽ አሳይ። ምዘናህ(ሽ) አንተን(ችን) አሁን ላይ ያለውን ሁኔታ እንጅ ወደፊት ልትሆን(ሆኝ) የምትሻውን(ሽውን) መሰረት ሊያደርግ አይገባም። በተቻለ መጠን ምዘናው ራስህን(ሽን) ከሌሎች ተመሳሳይ የታ እና እድሜ ካላቸው የምታውቃቸው(ቂያቸው) ሰዎች አንፃር ለራስህ(ሽ) ታማኝ በሆነ መልኩ አከናውን(ኝ)። የአንተን(ችን) ስብዕና በታማኝነት እንዲገልፁ ሲባልም የምትሰጠው(ጭው) መልሶች በጥብቅ ሚስጥርነት ይያዛሉ። እባክህን(ሽን) እያንዳንዱን ዐረፍተ ነገር በጥሞና በማንበብ የአንተን(ችን) ስብዕና ይበልጥ ይገልጻል በምትለው(ይው) ሳጥን ውስጥ የ“√” ምልክት አስቀምጥ(ምጭ)፡

ተራ ቁጥር	ዓረፍተ ነገር	በጣም ትክክለኛ ያልሆነ	ትክክለኛ ያልሆነ	መወሰን ያዳግተኛል	ትክክለኛ የሆነ	በጣም ትክክለኛ የሆነ
		(1)	(2)	(3)	(4)	(5)
1.	ጨዋታ አድማቂ ነኝ።					
2.	የሰዎች ቀልብ እንዴት እንደሚሳብ (እንደሚገዛ) አውቃለሁ።					
3.	በንግግሬ ቁጥብ ነኝ።					
4.	አይን ውስጥ መግባት አልወድም።					
5.	የህይወት ተሞክሮዬ ብዙም አስደሳች አይደለም።					
6.	አብዛኛውን ጊዜ ጭንቀት ይሰማኛል።					
7.	አብዛኛውን ጊዜ ተራነት ይሰማኛል።					
8.	እራሴን እጠላለሁ።					
9.	ባህሪዬ ተለዋዋጭ ነው።					
10.	በቀላሉ እርበተቢታለሁ።					

11.	አልፎ አልፎ ድብርት ይሰማኛል።					
12.	በእኔነቴ እጅግ ደስተኛ ነኝ።					
13.	በነገሮች በቀላሉ አልበሳጭም።					
14.	ከእቅዴ ዝንፍ አልልም።					
15.	እቅዴን እፈፅማለሁ።					
16.	መሰራት ያለበት ስራ በሰአቱ እንዲሰራ አደርጋለሁ።					
17.	ለ ዝርዝር ነገሮች ትኩረት እሰጣለሁ።					
18.	በቀጥታ ወደ ስራ መግባት አልወድም።					
19.	ግዴታዬን በአግባቡ አልወጣም።					
20.	ጊዜዎን በአረባ ነገር ላይ አሳልፋለሁ።					
21.	ማንንም አላስቀይምም።					
22.	ሰው አክባሪ ነኝ።					
23.	ሰውን እንዳመሉ አስተናግዳለሁ።					
24.	ሰዎች ዘና እንዲሉ አደርጋለሁ።					
25.	ሰዎችን ለመናገር ወደኋላ አልልም።					
26.	ሰዎችን አበቀላለሁ።					
27.	ጥበብ ጠቃሚ ነው ብዬ አምናለሁ።					
28.	ግልፅ ምናብ አለኝ።					
29.	ስለ አዳዲስ ሀሳብ መስማት ያስደስተኛል።					
30.	ሰዎች ጋር በቁም ነገር ዙሪያ እነጋገራለሁ።					

31.	ለ ጥበብ ትኩረት የለኝም።					
32.	መተማኛዎቼን የመገባታት ልምድ የለኝም።					
33.	መፈላሰፍ አልወድም።					

**አባሪ መ፣ የማህበራዊ እሴት መጠይቅ**

**መመሪያ:** ከዚህ በታች የቀረቡት ዐረፍተ ነገሮች የሰዎችን አመለካከትና ባህሪ የሚመለከቱ ናቸው። እያንዳንዱን ዐረፍተ ነገር ካነበብክ(ሽ) በኋላ ከሚከተሉት አማራጮች መካከል የአንተን(ችን) የባህሪ ሁኔታ ይወክላል የምትለውን(ይውን) በመምረጥ መልስ(ሽ)።

ተራ		ሐሰት	እውነት
ቁጥር	ዓረፍተ ነገር	(0)	(1)
1	አልፎ አልፎ አይዞህ ካላሉኝ (ካላበረታቱኝ) ስራ ይሰለቸኛል።		
2	በማንም ላይ የመረረ ጥላቻ ኖሮኝ አያውቅም።		
3	አንዳንዴ በህይወቴ ስኬታማ እንደማልሆን ይሰማኛል።		
4	ነገሮች እንዳሰብኳቸው አልሆን ሲሉኝ እበሳጫለሁ።		
5	ሰዎች እንዳላወቁበኝ እርግጠኛ ከሆንኩ ፊልም ሳልከፍል ልመለከት እችላለሁ።		
6	አንዳንዴ ያልተረጋገጠ ወሬ ማውራት እወዳለሁ።		
7	ትክክለኛ መሆናቸውን ባውቅ እንኳ አንዳንድ ጊዜ የበላዮቼን (ማለትም መምህራን፣ ርዕሰ መምህራንና የሸፍት አስተባባሪዎች) መጋፋት ደስ የሚለኝ ጊዜ ነበር።		
8	ማንም ይሁን ከሰው ጋር በምነጋገርበት ጊዜ ጥሩ አድማጭ ነኝ።		
9	ሰበብ ፈጥራ ደስ ካላሰኘኝ ነገር እርቄ አውቃለሁ።		
10	አንዳንድ ጊዜ በሰው አማካኝነት ጥቅሜን አሳክቻ አውቃለሁ።		
11	ጥፋት ከፈጸምኩ ጥፋቴን እቀበላለሁ።		
12	ቃሌን አጥፌ አላውቅም።		
13	ነጭናጫና አሰቸጋሪ ከሆኑ ሰዎች ጋር መቀራረብ(መዋል) አያዳግተኝም።		
14	ለአሰቸጋሪ ሰዎች እንኳ ቢሆን ትሁት ነኝ።		

15	እቃዎችን ስበር ስበር የሚል ስሜት ገጥሞኝ ያውቃል።		
16	ውለታ እንድመልሰ ብጠየቅ አልጠላም።		
17	ሰዎች ከእኔ የተለየ ሀሳብ እንኳ ቢኖራቸው ተበሳጭቸ አላውቅም።		
18	ረጅም ጉዞ ሳስብ ደህንነቱን ሳላረጋግጥ ንቅንቅ አልልም።		
19	በሰዎች እድል የቀናሁበት ጊዜ አለ።		
20	ሰዎች ሲሳሳቱ ለመቆጣት ድፍረት አግኝቻ አላውቅም።		
21	ያለምክንያት ተቀጥቻ አውቃለሁ ብዬ ተሰምቶኝ አያውቅም።		
22	ሰዎች መጥፎ አጋጣሚ ሲያጋጥማቸው የእጃቸው ነው በዬ አስባለሁ።		
23	ሰውን የሚያስቀይም ነገር ሆን ብዬ ተናግሬ አላውቅም።		

**አባሪ ሠ፣ የማስታወስ ችሎታ /ብቃት/ መጠይቅ**

መመሪያ፡ ከዚህ በታች የተዘረዘሩት ዓረፍተ ነገሮች አንተ(ቺ) በተለያዩ ሁኔታዎች ካለህ(ሽ) የማስታወስ ብቃት(ችሎታ) ጋር የሚዛመዱ ናቸው። እያንዳንዱን ዓረፍተ ነገር በጥሞና በማንበብ የቀረበው ሀሳብ የአንተ(ቺ) የማስታወስ ብቃት ምንያህል እንደሚገልጽ በተሰጡት አማራጮች መካከል አንዱን በመምረጥ አመልክት(ች)። አማራጮቹ የሚከተሉት ናቸው።

1. በጭራሽ አልሰማም
2. አልሰማም
3. መወሰን ያዳግተኛል
4. እስማማለሁ
5. በጣም እስማማለሁ

ተራ ቁጥር	ዓረፍተ ነገር	በጭራሽ አልሰማም	አልሰማም	መወሰን ያዳግተኛል	እስማማለሁ	በጣም እስማማለሁ
		(1)	(2)	(3)	(4)	(5)
1	ስልክ ቁጥሮችን በቀላሉ አስታውሳለሁ።					
2	በአንድ ታሪክ ውስጥ በግልጽ የቀረበን ሃሳብ በቀላሉ ለማስታወስ አልቸገርም።					
3	የተዋወቅሁትን ሰው ስም ለማስታወስ አልቸገርም።					
4	እንደ ቁልፍ ያሉ ነገሮችን ቤት ውስጥ የት እንዳስቀመጥኳቸው ለማስታወስ አልቸገርም።					
5	አንዴ ያየሁትን ቦታ ለማስታወስ አልቸገርም።					
6	ከዚህ በፊት በመጠኑ ትርጉማቸውን የማውቃቸውን ቃላቶች የማስታወስ ችሎታዬ ከፍተኛ ነው።					
7	የማስታወስ ችሎታዬ አንዱ ጠንካራ ጎኔ ነው።					

8	ወደፊት እጠቀምበታለሁ ያልኩትን ቃል ለማስታወስ አልቸገርም።					
9	በንግግር ወቅት አንድ ሰው የተናገረውን ዋና ነጥብ ለማስታወስ አልቸገርም።					
10	ለእኔ ጠቃሚ የሆነን ቀጠሮም ይሁን ሌላ ጉዳይ ለማስታወስ አልቸገርም።					
11	ባለፈው ክፍለ ጊዜ የተማርኳቸውን ነጥቦች የማስታወስ ችሎታዬ ጠንካራ ጎኔ ነው።					
12	ትኩረት የሚሹ ስራዎችን ለማስታወስ አልቸገርም።					
13	ፈታኝ የሆኑ ስራዎችን ለመከወን በማስታወስ ችሎታዬ እመካለሁ።					
14	አስቸጋሪ የሆኑ መረጃዎችን የማስታወስ አቅም አለኝ።					

**አባሪ ረ ፣ ሁኔታዎችን የመቆጣጠር ዝንባሌ መጠይቅ**

መመሪያ፡-ከዚህ በታች አንተ(ቺ) በራስህ(ሽ)ና በዙሪያህ(ሽ) ያሉ ሁኔታዎችን ከመቆጣጠር ዝንባሌና ለተለያዩ ገጠመኞች(አጋጣሚዎች) ከምትሰጠው(ጭው) ምላሽ ጋር ተያያዥነት ያላቸው ሃሳቦች ቀርበዋል። እያንዳንዱን ዐረፍተ ነገር በጥምና በማንበብ የቀረበው ሃሳብ የአንተን(ችን) ባህርይ ምን ያህል እንደሚገልጽ ከተሰጡት አምስት አማራጮች አንዱን በማክበብ አመልክት(ች)። አማራጮቹ የሚከተሉት ናቸው።

1. በጭራሽ አልሰማማም
2. አልሰማማም
3. መወሰን ያዳግተኛል
4. እስማማለሁ
5. በጣም እስማማለሁ

ተራ ቁጥር	ዓረፍተ ነገር	አማራጭ				
		በጭራሽ አልሰማማም	አልሰማማም	መወሰን ያዳግተኛል	እስማማለሁ	በጣም እስማማለሁ
		(1)	(2)	(3)	(4)	(5)
1	ህይወቴ በእጅጉ በአጋጣሚዎች ተጽእኖ ስር የወደቀ ነው።					
2	ታዋቂ የመሆን እድሌ በአብዛኛው የሚወሰነው በእራሴ ችሎታ ነው።					
3	በአብዛኛው ጥቅሜን ከመጥፎ አጋጣሚ የመጠበቅ እድሉ የለኝም።					
4	የምሻውን ነገር የማገኘው በአብዛኛው በእድለኝነቴ ነው።					
5	የቱንም ያህል ጥሩ ችሎታ ቢኖረኝ፣ ያለመምህራኖቼ መልካም ፈቃድ የክፍል ሽልማት ሊሰጠኝ አይችልም።					
6	ህይወቴ በሃይለኞች መዳፍ ውስጥ ናት።					

7	እድሌ ከሆነ ከመኪና አደጋ አላመልጥም።					
8	እንደ እኔ ያሉ ሰዎች ሌሎች ጉልበት ያላቸውን ሰዎች ተጋፍጠው ጥቅማቸውን የማስከበር እድላቸው እጅግ አናሳ ነው።					
9	የምፈልገውን ለማግኘት የበላዮቼን ( ማለትም መምህራኖቻቸው፣ ታላላቆቻቸው፣ ወላጆቻቸው፣ ቤተሰቦቻቸውን) ማስደሰት አለብኝ።					
10	ታዋቂ የምሆነው እድል ብሎ ጊዜና ቦታው ሲገጥምልኝ ነው።					
11	ከሞላ ጎደል የህይወቴን እጣፈንታ የምወስነው እኔ ነኝ።					
12	የመኪና አደጋ ያጋጥመኝ አያጋጥመኝ የሚወስነው በአሽከርካሪው ነው።					
13	ህይወቴ የሚወስነው በራሴ ጥረት ነው።					
14	የጓደኞቼ መብዛት ወይም ማነስ በአብዛኛው የአጋጣሚ ጉዳይ ነው።					

**አባሪ ሰ፣ የልጅ አስተዳደግ ዘዴ መጠይቅ**

**መመሪያ:** ይህ ክፍል ዘጠኝ ዓረፍተ ነገሮችና ስድስት ጥያቄዎች አሉት። ከተራ ቁጥር 1 እስከ 9 የተዘረዘሩትን እያንዳንዱን ዓረፍተ ነገር በጥምና በማንበብ በቀረበው ሃሳብ ምንያህል እንደምትስማማ(ሚ) ለእያንዳንዳቸው ከተሰጡት አምስት አማራጮች አንዱን ብቻ በማክበብ መልስ(ሽ)፡፡አማራጮቹ የሚከተሉት ናቸው፡፡

1. በጭራሽ አልሰማማም
2. አልሰማማም
3. መወሰን ያዳግተኛል
4. እስማማለሁ
5. በጣም እስማማለሁ

ተራ ቁጥ.	ዓረፍተ ነገር	አባት (የእንጀራ አባት፡ወንድ አሳዳጊ)					እናት (የእንጀራ እናት፡ ሴት አሳዳጊ)				
		1	2	3	4	5	1	2	3	4	5
1.	ችግር ቢያጋጥመኝ በወላጆቹ እርዳታ እተማመናለሁ፡፡										
2.	ወላጆቹ በማናቸውም በምሰራቸው ስራዎች ያበረታቱኛል፡፡										
3.	ወላጆቹ የተሻለ ሀሳብ ካለኝ እንድናገር ይፈቅዱልኛል፡፡										
4.	ወላጆቹ ዘወትር በፍቅርና በፈገግታ ያናግሩኛል፡፡										
5.	ወላጆቹ አንድ ነገር እንድሰራ ሲያዙኝ ምክንያቱን ያብራሩልኛል ፡፡										
6.	በትምህርቱ ዝቅተኛ ውጤት ሳገኝ ወላጆቹ ጠንክሬ እንድሰራ ያበረታቱኛል፡፡										
7.	ወላጆቹ የጓደኞቼን ማንነት ያውቃሉ፡፡										
8.	ወላጆቹ እየዋሩኝ ጊዜያቸውን ያሳልፋሉ፡፡										
9.	ወላጆቹ ከጓደኞቼ ጋር ውጭ ከምሄድ ይልቅ እየዋራኋቸው ቤት ውስጥ ብቆይ ይወዳሉ፡፡										

መመሪያ፣ ከተራ ቁጥር 10 እስከ 13 ለተዘረዘሩት ለእያንዳንዱ ጥያቄ ከተሰጡት አማራጮች መካከል የአንተን(ችን) ሁኔታ ይበልጥ ይገልጻል የምትለውን(ይውን) አማራጭ ምረጥ(ጭ)።

10. ወላጆችህ(ሽ) ትምህርት ቤት መሄድህ(ሽ)ና ስላለመሄድህ(ሽ) ለማወቅ ምን ያህል ይጥራል?

አባት(የእንጀራ አባት፣ወንድ አሳዳጊ) እናት(የእንጀራ እናት፣ሴት አሳዳጊ)

- ሀ. ፈጽሞ አይጥርም
  - ለ. በመጠኑ ይጥራል
  - ሐ. በእጅግ ይጥራል
- ሀ. ፈጽሞ አትጥርም
  - ለ. በመጠኑ ትጥራለች
  - ሐ. በእጅግ ትጥራለች

11. ወላጆችህ(ሽ) በትርፍ ጊዜህ(ሽ) ምን እንደምትሰራ(ሪ) ለማወቅ ምን ያህል ይጥራሉ?

አባት(የእንጀራ አባት፣ወንድ አሳዳጊ) እናት(የእንጀራ እናት፣ሴት አሳዳጊ)

- ሀ. ፈጽሞ አይጥርም
  - ለ. በመጠኑ ይጥራል
  - ሐ. በእጅግ ይጥራል
- ሀ. ፈጽሞ አትጥርም
  - ለ. በመጠኑ ትጥራለች
  - ሐ. በእጅግ ትጥራለች

12. ወላጆችህ(ሽ) በእርግጠኝነት ከትምህርት ቤት መልስ ጊዜህ(ሽ)ን እንዴት እንደምታሳልፍ(ፊ) ለማወቅ ምን ያህል ይጥራሉ?

አባት(የእንጀራ አባት፣ወንድ አሳዳጊ) እናት(የእንጀራ እናት፣ሴት አሳዳጊ)

- ሀ. ፈጽሞ አይጥርም
  - ለ. በመጠኑ ይጥራል
  - ሐ. በእጅግ ይጥራል
- ሀ. ፈጽሞ አትጥርም
  - ለ. በመጠኑ ትጥራለች
  - ሐ. በእጅግ ትጥራለች

13. ወላጆች(ሽ) ገንዘብ በኖረህ(ሽ) ጊዜ ለምን እንደምታውል(ይ) ለማወቅ ምን ያህል ይጥራሉ?

አባት(የእንጀራ አባት፣ወንድ አሳዳጊ) እናት(የእንጀራ እናት፣ሴት አሳዳጊ)

- ሀ. ፈጽሞ አይጥርም
  - ለ. በመጠኑ ይጥራል
  - ሐ. በእጅግ ይጥራል
- ሀ. ፈጽሞ አትጥርም
  - ለ. በመጠኑ ትጥራለች
  - ሐ. በእጅግ ትጥራለች

**አባሪ ሽ፣ የአቋም አመለካከት መጠይቅ**

በ መምህራን የሚሞላ መጠይቅ

- የተጠኝው ስም \_\_\_\_\_
- የክፍል ደረጃ \_\_\_\_\_
- የገምጋሚው ስም \_\_\_\_\_
- ቀን \_\_\_\_\_

**መመሪያ:** ከዚህ በታች የተዘረዘሩትን እያንዳንዱን ዐረፍተ ነገር በጥሞና በማንበብ የተጠኝውን አቋም በይበልጥ ይገልጻል የሚሉትን ዓማራጭ በማክበብ አመልክት(ች):: እባክዎን ተጠኝውን ሲገመግሙ ተጠኝው በክፍል ውስጥ በሚከናወኑ የመማር-ማስተማር ሂደት ጊዜ ባሳየው ባህሪ ላይ የተመሰረተ ይሁን።

ተራ ቁጥር	ዓረፍተ ነገር	ዓማራጭ			
		ጭራሽ	አልፎ-አልፎ	ባብዛኛው	ሁልጊዜ
		(1)	(2)	(3)	(4)
1.	ተማሪው መምህራን የሰጡትን አስተያየት ምን ያህል ይቀበላል?				
2.	ተማሪው ሌሎች ተማሪዎች የሰጡትን አስተያየት የመቀበል ዝንባሌው ምን ያህል ነው?				
3.	ተማሪው የፈጸመውን ስህተት የመከላከያ አዝማሚያው ምን ያህል ነው?				
4.	ተማሪው የፈጸመውን ስህተት የማመን አዝማሚያው ምን ያህል ነው?				
5.	ተማሪው ላመነበት ነገር የመቆም አዝማሚያው ምን ያህል ነው?				
6.	ተማሪው ሌሎች ተማሪዎችን በጥሩ ምሳሌነት የመምራት ዝንባሌው ምን ያህል ነው?				
7.	ተማሪው የተነገረውን እንዳለ (እንደወረደ) የመቀበል ዝንባሌው ምን ያህል ነው?				

*Assurance of the Researcher*

The undersigned agrees to accept responsibilities for the scientific, ethical, and technical conduct of the research project and for the provision of the required progress reports as per terms and conditions of research.

Submitted by:

Name \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_

Approved by:

Name \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_