Self-regulation and Disruptive Behavior among School Adolescents: The Moderating Effects of Family Structure

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Abstract: In Ethiopia, problem behaviors in adolescents are commonly reported phenomena. However, studies examining how personal factor (self-regulation) influence the same are rarely found. Hence, the present study aimed to examine the effects of self-regulation on adolescents' disruptive behavior using family structure as a moderating variable. Correlational research design was employed to address the objectives of the study. Data were collected from a randomly selected 304 adolescent students (155 males, 149 females) using 'the Problem Behavior Frequency Questionnaire', and 'Adolescents' Self-Regulation Inventory'. Multiple regression analysis and two-way ANOVA were used to examine relationships and differences. Findings indicated that there is a statistically significant negative relationship between self-regulation and disruptive behavior in adolescents. Adolescents from non-intact family structures were found to engage in more disruptive behavior than adolescents from intact family structures. Male adolescents were found more active in disruptive behaviors than female adolescents. Self-regulation difference in adolescents as a function of their sex and family structure was reported. Sex and family structures moderate the relationship between self-regulation and disruptive behavior in adolescents. Because self-regulation is crucial to shield adolescents from engaging in disruptive behaviors, it is recommended that life skill training be provided for the adolescents in this study area in order to foster their self-control skills.

Keywords: Disruptive behavior; Family structure; Self-regulation

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1. Introduction

Adolescence is a period of human development characterized by a complex set of developmental challenges that bridges childhood and young adulthood (Santrock, 2007). It is also a time of major changes, social, emotional, physical, and cognitive (Steinberg, 2011). Likewise, Steinberg describes adolescence as the period of rapid developmental changes where the person is tempted to experiment with both positive and negative behaviors. Through their experiment with different things, that are typical for their ages, as well as other triggering factors including low self-control, parental factors, poverty, unemployment, etc., sometimes their behaviors evolved into a more harmful, disruptive behavior (Ciarrochi, Chan, and Bajgar, 2001).

Different scholars equate the concepts of disruptive behaviors in adolescents with mal-adaptive behaviors, problem behaviors, aggressiveness, inappropriate behaviors, behavioral disorders, conduct disorders, and delinquent behaviors interchangeably, to mention a few. For example, Carolyn, Julianne, and Smith (2017) characterize disruptive behavior in adolescents as a wide range of behaviors that includes disobedience, defiance, aggressive acts against self or others, drug use and abuse stealing, lying, property destruction, and delinquency. Karimy *et al.* (2018) define disruptive behaviors in adolescents as defiance of authority figures, furious outbursts, and other anti-social activities such as lying and stealing. In general, defiant behavior, not complying with authority figures, rule-breaking, aggressiveness, absent, or early leaving classes, drug and alcohol abuse, engaging in various delinquent behaviors, harming or attempting to harm others, and insulting teachers and other authority figures are all common themes in the above-mentioned definitions for disruptive behavior by scholars in the field.

Adolescent disruptive behavior is a worldwide phenomenon where it has high prevalence and potentially fatal repercussions in adolescents' life themselves and people around them including their families, peers, community, and a nation in general (Kokkinos and Panayiotou, 2004). Prevalence rates have been estimated to vary from elementary to high school students Kaltiala-Heino, Rimpelä, Rantanen, and Rimpelä (2000) to as high as 27 percent for elementary school students and 51 percent for adolescents (Bond, Carlin, Thomas, Rubin, and Patton, 2001). Though the prevalence of the problem has yet to be studied in Africa in general and in Ethiopia in particular, it is expected to be high due to a variety of factors such as poverty, unemployment, recurrent drought, ethnic conflict, incessant civil war reported here and there, and an increasing number of divorces.

Adolescents with disruptive behavior would experience different challenges later in life. For example, dropping out of school (Kokko, Tremblay, Lacourse, Nagin, and Vitaro, 2006); inability to understand and manage emotions (Ciarrochi *et al.,* 2001); developing of antisocial personality (Rijlaarsdam *et al.,* 2016); at higher risk for drug abuse and mental health problems (Loeber and Keenan, 1994); criminal involvement, incarceration, inability to develop and maintain healthy and meaningful relationships, social isolation, substance use, and risky sexual behaviors, and learning disorders, poor to understand and manage emotions and higher risk of committing anti-social and criminal behaviors are problems reported by adolescents with disruptive behaviors (Adimora, Akaneme, and Aye, 2018; Ciarrochi *et al.,* 2001).

Among the factors that contribute to disruptive behaviors in adolescents' family structure, particularly single and step-parent family environment has a reinforcing effect on adolescents' disruptive behavior problems. For example, according to Rydell (2010) living in single and step-parent families is a strong predictor of disruptive behavior in adolescents. Likewise, children from divorced families and family conflict are the strong predictor of disruptive behavior in adolescents. Reinforcing this idea, Ginther and Pollak (2013) revealed that children with divorced parents have greater behavior difficulties than children in intact households and that children living in stepparent and blended families also have higher behavioral problems. Some recent studies also demonstrate that adolescents from single-parent families are more involved in different disruptive behavior problems than adolescents from intact families (e.g., Park and Lee, 2020; Mason, 2012; Ginther and Pollak, 2013; Bruffaerts *et al.,*2016). These studies portray how single and stepparent families contribute to

different problem behaviors in adolescents. These researchers, in their explanations, have stated that single parents' lack of time to spend and supervise their children, as well as a scarcity of resources for raising children, are the major causes of reported disruptive behavior among adolescents from single parents compared to adolescents from intact families.

Disruptive behavior in adolescents can be reported by both sexes albeit the manner in which they do so appears to be different. For example, while adolescent boys engage in aggressive behavior such as physical assault, female adolescents engage in relational aggression such as threatening to withdraw acceptance or friendship, ostracizing, or using social exclusion or rumor spreading (Crick, Casas, and Ku, 1999); lying/cheating, stealing, running away from home, swearing, truancy, alcohol or drug use (Bongers, Koot, van der Ende, and Verhulst, 2004).

One of the personal attributes that protect adolescents from engaging in various disruptive problem behaviors is their ability to self-regulate (Bassett, Denham, Wyatt, and Warren-Khot, 2012; Graziano *et al.*, 2015; Ponitz, McClelland, Matthews, and Morrison, 2009). Self-regulation, for example, is defined by Moilanen (2007) as the ability to flexibly activate, monitor, inhibit, persevere, and/or adapt one's behavior, attention, emotions, and cognitive strategies in response to internal cues, environmental stimuli, and feedback from others to achieve personally relevant goals. The same token, Miller and Brown (1991) describe self-regulation as the ability to make deliberate decisions about how one acts and behaves rather than relying on impulses. Self-regulation is related to action control and attention control and is considered the ability to keep one's attention focused on a given goal despite distractions (Diehl, Semegon, and Schwarzer, 2006). Self-regulation generally refers to a deliberate attempt to modulate, modify, or inhibit actions and reactions toward a more adaptive end (Barkley, 2004).

Self-regulation is particularly important for developing socio-emotional competence; however, difficulties with such regulation can also have negative consequences (Eisenberg and Spinrad, 2016; Troy and Mauss, 2011). For example, when difficulties with emotion regulation are externalized, they can be manifested in aggression and rule-breaking in the schools and other contexts of life which distract students from focusing on their schoolwork and contribute to teacher burnout and a host of socio-emotional difficulties (Allman and Slate, 2011; Mehta, Cornell, Fan, and Gregory, 2013). Studies have consistently linked low self-regulation to different problem behaviors in adolescents. For example, Heatherton and Wagner (2011) in their study on self-regulation asserted that individuals with low levels of self-regulation are more susceptible to addiction and sexual infidelity. Likewise, emotional troubles, addiction, crime, aggression, underachievement, substance abuse, and interpersonal problems have all been linked to a lack of self-regulation (Baumeister, Tice, and Vohs, 2018). These studies assert that low self-regulation has been associated with different problem behaviors in adolescents including alcohol abuse, violent and criminal behavior, underachievement in school and work, addiction, sexual infidelity, emotional troubles, crime, aggression, substance abuse, and other disruptive behaviors. On the other hand, strong self-regulation can form a resiliency against stressors, allow for a better focus on long-term goals, and make adolescents more proficient at cooperating and displaying other socially adaptable behaviors (Eisenberg and Spinrad, 2016).

Previous research on gender and self–regulation behavior has been equivocal, with some findings indicating female superiority (Gottfredson and Hirschi, 1990) and other findings reported no difference at all (Tefera, Ahimed, and Fentahun, 2015). In fact, there are researches findings that stressed female adolescents are better in their self-regulation than their male adolescent’s counterparts and vice versa. For example, Bjorklund and Kipp (1996) indicated that female adolescents are better in their self-regulation than their counterparts. Similarly, Shulman, Harden, Chein, and Steinberg (2015) asserted that associated with their low self-control adolescent males appear to outnumber adolescent females in fatal accidents, gambling, and crime. Moreover, Tetering, Laan, Kogel, Groot, and Jolles (2020) revealed that mid-adolescent males experience more difficulties with self-control and self-monitoring than females of the same age. On the other hand, in the report of other researchers (such as Papalia, Olds, and Feld Man, 2004), no significant sex difference in adolescents' self-

regulation is indicated. In the Ethiopian context, though only very limited research has been conducted the reported results are inconclusive. For example, Tefera *et al.* (2015) revealed that female adolescents were found to be better in their self-regulation than male adolescents. In contrast to the works of Tefera and his associate, Addis (2014) reported the absence of sex differences in adolescents' self-regulation. Thus, from the preceding review, it is possible to note that though most of the previous studies done on the area favor female adolescents, still it is difficult to take a firm stand that one sex group is better than the other sex group in their self-regulation during adolescents.

Currently, here in the Ethiopian context, people are increasingly complaining that today's adolescents are not complying with authorities, are more engaged in anti-social behaviors, substance use, and abuse, drop out of school, and have no respect for their elders etc. Adolescents of Harari regional state are not exempted from this blame. For example, since the researcher has been living in the Harari Regional State, he has got a chance to frequently visit the secondary schools in the region. It was this time that the researcher comes to witness the grave disruptive behaviors in adolescents attending their high school education in the region. Disturbing in the classes while the teacher is teaching, coming late and jumping into the class without getting permission to let into the class from the teachers, customary late coming to the schools, fighting each other while the teacher is teaching, leaving the classroom without getting permission to leave the class for nothing while the teacher is teaching, insulting teachers, even throwing stones to teachers, teasing on teachers, hitting teachers and running away, chewing chat in the school premises, getting into class with chat stashed in their cheeks, to mention a few are the common witnessed disruptive behaviors among adolescent students of Harari regional state. However, previous research on adolescent problems in Ethiopia has been focused on tangential factors that contribute to adolescents' disruptive behavior, with many of them placing a high value on contributing elements such as individual-level factors, societal factors, family educational status etc. (Mekuria, Girma, and Birhanu, 2019; Getachew and Sintayehu, 2006; Zeray, 2019; Bezabi, 2020; Fayso, 2019). However, to the best of the researchers' knowledge, none of them studied the effects of self-regulation on adolescents' disruptive behavior using family structure as moderating variable in the Ethiopian setting in general and in the Harari regional state in particular. Therefore, given the dearth of research in this area, it appears that this field of research has been given a blind spot. Hence, the current research attempted to throw some light on this under-researched part of the field.

Hence, the following research questions were forwarded to be addressed:

1. Is there a statistically significant relationship between self-regulation and disruptive behavior in adolescents?
2. Is there a statistically significant difference in adolescents' self-regulation and disruptive behaviors as a function of their sex and family structure?
3. Do Sex and Family structure moderate the relationship between self-regulation and disruptive behavior in adolescents?

2. Research Methods

2.1. Study Design

For this study was primarily concerned with the relationship between the variables of interest, a correlational research design was used to serve the intended purpose. In line with this, Creswell (2012) asserted that correlational study design helps the researchers in describing and measuring the degree of association (relationship) between two or more variables or sets of scores. Hence, the design was chosen because it is well suited to examining the relationships between predictor and criterion variables of the study.

2.2. Study Site

The present study was conducted in the Harari regional state. Harar, one of Ethiopia's oldest and popular cities, is located in the Ethiopian Highlands' eastern extension. It is located 522 kilometers

east of Ethiopia's capital, Addis Ababa. Harar is situated at an elevation of 1,885m above sea level. Currently, a total of 183,344 people live in the region. The Islamic faith is practiced by the majority of the population (69%) in the city, followed by Orthodox Christianity, which is practiced by roughly 27% of the entire population. Different ethnic groups including Oromo, Amara, Harari, Guragie, and other ethnic groups have been living together in this region from the time of immemorial. According to Ethiopian Central Statistical Agency (CSA), (2007) 12.5 percent of children under the age of 18 live with only one parent or are alone since both parents have died. Furthermore, in this region, according to CSA (2007), 10.15% of marriage ends in divorce. Unemployment and illiteracy are also the commonly reported challenges in the region, according to CSA (2007) a cash crop product like chat (khat) is the dominant income generation for many habitats in the city.

2.3. Participants of the Study

The present study was conducted on two randomly selected senior secondary schools in Harari Regional State. One school is from government schools (i.e., Shekib senior secondary school) and the other is from privately owned senior secondary schools (i.e., SOS Academy). Currently, a total of 1403 adolescent students (1088 in Shekib senior secondary school and 315 in SOS Academy) have been enrolled and attending in the respective schools. The sample size of the study was determined using Drapper and Smith's (1998) formula for the non-single population (cited in Tefera and Ahimed, 2015). According to Drapper and Smith, sample size (n) is a function of the factors (Xi) and categories (Ck) involved in research such that a minimum of 10 observations is required for each category of a factor n= (Cfn1 x Cfn2 x Cf3x…….Cfn).

Where:

n = sample

C_{f1} = number of categories of factor 1

C_{f2} = number of categories of factor 2

C_{f3} = number of categories of factor 3

C_{fn} = number of categories of factor n

There are four variables in the present research (i.e., sex, school type, family structure, and grade level), and there are two categories in the first factor (male and female), two categories in the second factor (private and government school), two categories in the third factor (intact and non-intact family structure), and four categories in the third factor (grade 9, 10, 11 and 12). Hence, a minimum sample size this researcher has to draw is 2 x 2 x 2 x 4 x 10 = 320. However, for the statistical precision and to increase the representativeness of the study the sample size was increased to 325 participants. After fixing on the total sample size (n) to be drawn from the population (N) using the above formula, then proportional allocation method was used to determine the amount to be drawn from each of the two schools.

The number of adolescent students enrolled in grade levels nine to twelve, as well as the number of students based on their sexes were then identified at each of the selected schools. Then, one class from each grade level was chosen by lottery method to ensure that all grade levels from nine to twelve were represented. Following this, participants in each class were classified depending on their sexes to ensure that both male and female adolescents are given equal opportunities, and then systematic random sampling technique was employed to select research samples. To do so, after collecting a list of students from the homeroom teachers, the male and female students were grouped separately, and then every "nth" was selected until the proposed sample size for each selected section was satisfied. This approach was implemented in all of the selected school sections. Accordingly, a total of 325 students of which 252 (129 Male and 123 Female) from the Shekib senior secondary school, and 73 (Male 37 and Female 36) from SOS Academy were randomly selected and participated in the study. The sample size of the participants selected from each school was determined based on the respective schools' total number of students. In such a way, the number of students currently enrolled in each school was proportionately represented in the study. However, of 325 students, 21 of which 11 were

male and 10 female students were either not returned the questionnaire or wrongly and inappropriately responded to the items. Hence, data analysis was made on 304 respondents of which 155 were male and 149 were female students.

2.4. Instruments of Data Collection

A self-report instrument was used to collect data on three important issues: participants' demographic information like sex, age, school type, grade level, and family structure (Part I), Problem Behavior Frequency Scale (PBFS) that employed to measure disruptive behavior in adolescents (Part II), and the Self-Regulation Inventory (Part III).

Problem behavior frequency scale (PBFS): To measure disruptive behavior in adolescents, an adolescent self-report version of Problem Behavior Frequency Scale (PBFS) developed by Farrell *et al*. (1992) then modified by Farrell *et al*. (2000) was used. The scale contains 26 items that cover four general areas of problem behaviors in adolescents; (1) physical aggression, (2) nonphysical/relational aggression, (3) delinquent behavior, and (4) drug use. Responses were based on a 6-point scale: 1 (never), 2 (1–2 times), 3 (3–5 times), 4 (6–9 times), 5 (10–19 times), and 6 (20 times or more). Higher scores indicate more involvement in disruptive problem behaviors. Sample items of the scale are: threatened a teacher, spread a rumor, been suspended from school for bad behavior, damaged school or other property that did not belong to you, smoked cigarettes. Pertaining to the scale's internal consistency adequate and reasonably high Cronbach's α coefficients have been reported for all dimensions of the scale. A number of items and alpha coefficients for the (PBFS-26) subscales are as follows: The alpha coefficient for the drug use dimension (6 items) of the scale was α =.87 in the urban sample and .88 in the rural sample. In the urban sample, the alpha coefficient for the physical aggressiveness dimension with seven items was α = .85, while in the rural sample, it was α = .82. Similarly, the alpha value for the non-physical/ relational aggression dimension with seven items was α = .85 in the urban sample and α =.84 in the rural sample. For delinquent behavior dimension with six items Cronbach alpha value α =.79 and α =.77 in the urban and rural samples reported, respectively. Further, in establishing the factor structure of the scale reasonably model fit results were reported such that Comparative Fit Index (CFI) =0.93 was reported.

The adolescents self-regulatory inventory (ASRI): ASRI is originally developed by Moilanen (2007) to measure adolescents' self-regulation. The scale has 27 items categorized into two factors – short term self-regulation, and long term self-regulation with 13 items and 14 items respectively. Sample items of the scale are: I forget about whatever else I need to do when I am doing something really fun; I can calm myself down when I am excited or all wound up; If I really want something, I have to have it right away. Respondents are expected to rate how true each item is for them, ranging from 1 (not at all true for me) to 5 (really true for me). Higher scores on the ASRI indicate a good/ strong/ higher level of self-regulatory behavior. Lower scores on the ASRI indicate poor/ weak self-regulatory behavior. With regard to the internal consistency of the scale a Cronbach's alpha coefficient of α =.80 for the entire scale, α =.70 for short-term self-regulation, and α =.82 for long-term self-regulation were reported, respectively (Moilanen, 2007). The scale's confirmatory factors analysis result was also found to be reasonable, with Comparative fit index (CFI) =.88 and Root Mean Square Error of Approximation (RMSEA) =.05, respectively. Ethiopian researchers have also utilized the scale for the same purpose, and the scale has been shown to be internally consistent. Addis (2014) for example, employed the scale to examine adolescents' self-regulatory behavior, reporting an internal consistency Cronbach's alpha coefficient of α =.79 that is almost similar to the original Cronbach's alpha coefficient of the scale which was α =.80.

2.5. Pilot Study

Validation of the present instrument went through different stages beginning with checking the face and content validity of the scale using five experts in the field. Concerning face and content validity of the scale, two associate professors and one professor including two doctoral students in education

and one doctoral student in Language and Literature have forwarded their comments after looking into the instruments' relevance, appropriateness, clarity, and conceptual scope where they endorsed the two scales along with these criteria. During their evaluation of the scales, the experts found some problems and forwarded their feedback after checking the items' face validity where their comments and suggestions were dully incorporated for the scales improvement. The calculated content validity index ratios of all the scales were also found reasonably high. Accordingly, Scale level content validity index of Problem Behaviour Frequency Scale was (S-CVI =.97) which was found to be satisfactory in line with Polit and Beck (2006) recommendation that a minimum for S-CVI should be 0.8 for reflecting content validity of particular measure. In the same vein, Scale level content validity index of the Adolescents Self-regulatory Inventory was (S-CVI =.97). Thus, the values of the content validity index of the measures indicated that the items on the scales are representative of the construct used for drawing data from participants of the study.

Once the scales were modified as per expert comments, the scales were then translated from English to the native languages (Amharic and Afan Oromo) and then backward from the Amharic and Afan Oromo versions to English by bilingual experts. For forward translation, two bilinguals were selected. Their educational qualifications were Assistant professor having a master's degree in English with a good understanding of the Amharic language and the second translator was an Assistant professor with a master's degree in Afan Oromo and Literature with a good command of English. Then back translation was made by experts of two bilinguals having a good command of English language. Their Educational qualification was a Ph.D. student in English language and literature having a good command of English language and a Ph.D. student in Afan Oromo and literature with having a good command of English language. These experts were not familiar with the original English version scales. The scales translated into Amharic and Afan Oromo were given to the experts. They were requested to translate the Amharic and Afan Oromo versions of the scales into English, which they did. Then, only very minor differences observed during the back and forth translation was corrected. Accordingly, the Amharic and Afan Oromo translations were accepted and the scales were finalized. In a subsequent step, the translated data collection tools (Amharic and Afan Oromo) were distributed to a random sample of 95 adolescents (47 females and 48 Males) from Hamaressa and Hope of the East High Schools and collected back accordingly. Data collected from the participants were analyzed using Cronbach alpha internal consistency reliability followed by Exploratory and confirmatory factor analysis.

Following Exploratory factor analysis made for problem behavior frequency scale seven items which were low loading effect and cross-loading on more than one factor were removed such that for Physical aggression dimension= 5 items (α=.807); for relational aggression= 4 items (α=.803); for delinquency dimension = 4 items (α=.724); and for drug use dimension =6 items (α=.77) were obtained respectively. An entire scale's Chronback alpha result was (α=.88). Confirmatory factor analysis was also made to examine the fitness of the model obtained through exploratory factor analysis such that the obtained result was fit CMIN = 431.03, CMIN/DF = 2.95, CFI = .901, and RMSEA = 0. 080.

The self-regulation scale was also subjected to Exploratory factor analysis such that although some incompetent and cross-loading items were removed from the scale, it has maintained the two original dimensions of the scale with Cronbach alpha coefficient for short term self-regulation (7 items; α = .825) and long term self-regulation (12 items; α =.95.) reported, respectively. Confirmatory factor analysis was also made to examine the fitness of the model obtained through exploratory factor analysis such that the obtained result was fit; CMIN = 439.73, CMIN/DF= 2.95, CFI = .925, and RMSEA = 0. 08, respectively.

2.6. Procedures

Before using the questionnaires for data collection, the questionnaires were translated into Amharic and Afan Oromo languages by language experts. This is due to the fact that, in the Harari region the

commonly used languages are Amharic and Afan Oromo. Then, after all the participants were in their respective classrooms, the researchers introduced themselves to the participants. Then, to get the students' permission to participate in the study the purpose of the study was clearly communicated to them. Then, after obtaining students' permission to participate in the study, a convenient time for the students to fill in the survey questionnaire was set in agreement with the students. Then, a conducive physical and psychological environment was created. To avoid confusions which could be experienced during data collection; they were given appropriate instructions for completing the questionnaires in their respective classrooms. Accordingly, the questionnaires were distributed and collected back. The whole process of data collection and administration was undertaken in the presence of the researcher so as to avoid some inconveniences that could arise during data collection.

2.7. Data Analysis

After the data were collected, coded, and encoded into (SPSS) window, version 24, data cleaning was performed such that missing and incomplete responses were discarded and made ready for further analysis. Pearson product-moment correlation coefficient was used to measure the association among variables of the study. Multiple regressions were run to test the unique and cumulative effect of independent variables on the dependent variables. It was also run to examine the moderating effects of sex and family structure on the relationship between self-regulation and disruptive behavior in adolescents. Finally, to examine whether there is a statistically significant difference in adolescents' self-regulation as a function of their sex and family structure two- way ANOVA was employed.

2.8. Ethical Considerations

This study involved a host of ethical issues. To begin, permission to collect the data from the schools was sought from the high schools where the data was collected. In addition, participants were informed that their participation was entirely optional and that they could opt-out of the data collection process at any time. In order to keep the information anonymous, all participants were told not to write their names on the questionnaires. Furthermore, participants were assured that the information gathered from them would be utilized just for this study and that the information they provided would not be shared with anyone else.

3. Results

In this section, the demographic characteristics of the participants and the results are presented respectively based on the specific objectives.

3.1. Demographic Characteristics of Participants

As shown in Table 1, nearly equal size of both sexes (Male 51% and Female 49%) were involved in the study. 70.4 percent of respondents came from an intact family, whereas 29.6% came from a non-intact family (i.e., either living with single parents, step-parent, relatives, or others). Participants in the study ranged in grade level from ninth to twelfth. In terms of their age range, they are within the age bracket from 14 to 20.

Table 1. Demographic characteristics of the study participants

Variables	Categories	Frequency	Percentage
Sex	Male	155	51%
	Female	149	49%
	Total	304	100%
Grade level	9^{th}	61	20.1
	10^{th}	62	20.4
	11^{th}	104	34.2
	12^{th}	77	25.3
	Total	304	100%
Family structure	Intact	214	70.4
	Non intact	90	29.6
	Total	304	100%
Age	Minimum	Maximum	Mean
	14	20	16.78

3.2. Descriptive Statistics on Disruptive Behavior and Self-regulation

Descriptive statistics of the independent, dependent and moderating variables of the study are presented in the Table 2 below.

Table 2. Mean and standard deviation of the study variables

Variables		Disruptive behavior	Self-regulation
Family structure	Intact		
	Mean	12.43	62.42
	SD	11.05	16.3
	Non-intact		
	Mean	16.21	57.29
	SD	10.27	15.24
Sex	Male		
	Mean	15.34	58.74
	SD	12.98	16.13
	Female		
	Mean	11.68	63.05
	SD	7.96	15.90

Adolescents from non-intact family structures (M=16.21) had a higher mean score on disruptive behaviors than adolescents from intact households (M=12.43), as seen in Table 2. In the same Table, a visible mean difference between adolescents from the intact and non-intact family structures in their self-regulation was reported, with adolescents from intact family structures (M= 62.42) and from non-intact family structures (M = 57.29), respectively. As shown in the same Table, male adolescents (M= 15.34) are more involved in disruptive behaviors than their female adolescents' counterparts (M= 11.68). There is evidence of mean difference differences among male and female adolescents when it came to self-regulation, with male adolescents (mean= 58.74) and female adolescents (mean= 63.05), respectively.

3.3. Correlation among Variables of the Study

Pearson product moment correlation coefficient was run to examine the relationship between and among the study variables as indicated in the Table 3 below**.**

Table 3. Zero order correlation coefficients among variables of the study (N=304)

Variable	Sex	Family structure	Self-regulation	Disruptive behavior
Sex (Male = 1; female = 0)	1			
Family structure (intact =1; non intact = 2)	.016	1		
Self-regulation	-.41**	-.23*	1	
Disruptive behavior	.167**	.158**	-.345**	1

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

As can be seen in Table 3, a statistically significant relationship between sex and self-regulation in adolescents was reported (r = -.41, P < .01) such that a significant sex difference in adolescents' self-regulation was reported. This means female adolescents are better in their self-regulation than their male counterparts. In the same Table, a statistically significant and moderate relationship between sex and disruptive behavior was reported (r =.167, P<.01). This means that male adolescents are more likely than female adolescents to engage in various disruptive behaviors. A statistically significant and moderate relationship between disruptive behavior and family structure was reported (r = .158, P<.01). That means adolescents from non-intact family structures are more likely to involve in disruptive behaviors than adolescents from intact family structures. In the same Table, a statistically significant and negative relationship between self-regulation and disruptive behavior was reported (r = -.345, P<.01). This means that when adolescents' self-control improves, their desires to engage in various disruptive behaviors reduce.

3.4. Self-regulation by Sex and Family Structure

To examine whether there is a statistically significant difference in adolescents' self-regulation as a function of their sex and family structure two- way ANOVA was employed and reported in the Table 4.

Before running the analysis of variance, assumptions of using the test were checked such that Levine's test of equality of variance was not significant (P = .394) implying that it was safe to run the mentioned statistics for the intended purpose.

Table 4. Self-regulation by sex and family structure (Two-way ANOVA)

Tests of between-subjects effects					
Source	Sum of squares	Df	Mean square	F	Sig.
Sex	1125.273	1	1125.273	4.37	.021
Family structure	917.736	1	917.736	3.56	.028
Sex * Family structure	878.518	1	878.518	3.40	.031

As shown in Table 4, there was a statistically significant sex effect on adolescents' self-regulation (F=4.37, P<.05), indicating that female adolescents are found better in their self-regulation than their male counterparts. The same is true for family structure and self-regulation in adolescents (F= 3.56, P< .05), suggesting that adolescents with intact family structures are better at self-regulating than those without intact families. A statistically significant interaction effect between sex and family structure on adolescents' self-regulation was reported (F= 3.40, P< .05).

3.5. Disruptive Behaviors by Sex and Family Structure

To examine whether there is statistically significant difference in adolescents' disruptive behaviors as a function of their sex and family structure two- way ANOVA was employed and reported in the Table 5.

Before running the analysis of variance, assumptions of using the test were checked such that Levine's test of equality of variance was not significant (P = .42) implying that it was safe to run the mentioned statistics for the intended purpose.

Table 5. Disruptive behaviors by sex and family structure (Two-way ANOVA)

Tests of between-subjects effects					
Source	Sum of squares	Df	Mean square	F	Sig.
Sex	684.988	1	684.988	5.969	.010
Family structure	888.849	1	888.849	7.746	.006
Sex * Family structure	535.460	1	535.460	4.309	.023

As shown in Table 5, sex is found to have a significant effect on adolescents' disruptive behaviors (F= 5.96, P<.05). This implies that male adolescents are more likely to engage in disruptive behavior than their female counterparts, with male adolescents (Mean=15.34) compared to female adolescents (Mean=11.68), respectively. In the same vein, family structure is found to have a significant effect on adolescents' disruptive behaviors (F=7.74, P<.05), suggesting that adolescents from non-intact family structure are found to engage in disruptive behaviors than adolescents from intact family structure, with adolescents from non- intact family structure (Mean= 16.21) and adolescents from intact family structure (Mean=12.43), respectively. A statistically significant interaction effect between sex and family structure on adolescents' disruptive behaviors was reported (F= 4.309, P< .05), indicating that male and female adolescents from non-intact family structures were more likely to involve in different disruptive behaviors than male and female adolescents from intact family structures.

The effects of independent variables on dependent variables, as well as the moderating effects of sex and family structure on the link between self-regulation and disruptive behavior in adolescents, were investigated using regression analysis.

3.6. Prediction of Disruptive Behavior

Regression analysis was made to examine the independent and moderating effects of the study variables on the criterion variable (Disruptive behavior).

Table 6. Summary of multiple regression analysis

Model	R	R Square	Adjusted R Square	Std. Error Estimate
1	.412[a]	.170	.159	.917

a. Predictors: (Constant), Sex, Family structure, Self-regulation

b. Dependent Variable: Disruptive behavior

In Table 6, a multiple regression analysis was conducted to determine the combined effects of predictor variables on adolescents' disruptive behavior. It is found that about 15.9% (R2 = 0.159) of the variance in adolescent disruptive is explained by all the predictors together.

With regard to the contribution of each independent variables on the dependent variable self-regulation contributes the most to the dependent variable, as shown in Table 6 (β=-.27). This means that this variable makes the strongest unique contribution to explaining the dependent variable, when the variance explained by all other variables in the model is controlled for.

Table 7. Multiple regression analysis of the predictors on the criteria variable

Variables	β	t - value	Sig.
Self-regulation	-.272	-3.586	.000
Sex	.151	2.855	.005
Family Structure	.157	2.984	.003
Sex X Self-regulation	-.091	-6.801	.000
Family stru X Self-regula	-.227	-3.941	.000

a. Dependent Variable: Disruptive behavior

Self-regulation (t= -3.586, P < 05), sex (t= 2.85, P< 05), and family structure (t=2.98, P< 05) all have a significant effect on disruptive behaviors in adolescents, as indicated in Table 7. The interaction effect of sex and self-regulation on adolescents' disruptive behavior was significant (t= -6.80, P<.05). Therefore, sex moderates the relationship between self-regulation and disruptive behavior in adolescents. Likewise, in the same Table, a statistically significant interaction effect between self-regulation and family structure on adolescents' disruptive behavior was reported (t= -3.941, P<.05). Thus, family structure moderates the relationship between self-regulation and disruptive behavior in adolescents.

4. Discussions

Self-regulation or a deliberate attempt to modulate, modify, or inhibit actions and reactions toward a more adaptive end is important for developing socio-emotional competence; however, difficulties with such regulation can also have negative consequences on adolescents' healthy development. In line with this notion, in the present study, a statistically significant and negative relationship between self-regulation and disruptive behavior in adolescents was reported. This implies that better self-regulation would serve to shield adolescents from engaging in different disruptive behaviors. Consistent with this finding, studies have consistently linked poor self-regulation in adolescents with different problem behaviors in adolescents. For example, (Allman and Slate, 2011; Mehta *et al.,* 2013) revealed that when difficulties with self-control are externalized, they can be manifested in aggression and rule-breaking in the schools and other contexts of life which distract students from focusing on their school work and contribute to a host of problem behaviors. Moreover, Heatherton and Wagner (2011) in their study on self-regulation asserted that individuals with low levels of self-regulation are more susceptible to addiction and sexual infidelity. Likewise, emotional troubles, addiction, crime, aggression, underachievement, substance abuse, and interpersonal problems have all been linked to a lack of self-regulation (Baumeister *et al.,* 2018). On the other hand, strong self-regulation can form a resiliency against stressors, allow for a better focus on long-term goals, and make adolescents more proficient at cooperating and displaying other socially adaptable behaviors (Eisenberg and Spinrad, 2016). Furthermore, adolescents with poor self-regulation are more likely to engage in disruptive behavior, irrespective of their gender. In support of this notion, Tangney, Baumeister, and Boone (2004) in their study reported that irrespective of their gender adolescents who scored low in their self-regulation are more likely to involve in addiction, alcohol abuse, drug abuse, violent and criminal behavior, underachievement in school and work. In the same token, Heatherton and Wagner (2011) in their study on self-regulation asserted that individuals with low levels of self-regulation are more susceptible to addiction and sexual infidelity.

The present study also revealed that adolescents from the non-intact family structure are more likely to engage in disruptive behaviors than adolescents living with their both parents. In support of this notion, Rydell (2010) asserted that living in single and step-parent families is a strong predictor of disruptive behavior in adolescents. Reinforcing this idea, Ginther and Pollak (2013) revealed that children with divorced parents have greater behavior difficulties than children in intact households and that children living in stepparent and blended families also have higher behavioral problems.

Moreover, some recent studies also demonstrate that adolescents from single-parent families are more involved in different disruptive behavior problems than adolescents from intact families (e.g., Park and Lee, 2020; Mason, 2012; Ginther and Pollak, 2013; Bruffaerts *et al.*,2016). Likewise, Kearney (2008) revealed that adolescents from non-intact families (single mother, single father families) are more likely than adolescents from intact families to engage in various problem behaviors such as smoking, drinking alcohol, sexual experience, depression, suicidal ideation, perceived stress, and poor perceived health status. These researchers have proposed many explanations for why adolescents from single and stepparent families exhibit more disruptive behavior than adolescents from intact families. In their made justification, single parents' lack of time to spend and supervise their children, as well as a scarcity of resources for raising children, are cited as the major causes of reported disruptive behavior among adolescents from single parents compared to adolescents from intact households. Consistent with the above notions, Lamb (1999), cited in Wise (2003), states that life in a non-intact family structure is full of challenges not only because of economic strain but also because of a lack of concrete and emotional support in the face of socio-emotional stress which in one way or another negatively influences adolescents' disruptive behavior.

Contrary to the preceding notions, an extant number of researchers asserted that it is not a single-parent family that pushes adolescents to engage in different problem behaviors rather, poverty, parent conflict, and disagreement among family members, to mention a few that pushes adolescents to engage in different problem behaviors. For instance, Shek and Lin (2016) stressed that it is poverty, not single-parent families that push adolescents to engage in various disruptive behaviors. Adolescents who experience poverty are more likely to engage in problem behavior than adolescents from well-to-do families, regardless of their parents' family structure. Poverty, from the perspective of family stress, causes stress in parents, affecting their well-being, family relationships, and parenting practices, which can lead to delinquent behavior and other disruptive behavior in adolescents.

Pertaining to sex and self-regulation in adolescents, female adolescents are found better in their self-regulation than their male counterparts. In support of the present study, Bjorklund and Kipp, (1996) indicated that female adolescents are better in their self-regulation than male adolescents of their counterparts. In the same vein, Shulman *et al.* (2015) asserted that associated with their low self-control adolescent males appear to outnumber adolescent females in fatal accidents, gambling, and crime. Moreover, Tefera *et al.* (2015) revealed that female adolescents were found to be better in their self-regulation than male adolescents. Contrary to the present study, previous research on gender and self–regulation behavior reported no sex difference. For example, Papalia *et al.* (2004), in their report no a significant sex difference in adolescents' self-regulation is indicated. Likewise, Addis (2014) reported the absence of sex differences in adolescents' self-regulation. These contrasting research findings could be attributed to different factors including parental socialization of their children, personal factors, and family factors of the respondents, to mention a few (Cho, Kim, and Kim, 2018).

5. Conclusions and Recommendations

The findings of this research generally suggest the following major conclusions:

A statistically significant negative relationship was reported between self-regulation and disruptive behavior problem. This implies that self-control improves disruptive behavior in adolescents reduces.

Adolescents from non-intact family structures appeared to engage in more disruptive behavior than those from intact family structures where both parents live together.

Sex and family structures moderate the relationship between self-regulation and disruptive behavior in adolescents.

A statistically significant sex difference in adolescents' self-regulation behavior was reported.

The following suggestions would help address the gaps noted:

Because self-regulation is so important for preventing adolescents from engaging in various disruptive behaviors, life skill training focusing on fostering self-control abilities should be organized for the study area's adolescents. For the intended purpose, the national life skill training framework

prepared by Federal Ministry of Youth, Culture, and Sports (MoYCS, 2011a; Tefera, 2015) and the manual of this framework (MoYCS, 20011b) would be of much relevance for this purpose. The life skill category that focuses on the self-control domain is more specifically related to improving adolescents' self-regulation skills and, hence, more attention be paid to this aspect in the event that training is envisaged to be offered to this group.

Orientation and training be given to parents of adolescent students, particularly from single and stepparent families on how to treat their children with warmth and control to facilitate the conditions which are essential to foster their adolescent children's self-control skills.

Further research needs to be conducted on the role of sex in adolescents' self-regulation to clear possible inconsistencies noted in this and many other researches.

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