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A Test of General Strain Theory: Suicidal Ideation and Attempt Among Adolescents in Istanbul, Turkey

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A TEST OF GENERAL STRAIN THEORY: SUICIDAL IDEATION AND
ATTEMPT AMONG ADOLESCENTS IN ISTANBUL, TURKEY

A Thesis

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ABSTRACT

Previous suicidal ideation and attempt are the strongest predictors of subsequent completed suicide, which is the second leading cause of death among youth today. Research shows that the risk factors for adolescent suicidal behaviors can be grouped into demographic, social, and psychological categories, so a broad theoretical framework is needed to examine the range of these factors' effects. In this study, Agnew's general strain theory is tested to explain those suicidal behaviors among adolescents in Istanbul, Turkey. Agnew argued that specific strains were more likely to lead to deviance, therefore a corresponding set of strains are selected. He also argued that these strains lead to deviance through negative affective states. The effects of these strains on suicidal ideation and suicidal attempt including tests of mediating effects of negative affective states on relationships between strains and these suicidal behaviors are investigated using data from the 2008 Youth in Europe Survey. Separate logistic regressions indicate that almost all of the strain measures were significantly associated with adolescent suicidal ideation and suicidal attempt, and negative affective measures partially mediated the effects of strains on Turkish adolescents' suicidal behaviors. In general, findings are consistent with previous research that have identified various risk factors for suicidality, but also adds to the literature by incorporating multilevel factors into a single theory. Other results, implications, and limitations of the study are discussed.

CHAPTER 1. INTRODUCTION

Suicide is an important global public concern that claims nearly one million premature deaths every year (World Health Organization 2014). Suicide rates for most subpopulations remained stable over the last 45 years, but statistics suggest an increase in suicide among young people to the point that suicide is now the second leading cause of death among 15-29-year-olds (Fleischmann and De Leo 2014). The frequencies of suicidal ideation and suicidal attempt also increase during adolescence (Bridge, Goldstein, and Brent 2006; Eskin et al. 2007; Evans et al. 2005), and these suicidal behaviors are the strongest predictors of subsequent completed suicide (Large et al. 2011; Lewinsohn, Rohde, and Seeley 1996; Nock et al. 2008). These dramatic increases in adolescent suicides and suicidal behaviors are similarly reflected in statistics about Turkish adolescents (Enginyurt et al. 2014; Eskin et al.2007).

Research identified numerous risk factors that made it more likely that an individual will consider, attempt, or commit suicide, including demographic traits, social-environmental settings, and psychological problems. To accurately conceptualize and study suicidal behaviors as it relates to these risk factors, a study employing a broad theoretical framework and taking all these factors into account is needed. Originally developed by Agnew (1992) to explain crime and deviance, general strain theory (GST) can provide the required guidance. Agnew argued that people occasionally experience some disliked events and conditions that create pressure for corrective action. These *strains* are important because they cause the development of *negative affective states* such as anger, depression, fear, and anxiety; which then under certain conditions, lead to deviant behavior; in our case, to suicidal behaviors. GST is particularly useful in studying suicidal behaviors of adolescents because the two major components of the theory, strains and

negative affective states, correspond to the social/environmental and psychological/emotional risk factors of adolescent suicidal behaviors respectively. This enables researchers to investigate the combined effects of social/environmental risk factors (as strains) and psychological/emotional risk factors (as negative affective states) on suicidal behaviors by also identifying the relationship between two.

Also controlling for the major demographic traits, this study examines the effects of different psychological/emotional and social/environmental factors on both adolescent suicidal ideation and suicidal attempt, from the perspectives of GST. Based upon assessments of GST and previous suicide research, strains as social/environmental risk factors to be tested in this paper will be familial strain, school strain, peer rejection strain, economic deprivation strain, strain as a result of negative life events, and physical victimization strain (Agnew 2006). Finally, because Agnew (2006) argued that the effects of strains were indirect via negative affective states, meditative effects of anger and depression on the relationships between strains and suicidal behaviors are also investigated.

Using data from the 2008 Youth in Europe Survey, the present study contributes to the literatures of both GST and suicide. First, it extends GST to research on adolescent suicidal behaviors, which differ significantly from other types of delinquent behaviors with their self-directed characteristics. Second, it tests the applicability of GST in the European-Asian and Muslim country of Turkey, which has a completely different societal structure than Western societies. Third, although there is consistent evidence for the influence of different demographic, psychological, and social factors on suicidal behaviors of adolescents, how these elements interact has received less attention. With the guidance of general strain theory, this study sheds light on how variables from different dimensions interact to influence suicidal behaviors of

Turkish adolescents. Finally, separate analyses will be conducted for both suicidal ideation and suicidal attempt, which will help us to see which strains and negative emotions lead to suicidal thoughts and which lead to suicidal attempts.

CHAPTER 2. REVIEW OF LITERATURE

Suicidal Behaviors in General

Many researchers argued that suicide phenomena fall on a continuum from ideation to attempts to completions (Beck, Resnik, and Lettieri 1974; Brent et al. 1988; Kessler, Borges, and Walters 1999; Pfeffer, Klerman, and Hurt 1991; Reynolds and Mazza 1999). *Suicidal ideation* refers to thoughts or wishes to be dead or to kill oneself; *suicidal attempts* are defined as self-inflicted behaviors intended to result in death; and *suicide completions* are self-inflicted death (O'Carroll et al. 1996). Although the adolescents of primary concern should be the suicide completers, in terms of preventing suicide, it is more effective and important to study suicidal behaviors of suicidal ideation and attempt because (1) suicidal ideation is relatively common and almost invariably precedes a suicide attempt or a suicide, (2) a past history of suicide attempt represents the strongest known risk factor for future suicide attempts and competitions, (3) although suicide is the second leading cause of death among adolescents, studying completed suicides is very difficult and costly given their low base rates (the rate of suicide in adolescents in various countries is approximately 2 to 15 per 100,000 according to World Health Organization). Previous research identified numerous risk factors that made it more likely that an individual will consider, attempt, or commit suicide, including demographic, psychological, and social factors. Among demographic traits, gender, religiosity, and age have been the strongest predictors (Wray, Colen, and Pescosolido 2011).

Research indicated that reported suicidal ideation and attempts were more common among females (Crosby et al. 2011; Mościcki et al. 1988; Weissman et al. 1999). In a large community-based survey, for example, Moscicki and colleagues (1988) found that the

prevalence of lifetime suicidal behavior in females was three times that reported by males. On the other hand, while females tend to show higher rates of reported nonfatal suicidal behavior; statistics revealed that males have a much higher rate of completed suicides (Beautrais 2006; Canetto and Sakinofsky 1998). Globally, male to female suicide ratio varies from 1.5 in low and middle income countries to four in richer countries (Fleischmann and De Leo 2014). Mościcki (1994) discussed four possible explanations for this gender paradox. First, men are more likely than women to use more lethal methods. Next, women are better reporters of health history. Third, women have higher treatment rates than men for depression, a common precursor of suicide; and finally, cultural emphases placed on being male increase lethal suicidality of men. Some other explanations such as women's more flexible coping skills have also been proposed (Canetto and Sakinofsky 1998; Payne, Swami, and Stanistreet 2008); but they all commonly stress that suicide-related behaviors are influenced by demonstrations of masculinities and femininities.

Although limited and sometimes too small to make overall conclusions, the studies of the relationship between religion and suicide indicate that suicide rates vary across religions. In his classic treatise, for instance, Durkheim (1951) found that suicide rates were higher among Protestants than Catholics and Jews. More recent studies also confirmed Durkheim with their findings that among the most common religious groups in U.S., Protestants have the highest suicide rate followed by Roman Catholics; and Jewish individuals have the lowest rates of suicide (Maris, Berman, and Silverman 2000). There were also lower recorded rates of suicide found among Muslims when compared to other religions. Rates of non-fatal suicidal behavior, on the other hand, did not appear to be lower in Muslims as compared to Non-Muslims (Lester 2006). Other empirical evidence indicated that the risk of suicidal behavior also varied according

to religiosity of individuals regardless of the religious denominations (Gearing and Lizardi 2009). This negative relation was generally explained such as that belief in an afterlife as a reward for preserving through life crises lowers the suicide risk (Stack and Lester 1991). Religiosity also helps people to cope better with life stresses, reduce the incidence of depression and substance misuse, facilitate recovery from depression, enhance social support and provide sources of hope and meaning (Cook 2014; Koenig, King, and Carson 2012). As the religious commitment increases, approval of suicide tends to decline (Koenig et al. 2012; Stack and Lester 1991; Stack 1983).

With regards to age, suicide rates have been highest among older adults (65+ years-olds). In the last 45 years, however, rates among adolescents increased to an extent that they are now the group at the highest risk in a third of all countries, and globally, suicide is the second leading cause of death among 15-29 year olds (WHO 2014). The frequency of nonfatal suicidal behavior also increases during adolescence years (Evans et al. 2005; Nock, Joiner, and Gordon 2006). In their cross-national study of risk factors for suicidal ideation, plans, and attempts, Nock et al. (2006) found that age was inversely related to risk of each suicidal behavior, with odd ratios increasing as age decreases. Evans et al.'s (2005) review of 128 population-based studies of suicidal behavior, involving 513,188 adolescents, found that suicidal behaviors were indeed common in this age group. The study showed that the proportion of adolescents reporting that they had attempted suicide was 9.7 percent, and 29.9 percent of adolescents said that they had thought about suicide at some point in their lives. Increasing rates of suicide and suicidal behaviors in adolescents were often attributed to the increased exposure to psychological/emotional and social/environmental risk factors that will be elaborated in following sections (Gould et al. 1996; Portzky, Audenaert, and Van Heeringen 2005).

Many psychologists followed a psychological/emotional explanation of suicide asserting that suicide and suicidal behaviors are consequences of combination of deep mental and emotional problems of the person. Studies indicated that mental and emotional factors played a major role in completed suicides and suicidal behaviors. Statistics revealed that the great majority of people who experienced a mental illness didn't commit suicide. Of those who died from suicide, however, more than 90 percent had a diagnosable mental disorder (Bertolote and Fleischmann 2002). Examining the unique associations between mental disorders and subsequent suicidal behaviors, Nock et al. (2010) found that 66 percent of people who have seriously considered killing themselves and 80 percent of people who attempted suicide reported having prior mental disorder. Among mental disorders, the most serious risk factor of suicide in adolescents, as well as in adults, was depression (Bertolote and Fleischmann 2002; Groholt et al. 2000; Sourander et al. 2001; Thompson et al. 2005). It is predicted that at least 50 percent of all people who died by suicide suffered from major depression (WHO 2014). Other mental health disorders such as anxiety, anger, and self-hatred were also found related to suicidality (Foster, Gillespie, and McClelland 1997; Harris and Barraclough 1997; Lehnert, Overholser, and Spirito 1994). These psychological studies revealed that people with these mental disorders feel so much sadness, hopelessness, and despair that they sometimes see death as a way to escape their overwhelming pain and anguish. Even though they do not want to die, they just want their pain and suffering to end.

Given that many individuals who committed suicides suffered from psychological problems before taking their own lives, associating suicide with those psychological factors seemed to be reasonable. However, if the suicide is only related to psychological problems, and it does not have any connection with the social life and environment, then there is no possible

explanation for why suicide is more common among individuals coming from low socioeconomic background, having poor family, school, and peer relations, experiencing social isolation, rejection, and negative life events. This was what the sociological perspective emphasizes: social/environmental factors lead suicide or suicidal behaviors; therefore the characteristics of environmental life need to be taken into account when explaining the risk factors of suicide.

Research found that in addition to psychological traits, the social life, the environment and the intensity of relationships between people also contributed tendency to commit suicide. Family-related problems (Adam, Bouckoms, and Streiner 1982; Compton, Thompson, and Kaslow 2005; Lai and McBride-Chang 2001; Ruchkin et al. 2003), school and academic-related problems (Dukes and Day Lorch 1989; Kosidou et al. 2014; Martin, Richardson, and Bergen 2005; Walls, Chapple, and Johnson 2007), socio-economic problems (Beautrais 2003; Lewis and Sloggett 1998; Stack and Wasserman 2007), negative peer relations (Cui et al. 2011; Kidd et al. 2006; Lewinsohn, Rohde, and Seeley 1996; Sun, Hui, and Watkins 2006; Sun and Hui 2007), and negative life experiences (Akin and Berkem 2013; Cohen-Sandler, Berman, and King 1982; Cooper, Appleby, and Amos 2002; Liu and Tein 2005) have been among the most prominent social/environmental risk factors for adolescent suicidal tendencies.

Family relationships are significant for adolescents because family support is a key to the adolescents' healthy development (Brooks-Gunn and Duncan 1997). Conversely, discomfort within the family predisposes the adolescents for mental and behavioral problems (Mortimer and Call 2001). Many problems related to family were found associated with adolescence suicidality. For example, Jong (1992) showed that students with a history of suicidal behavior exhibited the lowest security of attachment, the least degree of individuation in their current relationships with

parents, and a significantly higher degree of emotional absence during childhood from their parents as compared to those without a history of suicidality. Perceived lack of parental closeness and support has been found to have associations with depression and suicidal behavior as well (Maris 1981; Sands and Dixon 1986). Indeed, in one study, family problems, including poor communication and parental conflict, were found to be the major factors leading to suicide ideation in high-school students (Grob, Klein, and Eisen 1983). Another study examining the effect of family-related factors on suicide revealed that improper parental rearing behavior, separation from parents, and social problems among family members were the most notable risks for suicidal behaviors (Xing et al. 2010). All these negative characteristics of families creates an unhealthy environment for adolescents and, deprive them of from familial support, communication, care, warmth, and enough attention, which lead them to have low self-esteem, negative attitudes towards the world, emotional instability, hopelessness and despair (Maris 1981). They might consider suicide as a way of escaping from these unavoidable family problems (Campbell and Milling 1993).

Educational environment plays a major part in the psychosocial, intellectual, and vocational development of adolescents. Teachers, curricula, school activities, and school culture all provide raw material that contributes to the adolescent's growing sense of self and increasing base of knowledge and skill. Considering the significant amounts of time adolescents spend in school, negative school atmosphere is also an important contextual risk factor for adolescent suicidal behavior. Poor school performance, academic pressure, and dissatisfaction with one's academic achievements were strongly associated with attempted and completed suicide (Dukes and Day Lorch 1989; Gould et al. 1996; Kosidou et al. 2014). Sun et al. (2006) found that teacher support and a sense of school belonging were significant predictors of adolescent suicidal

ideation, though the effects were mediated through self-esteem and depression. These findings highlighted that the importance of school was second only to family influences of adolescent suicidal behaviors. Adolescents who experience academic failure and do not feel connected to their school are likely to develop low self-esteem that in turn contributes to their depressed mood and subsequent suicidal thoughts (Sun and Hui 2007).

Many researchers also pointed out the role of peers on adolescents' suicidal behaviors, as the influence of peers increases dramatically during adolescence (Cui et al. 2011; Kidd et al. 2006; Sun et al. 2006). Sun and his colleagues (2006) suggested that peer support was associated with suicide thoughts among Chinese adolescents. Cui et al. (2011) found a significant association between peer relations and suicide ideation/attempt, and feeling of loneliness acted as a moderator in this association. Kidd et al.'s (2006) study based on a large national sample of American adolescents also indicated that high levels of social relations with peers had a mitigating effect on suicide attempts of suicidal youth. Besides peer support and peer relations; victimization of bullying by peers (Kaminski and Fang 2009) and frequent fighting with peers (O'Donnell, Stueve, and Wilson-Simmons 2005) were also found as factors related to adolescents' peer environment that lead to suicidal thoughts and attempts. As adolescents perceive that friendship is increasingly important in their social life and that peer support is a critical factor contributing to their life satisfaction (Chang and McBride-Chang 2003), failure to obtain peer support, like family support, contributes to feelings of loneliness, worthlessness, feelings of hopelessness, depressive symptoms, and subsequent suicidal ideation among adolescents (Harter 1992; Sun et al. 2006).

Research showed that risks of suicidal behavior were increased among individuals from economically disadvantaged backgrounds. Low socioeconomic status, low income, poverty, and

associated factors were significantly associated with suicidal behaviors (Andrews and Lewinsohn 1992; Beautrais, Joyce, and Mulder 1998; Beautrais 1998; Dubow et al. 1989; Groholt et al. 2000). For example Groholt and his colleagues (2000) found that young people from low socioeconomic backgrounds were 2.4 times more likely to attempt suicide than the community in general. Examining the extent to which a series of sociodemographic factors were associated with risk of serious suicide attempts, Beautrais (1998) found that low socioeconomic status and low annual income were significant predictors. According to data from the Office for National Statistics Longitudinal study (Lewis and Sloggett 1998), other measures of economic deprivation such as unemployment were also associated with a doubling of the suicide rate. Economic problems often result in feelings of shame, humiliation, and despair for adolescents and can lead to depression, isolation, a lack of sense of connectedness or belonging and hopelessness, which are significant risk factors for suicide (McLeod and Shanahan 1993).

Negative life events were also associated with suicide and suicidal behaviors by researchers. Negative life events are commonly defined as objective occurrences of sufficient magnitude to cause negative or adverse life pattern changes for most individuals who experienced them (Dohrenwend et al. 1978). There is extensive and growing evidence to suggest that negative life events are significantly associated with suicidal behaviors especially among youth (Cohen-Sandler et al. 1982; Cooper et al. 2002; Joiner and Rudd 2000), and the risk increases with the frequency of events (Liu and Tein 2005). For instance in a hospitalized sample of youth, Cohen-Sandler and his colleagues (1982) found that young adolescents who had either attempted suicide or who had experienced suicidal ideation were more likely to have been exposed to negative life events such as death of a grandparent, parental separation/divorce, and remarriage of a parent than youth who had not considered or attempted suicide. Zhang et al.'s

(2015) study also demonstrated that as the number of experienced negative life events such as serious illness, love failure, and major loss in property increase, the risk of attempting suicide also increases. As a risk factor, negative life event may directly cause attempted suicide as a solution or avoidance of the difficulties and stress derived from them, or indirectly facilitate the behavior by generating and aggravating psychiatric symptoms such as depression and anger (Beautrais 2000).

Finally, research shows that victimization is a significant risk factor for suicidal behaviors as victims were found to exhibit high levels of depression and suicidal ideation and were more likely to attempt suicide (Brunstein Klomek et al. 2007; Mina and Gallop 1998). A study using data from a nationally representative sample of 5,238 American adults found that physical assault victimization was positively associated with suicidality, implying that the relation between physical violence victimization and suicidal behaviors is also solid (Simon et al. 2002). Risk level also varied according to the frequency of victimization. In another study, for instance, it was found that adolescents reporting more frequent physical and sexual victimization were more likely to report suicidal ideation and attempt (Kaminski and Fang 2009).

Suicidal Behaviors in Turkey

Research in regards to the influences of demographic, psychological and social factors on suicide among Turkish individuals was limited, but produced similar results to studies in other countries. Like in U.S. and Western societies, there is a gender paradox in rates of suicide and suicidal behavior. Among all deaths between 2007 and 2012, the suicide deaths for men were 12,107 (1.1%) whereas it was 5,235 (0.6%) for women (Enginyurt et al. 2014). On the other hand, studies indicated that suicidal ideation, attempt, or nonfatal self-injuries were more

frequent among Turkish adolescent girls than among their male counterparts (Eskin et al. 2007; Ozcan et al. 2005).

Findings similar to those in other countries were detected among Turkish adolescents in regards to the influence of religion. Cirhinlioglu and Ok (2010) found a significant negative relation between strength of religiosity and suicide approval, in their study among Turkish college students. On the other hand, students who were not completely sure about the existence of God and experienced hesitation and contradiction in their religious beliefs reported higher levels of depression and suicidal approval (Cirhinlioglu and Ok 2010). In another study among Turkish youth, praying regularly and feeling the existence of God were significantly associated with decreased risk of suicide (Yapici 2007).

Similarly to other countries, suicide and suicidal behavior risk increase in adolescence in Turkey. After the 80+ years-olds, the second highest rate of suicides belongs to the 15-24 age group, and nonfatal suicidal behaviors have been found to be common among younger segments of the population (Enginyurt et al. 2014). A study with 1,262 university students found that nearly 42 percent had thought of killing themselves and 7 percent made an attempt to kill themselves in their lifetime or in the past 12 months (Eskin, Kaynak-Demir, and Demir 2005).

The literatures on psychological and social risk factors of adolescent suicide and suicidal behaviors in Turkey are also in line with studies in other countries. Mental health problems in general and depression in particular were the most powerful risk factors for Turkish adolescents (Eskin 2000; Tüzün 2005). Data from Turkish Statistical Institute showed that 10.7 percent of all suicides between 2007 and 2012 in Turkey were committed because of familial problems, making it the second most common cause after mental illness (Enginyurt et al. 2014). The way the child is raised by the parents was also strongly associated with Turkish high school students'

consideration of suicide (Ulusoy, Demir, and Baran 2005). Among school problems, low grade-point average was a significant predictor of suicidal attempts, especially for Turkish boys (Eskin et al. 2007). Problems with peer, bullying victimization, and lack of friend support (Demir, Baran, and Ulusoy 2005), economic problems, low socioeconomic status and unemployment (Ekici, Savas, and Citak 2001), and negative life events and life hassles (Akin and Berkem 2013) were other social factors found significantly influential on adolescents' suicide and suicidal behaviors in Turkey.

All these studies reveal that adolescent suicidal behavior can be related to demographic, psychological, or social factors and that it is hard to say that only one of these factors alone is responsible for suicidality. The answer to the question “What causes adolescent suicidality” probably lies behind the combination of all these factors. Thus, a study taking all these factors into account is needed and in order to accurately conceptualize and study suicidal behavior as it relates to these risk factors, a broad theoretical framework must be employed. By controlling for demographic risk factors too, this study aims to investigate the effects of psychological and social risk factors of adolescent suicidal behaviors all together with the frameworks of GST, which is originally developed by Agnew (1992) to explain deviant behaviors and crime.

Although they differ from other types of delinquencies with their self-directed nature and demographic, psychological, and social aspects, suicidal behaviors are still considered deviant behaviors because they are contrary to the norms of the societies (Clinard and Meier 2015). Throughout history, social institutions stood against the idea of suicide. The reprobation of suicide in most societies was strictly institutionalized with the emergence of monotheistic religions. According to the three mainstream religions, Christianity, Judaism and Islam, the life of a person belongs to God; He gives it and only He can determine when a person will die.

Committing suicide, therefore, is opposing to God, which ends up in infinite punishment (Gearing and Lizardi 2009). The societies administrated with religious rules were punishing the people who committed suicide usually by depriving them of a traditional funeral or confiscating their properties (Durkheim 1951). In industrial societies, in addition to religious doctrines, legal forces also discouraged suicide, although the person who committed suicide was beyond the reach of the law. For instance, English law perceived suicide as an immoral, criminal offence against God and also against the Crown until 1961 (Canick 1997). In United States, 32 states had laws against suicide in the late 1960s (Litman 1966). Associated matters of attempting suicide and assisting suicide have still been dealt with by the judiciaries of many countries (Shaffer 1986).

Given that suicidal behaviors are deviant acts condemned by societies, investigating suicidal behaviors from perspectives of crime-deviance theories can provide new insights to researchers. The reason why GST is chosen among crime and deviance theories is because Agnew's GST is particularly well suited to explain suicidal behaviors among adolescents, as it enables us to investigate the effects of various social and psychological factors on adolescent delinquency, in this case, on suicidal behaviors. So far, only two studies tested GST on suicidal behaviors, and those studies were either conducted on a specific minority group including limited strains (Walls et al. 2007); or unable to produce conclusive results probably due to the very small sample size (Heydari, Nouri, and Ebrahimi 2013).

General Strain Theory

GST was developed by Agnew (1992) to improve the limitations of strain theories developed by Merton (1938) and Cloward and Ohlin (1960). In fact, strain theories originally derived from Durkheim's "anomie" term. While Durkheim (1951) argued that anomie occurred

during periods of social upheavals, Merton (1968) saw anomie as an enduring feature of society, especially for American society. Merton (1968) believed that societal norms, or socially accepted goals, such as the American Dream, place pressure on the individual to conform, which force individuals to either work within the structure society has produced, or instead become members of a deviant subculture in an attempt to achieve those goals. When individuals are faced with a gap between “what ought to be” and “what is,” they will feel strained and make a choice between different types of adaptations some of which lead them to delinquency.

Agnew (1992) pushed Merton’s (1968) classical strain theory toward a more comprehensive strain/stress approach of explaining crime and deviance. Agnew (1992) argued that strain can come from sources other than economic failure and identified three primary sources of strain: (1) strain as the actual or anticipated failure to achieve positively valued goals (e.g. failing an exam), (2) strain as the actual or anticipated removal of positively valued stimuli (e.g., losing a job), and (3) strain as the actual or anticipated presentation of negatively valued stimuli (e.g., being treated poorly by others). These strains were important because they lead to the development of negative emotions, or as Agnew (2001) described them, negative affective states. These negative emotions like frustration, anger and depression create pressure for corrective action, and can lead to deviant behavior. Not all people cope with strains through deviance, though. Criminal coping is most likely to occur when the individual lacks the ability to cope with strains in a legal manner, the cost of criminal coping is low, and the individual is disposed to crime (Agnew 2001). The deviant behavior may be used to escape from or reduce strains, seek revenge against the source of strain or related targets, or alleviate negative emotions. In fact, suicidal behaviors may represent a clear-cut yet irreversible escape from strain

and the negative emotions associated with it, as well as an emotion-driven reaction to the inability to escape (Walls et al. 2007).

Agnew (2001) stated that strains were most likely to lead to crime when they (1) were perceived as unjust, (2) as high in magnitude, (3) were associated with low social control, and (4) created incentives or pressure for criminal coping. He argued that all four of these characteristics were roughly equal in importance and that the absence of any one characteristic substantially reduces the likelihood that strain will result deviant behavior. Although he argued that any type of strain that possess these characteristics can lead to delinquency, he listed some specific strains that were most likely to lead to delinquency (Agnew 2001).

The specific strain types and negative affective states most likely to lead to delinquency according to Agnew (2006) were similar to adolescents' suicidal behavior risk factors. Agnew (2006) listed the most "criminogenic" strains as: relations with family, school, and peers especially for juveniles; and victimization, negative life events, economic problems, and discrimination for both juveniles and adults. As negative affective states, he proposed anger and depression as the strongest ones caused by strains which mediate the effects of strains on suicidal behaviors (Agnew 2006).

Strains

Negative relations with family were the first type of strain emphasized by Agnew. He (2006) included caretaker rejection, parental punishments, family conflict, parental separation, and strict, erratic and coercive parenting as types of strains experienced by adolescents that may result in pressure or incentive to engage in deviant behaviors. These familial strains appear to be a relatively strong predictor of juvenile delinquency. Studies testing General Strain Theory indicated that adolescents having parents who do not express love or affection for them, show

little interest in them, provide little support to them and often display hostility toward them were more likely to engage in crime and delinquency (Agnew 2006; Laub and Sampson 1993; Maxwell 2001). Parental use of erratic, excessive, and harsh discipline was strongly related to crime in adolescents (Agnew 2005; Colvin 2000; Mazerolle et al. 2000). Agnew and White (1992)'s study also showed that adolescents having higher scores of delinquency stated that they are bothered by the fact that their parents often fight or argue with one another a lot.

School experiences that include low grades, negative relations with teachers, and feelings that school is boring or a waste of time were seen by Agnew (2001: 344) "as a source of strain likely to lead to delinquency, especially given the central role that school plays in the lives of juveniles." A positive association between these school-related strains and delinquency was tested and proved numerous times in all around the world (Agnew 2001; Colvin 2000; Sampson and Laub 1993; Sigfusdottir, Kristjansson, and Agnew 2012). For instance, testing the GST on adolescents in five different cities across Europe, Sigfusdottir and his colleagues (2012) found that school strain was significantly associated with both property and violent crime, and negative affective states functioned as mediators.

Peers are another important aspect for development and behavior, especially in adolescence (Gardner and Steinberg 2005). Rejection by peers occupies a critical place in the developmental process, and several scholars have argued that it is a life event that may be stressful, emerging from the individual's desire to be part of the larger group, and may have important consequences for the individual's development (Dodge, Lansford, and Burks 2003). Peer rejection and abusive peer relations including insults, threats and physical assaults was another interpersonal strain effective on crime and deviance, especially among youth according to Agnew (2006). Limited research found that such abuse and rejection increased the likelihood

of delinquency (Agnew and Brezina 1997; Higgins, Piquero, and Piquero 2011). Examining the extent to which peer rejection is associated with subsequent delinquency/crime, Higgins and his colleagues (2011) found that adolescents rejected by peers reported significantly higher scores of subsequent delinquency/crime and this relation was stronger for boys.

As mentioned above, economy-related problems form the base for strain theories. Although all kinds of economic problems might be a resource of strain, Agnew especially focused on perceived economic deprivation (Agnew 2006). People determine the severity and injustice of their strains partly through a process of social comparison. If people are surrounded by privileged others, they are more likely to interpret their poverty as severe. Further, if they are similar to these privileged others on certain relevant characteristics (e.g., education), they are more likely to interpret their poverty as unjust (Sigfusdottir et al. 2012). There is some support for this idea. Crime rates were higher in societies with high levels of economic inequality, particularly when such inequality was the result of race, ethnic, or religious discrimination (Agnew 2006; Messner 1989). Also, individuals who were economically deprived were more likely to turn to crime when they live in communities where most others were privileged (Bernburg, Thorlindsson, and Sigfusdottir 2009). The impact of economic strain on various domains of functioning has been well-established, including links with property crime (Chamlin and Cochran 1995), homicide rates (Maume and Lee 2003), depression (Conger et al. 1992), aggression (Conger et al. 1994), and adolescent alcohol use (Haan, Boljevac, and Schaefer 2010).

According to Agnew (2002), events like experiencing a serious accident, severe illness, the death of a parent, sibling or friend, breaking up with girlfriend/boyfriend, rejection by friends, being expelled from school, and physical or sexual abuse were events and conditions that

can strongly affect one's mental state and may lead to delinquent behavior (Agnew 1992). Research shows that there is a strong relation between negative life events and delinquency (Agnew and White 1992; Mazerolle 1998). Examining the effect of 15 different negative life events (e.g. serious injury, assault, the death of a parent or a close friend) on delinquency, Agnew and White (1992) found that these events are significantly associated with delinquent behaviors such as robbery, vandalism, drug use etc. Mazerolle (1998) also found a significant association between aversive life events to which adolescents are typically exposed and violent/property related delinquency.

Finally, Agnew (2001) attributed special interest to victimization, arguing that criminal victimization including physical victimization was among the types of strain that are most likely to cause delinquency. Exposing physical victimization is usually seen as unjust and high in magnitude, often occur in settings in which social control is low, and is often associated with the social learning of crime (Agnew 2001). Physical victimization, then, is one of the key types of strain in GST. For example, Agnew (2002) found that experienced physical victimization and certain types of vicarious and anticipated physical victimization were strongly associated with delinquency. Research also found that victimization was strongly associated with criminal offending, with the association between violent victimization and offending being especially strong (Baron and Hartnagel 1998; Loeber, Kalb, and Huizinga 2001). According to a study examining the effect of different types of adolescent maltreatment on later delinquency, physical abuse was the most significant factor that increases individual's likelihood of committing later property damage, status offending, and violent crime (Evans and Burton 2013). Similarly, Watts and McNulty (2013) found that early childhood physical and sexual abuses were robust predictors of offending in adolescence.

Negative Affective States

As noted previously, the central components of GST are the negative emotions that result from strain and potentially lead to delinquent behavior (Agnew 1992). Specific to GST, Agnew (1992:59) included some negative emotions as potential reactions to strain but focused specifically on anger as “the most critical emotional reaction for the purposes of GST.” Anger results when individuals blame their adversity on others, and anger is a key emotion because it increases the individual’s level of felt injury, creates a desire for retaliation/vengeance, triggers the individual for action and lowers inhibitions, in part because individuals believe that others will feel their aggression is justified (Agnew 1992). Individuals who experienced more strains were more likely to report that they felt angry, and this state of anger increased their likelihood of deviance (Jang and Johnson 2003).

Anger is distinct from many of the other types of negative affect in this respect, and this is the reason that anger occupies a special place in GST; however, it is important to note that Agnew (1992) states that delinquency may still occur in response to other types of negative emotions such as depression. Depression usually results when people have experienced some disliked event or condition and it reduces the ability to cope in a legal manner, in part because depressed people are lethargic and feel powerless to act (Agnew 2006). For this study, depression might have a special significance because as mentioned above, it is a strong antecedent of suicidal behaviors (Bertolote and Fleischmann 2002; Groholt et al. 2000; Sourander et al. 2001; Thompson et al. 2005) .

CHAPTER 3. THE PRESENT STUDY

Also controlling for the major demographic traits, this study examines the effects of different psychological/emotional and social/environmental factors on both adolescent suicidal ideation and suicidal attempt, from the perspectives of GST. As reviewed above, Agnew's specified strains and negative affective states that are more likely to lead delinquency mostly corresponds to the social/environmental and psychological/emotional risk factors of suicidal behaviors respectively. Based on Agnew's (2001) criteria and previous research, the current study assesses the importance of strains related to family, school, peer rejection, economic deprivation, negative life events, and physical victimization with suicidal ideation and attempt. Finally, because Agnew (1992; 2006) argued that the effect of stressors was indirect via negative affective states; models are assessed that determine whether anger and depression mediate the effects of strains on suicidal ideation and suicidal attempt. The following hypotheses are proposed based upon general strain theory and past suicide research:

Hypothesis 1: Each of the included measures of strains (family strain, school strain, peer rejection, economic deprivation strain, strain as a result of negative life events, and physical victimization strain) will be positively associated with suicidal ideation.

Hypothesis 2: Each of the included measures of strains will be indirectly associated with suicidal ideation through negative affective states (anger and depression). These negative emotions will mediate fully or partially the effect of stressors on suicidal ideation.

Hypothesis 3: Each of the included measures of strains (family strain, school strain, peer rejection, economic deprivation strain, strain as a result of negative life events, and physical victimization strain) will be positively associated with suicidal attempt.

Hypothesis 4: Each of the included measures of strains will be indirectly associated with suicidal attempt through negative affective states (anger and depression). These negative emotions will mediate fully or partially the effect of stressors on suicidal attempt.

CHAPTER 4.

DATA AND MEASURES

The data for this study are drawn from the 2008 Youth in Europe (YIE) survey, a set of representative cross-sectional surveys of mostly 14- to 15-year-old adolescents in 11 cities across Europe in October and November of 2008. Only Istanbul (Turkey) part of the survey is included. The survey was administered in Turkish language and permission was obtained from both the school authorities and the parents of the children whom were included in the survey. Participants were students attending the 9th and 10th grades of the local secondary school systems. Classroom-based samples were drawn where all classes from schools within the city were randomly sampled for participation. Students who were not present in school on the day of the survey were not included. Data collection in the classes was supervised by teachers, guided by a strictly uniform methodological protocol developed by the Icelandic Centre for Social Research and Analysis (ICSRA). The Turkey sample had a response rate over 95 percent and included approximately 2500 students. To standardize the sample size across models, students who did not answer any of the related items were excluded. Responses from a total of 2066 students were examined.

Dependent Variables

Measurement for suicidal ideation and suicidal attempt was modelled after Bjarnason and Thorlindsson (1994), Bernburg, Thorlindsson, and Sigfusdottir (2009), and Thorlindsson and Bernburg (2009). Students' *suicidal ideation* was measured with two questions about having thought about suicide. The questions were 1) Have you ever thought about committing suicide? 2) Have you ever seriously considered committing suicide? Response categories for these questions are "yes" and "no". Students who answer at least one of these questions as *yes* were

coded 1; and students who answer all the questions as *no* were coded 0. Students' *suicidal attempt* was also measured with two questions. The questions were 1) Have you ever made an attempt to commit suicide? 2) Have you made an attempt to commit suicide this school year? Response categories for these questions are "yes" and "no". Students who answer at least one of these questions as *yes* were coded 1; and students who answer all the questions as *no* were coded 0.

Strain Measures

The family strain measure used in the current study was modeled after Sigfusdottir et al. (2012), which was created with count data based upon answers to four questions headed by the sentence "Have you experienced any of the following in the past 12 months?": 1) A serious argument with your parents, 2) Witnessed a serious argument by your parents, 3) Witnessed a physical violence in your home where an adult was involved, and 4) Been involved in physical violence in your home where an adult was involved. Response categories for these variables were 0="No", 1="Yes". The scores were summed up to form a cumulative scale, with a maximum score of 4 and a minimum score of 0.

School strain was measured in accordance with Sigfusdottir et al. (2012). Although there were more questions about school environment in the data set, the following four items were selected based on factor analyses results: 1) I feel bad at school. 2) I want to quit school. 3) I want to change school. 4) I get on badly with the teachers. The response categories range from 0="Applies almost never to me", 1="Applies seldom to me", 2="Applies sometimes to me", 3="Applies often to me", and 4="Applies almost always to me". Mean scores of these four items were calculated to form a scale ranging from 0, meaning minimum school strain, to 4, maximum

school strain. Cronbach's alpha statistic indicated a sufficient level of internal reliability for the scale ($\alpha = .75$).

Peer strain was assessed with the following five items that were headed by the sentence "How easy or hard to get from friends": 1) caring and warmth, 2) discussions about personal affairs, 3) advice about the studies, 4) advice about other issues, and 5) assistance with things. The response categories range from 0="Very difficult" to 3= "Very easy." In order to standardize the scales, the scores were reverse coded so that higher values meant higher levels of strain. Mean scores of these five items were calculated to form a scale ranging from 0, meaning minimum peer strain, to 3, maximum peer strain. Responses to these five items were found to be internally consistent ($\alpha = .80$).

Economic strain was measured through Family Affluence Scale (FAS), a four-item measure of family wealth developed in the WHO Health Behavior in School-aged Children Study was used to assess economic strain of adolescents (Boyce et al. 2006). Those four items include: 1) My parents are bad-off financially, 2) My parents can't afford to have a car, 3) My parents hardly have enough money to pay for necessities (e.g. food, housing, phone), 4) My parents do not have enough money to pay for the extracurricular activities that I would most like to participate in (e.g. learn to play a musical instruments or practice sports). The response categories range from 0="Almost never", 1="Seldom", 2="Sometimes", 3="Often", and 4="Almost always". Mean scores of these five items were calculated to form an index ranging from 0 to 4. The higher score means the higher economic strain. Items formed an internally consistent scale of family wealth ($\alpha = .80$). Bernburg et al.'s (2009) study of measurement validity indicates a strong association between the current measure of economic strain and parents' self-reported economic deprivation.

Exposure to negative life events strain was measured in a similar way to previous studies (Agnew and White 1992; Mazerolle 1998). Thirteen negative events headed by the question “Have you experienced any of the following in the past 12 months?” were listed in the questionnaire. The events were serious accident, severe illness, separation or divorce of your parents, death of a parent or sibling, death of a friend, been rejected by your friends, separation from a friend, received an exceptionally low grade, break up with a girlfriend/boyfriend, father or mother lost a job, been dismissed from class or sent to the principal’s office, been expelled from school, and sexual abuse. Response categories for these variables were coded as 0=“No”, 1=“Yes”. The scores were summed to form a cumulative scale ranging from 0 to 13 ($\alpha = .67$).

Physical victimization was measured through responses to the question “Have you been a victim of physical violence during the last 12 months?” Response categories range from “Never” to “18 times or more.” Due to the small percentage of victimized respondents, this variable was recoded as 0=“No”, 1=“Once”, 2= “2-5 times”, and 3= “6-9 times or more”.

Negative Affective States

Anger was measured with five questions: 1) I was easily annoyed or irritated, 2) I experienced outbursts of anger that I could not control, 3) I wanted to break or damage things, 4) I had a fight with someone, and 5) I yelled at somebody or threw things. The response categories range from 0=“Almost never”, 1=“Seldom”, 2=“Sometimes”, 3=“Often” Mean scores for these five items were calculated to form a scale ranging from 0 to 3. Similar measures of anger were used by previous studies testing GST (Brezina 1996; Mazerolle et al. 2000). High scores on the scale indicated that respondents are more likely to be angry and frustrated people, which when coupled with exposure to strain may lead to delinquent responses. Factor analysis revealed that the scale was unidimensional and the Cronbach’s alpha for the anger scale was .81.

Depression was measured with 11 items based on the multidimensional self-report symptom inventory developed by Derogatis and Cleary (1977) and used by many researchers (e.g. Asgeirsdottir and Sigfusdottir 2011). The participants were asked how often during the previous week each statement applied to them: 1) I was sad or had little interest in doing things, 2) I had little appetite, 3) I felt lonely, 4) I cried or wanted to cry, 5) I had sleeping problems, 6) I felt sad or blue, 7) I was not excited in doing things, 8) I was slow or had little energy, 9) The future seemed hopeless, 10) I felt that everyone had let me down, and 11) I had no one to talk to. The response categories range from 0="Almost never", 1="Seldom", 2="Sometimes", 3="Often" Mean scores for these 11 items were calculated to form a scale ranging from 0 to 3. The higher score means the higher levels of depression. A factor analysis indicated that the scale is unidimensional and Cronbach's alpha statistic showed that items formed an internally consistent scale of depressive mood ($\alpha = .92$).

Control Variables

Participants' gender was coded with 1 for female and 0 for male. The Youth in Europe survey was performed mainly among 10th grades with a great majority of students being 14 or 15 years of age. Nevertheless, age ranges between 13 and 17 and is therefore controlled for. Finally, the religiosity of students is controlled. The intrinsic religious orientation scale was used as a measure of religiosity as it is suggested that internalized religious beliefs are more effective compared to extrinsic religiosity in explaining suicidal behaviors (Walker and Bishop 2005). Following five statements in the questionnaire were used: 1) I believe in God. 2) My faith is important to me. 3) I pray to God on a regular basis. 4) I would be able to get support from God if I needed it. 5) I have sought support from God when I have needed it. Response categories range from 0="Applies to me very poorly" to 3="Applies to me very well". The mean scores for

these five items were calculated to form a scale ranging from 0 to 3. The higher score means the higher religiosity. The scale is unidimensional and internally consistent ($\alpha = .84$).

CHAPTER 5.

ANALYTIC STRATEGY

The analyses in the current study assess direct and mediated effects of strains on suicidal ideation and suicidal attempt using a series of regression models. Tests of mediation follow conditional requirements as proposed by Baron and Kenny (1986), where (a) the independent variables (strains) are associated with the mediators (negative affective states), (b) the independent variables significantly predict the dependent variable, and (c) when both the independent variables and mediators are included in the model, the original focal relationship between independent and dependent variables is eliminated or reduced. In order to achieve condition a, the mediators were linear regressed on the independent variables (strains) first. For condition b and c, the data was run in hierarchical models with control variables only in the first model, measures of strain were added in the second model, and the third and final model included negative affective states measures. Because there are two dependent variables in this study (suicidal ideation and suicidal attempt), these steps were followed for both separately. The difference between second and third models will tell us how much negative affective states mediate the influences of strains on dependent variables. Because our dependent variables are dichotomous measures, logistic regressions will be applied in these models. Stata 13 will be used for both bivariate and multilevel analyses.

CHAPTER 6.

RESULTS

Descriptive Statistics and Bivariate Correlations

Table 1 displays descriptive statistics. First, about 25% of the adolescents in this sample reported suicidal ideation, which indicates suicidal ideation was a serious problem among sampled adolescents. Second, about 10% percent of the adolescents reported that they attempted suicide at some point in their life or during the year of survey. Third, the mean score of religiosity (2.78 over 3.00) reveals that overwhelming majority of the adolescents identify themselves as highly religious. This result is not surprising given that Turkey is among the most religious countries in the World according to Gallup International Survey (2014).

A number of significant bivariate associations were found across the variables used here and are presented in Table 2. Strongest association on bivariate level is between suicidal ideation and suicidal attempt ($r=.51$). Being female is associated with higher rates of ideation, but not with attempt. Age is positively, and religiosity is negatively associated with both of the suicidal behaviors. Religiosity is also negatively associated with most of the strain measures, which indicates the protective role of religiosity against stressors. Among strain variables, parental strain, school strain, economic strain, negative life events strain and physical victimization strain are associated with both of the suicidal behaviors, whereas peer strain is only associated with suicidal attempt. Both measures of emotions are also associated with both of the suicidal behaviors at the bivariate level. Among the independent variables, all measures of strains are significantly associated with greater negative emotions among these adolescents.

Table 1.
Descriptive Statistics

	<u>Mean</u>	<u>St. D.</u>	<u>Range</u>
<u>Dependent Variables</u>			
Suicidal Ideation	.25	.44	0-1
Suicidal Attempt	.10	.30	0-1
<u>Control Variables</u>			
Gender ^a	.50	.50	0-1
Age	14.35	.68	13-17
Religiosity	2.78	.47	0-3
<u>Strain Variables</u>			
Parent Strain	.21	.61	0-4
School Strain	.91	.98	0-4
Peer Strain	.74	.62	0-3
Economic Strain	1.17	.97	0-4
Negative Life Events	.56	1.15	0-13
Physical Victimization	.16	.55	0-3
<u>Negative Affective States</u>			
Anger	1.05	.79	0-3
Depression	1.08	.83	0-3

^aGender is coded as 0 for male and 1 for female.

Table 2.
Bivariate Correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1.Suicidal Ideation	1												
2.Suicidal Attempt	.51**	1											
3.Gender	.15**	.04	1										
4.Age	.05*	.09**	-.20**	1									
5.Religiosity	-.07**	-.14**	.09**	-.06**	1								
6.Parent Strain	.20**	.20**	.02	.08**	-.11**	1							
7.School Strain	.12**	.16**	-.18**	.17**	-.15**	.08**	1						
8.Peer Strain	.03	.09**	-.25**	.11**	-.11**	.07**	.20**	1					
9.Economic Strain	.08**	.07**	-.09**	.10**	-.02	.10**	.10**	.18**	1				
10.Negative Life Events	.15**	.22**	.00	.05*	-.15**	.43**	.11**	.09**	.06**	1			
11.Physical Victimization	.19**	.16**	-.04*	.05*	-.10**	.19**	.16**	.04	.13**	.17**	1		
12.Anger	.31**	.19**	.00	.07**	.00	.10**	.20**	.06**	.12**	.10**	.15**	1	
13.Depression	.38**	.23**	.15**	.07**	-.02	.14**	.22**	.09**	.17**	.13**	.18**	.50**	1

*p<.05; **p<0.01

OLS Models for Negative Affective States

Moving on to the multivariate analyses, recall the previous discussion of those conditions necessary for mediation to occur. Condition (a)-(The emotions must associate with strains) is tested using ordinary least squares regression and is illustrated in Table 3.

Table 3.
OLS regression models predicting Negative Affective States

	Anger		Depression	
	<u>B</u>	<u>β</u>	<u>B</u>	<u>β</u>
Control Variables				
Gender	.08	.05*	.38	.23***
Age	.04	.03	.06	.05*
Religiosity	.09	.06*	.05	.03
Strain Variables				
Parent Strain	.06	.05	.07	.05*
School Strain	.15	.18***	.17	.20***
Peer Strain	.02	.01	.09	.07**
Economic Strain	.07	.08***	.12	.13***
Negative Life Events	.03	.04	.04	.05*
Physical Victimization	.14	.10***	.18	.12***
Constant	.44***		.26*	
R ²	.07		.14	
Observations	2,066			

*** p<0.001, ** p<0.01, * p<0.05

School strain is significantly associated with anger ($\beta=.18$; $p<0.001$) and depression ($\beta=.20$; $p<0.001$). Similarly, economic strain is significantly associated with anger ($\beta=.08$; $p<0.001$) and depression ($\beta=.13$; $p<0.001$). Physical victimization strain is also significantly associated with both anger ($\beta=.10$; $p<0.001$) and depression ($\beta=.12$; $p<0.001$). Parental strain ($\beta=.05$; $p<0.05$), peer strain ($\beta=.07$; $p<0.01$) and negative life events strain ($\beta=.05$; $p<0.05$) are significantly associated with only depression. By comparing the standardized coefficients and the number of significant strains, it can be seen that strains lead to depressive symptoms more than they lead to anger.

Among control variables, being female is positively associated with anger ($\beta=.05$; $p<0.05$) and depression ($\beta=.23$; $p<0.001$); being older is associated with depression ($\beta=.05$; $p<0.05$); and finally, religiosity is significantly associated with anger ($\beta=.06$; $p<0.05$).

Consequently, all strain variables in the models are significantly associated with at least one of the negative affective states (anger and depression), therefore condition (a) is achieved.

Logistic Regression Results for Suicidal Ideation

Logistic regression results for suicidal ideation are shown in Table 4. Model 1 illustrates the effects of the control variables on adolescent suicidal ideation when no other predictors are included in the model. Results indicate that being female is positively associated with suicidal thinking ($b=.82$, $p<0.001$). Females are more than 2 times more likely than males to report suicidal ideation ($\text{Exp}(b)=2.26$). Similarly being older is also positively associated ($b=.28$; $p<0.001$) with suicidal ideation. On the other hand, religiosity ($b=-.37$; $p<0.001$) is negatively associated with suicidal ideation.

Table 4.
Logistic Regression Models Predicting Suicidal Ideation

	Model 1		Model 2		Model 3	
	<u>B</u>	<u>(Exp b)</u>	<u>B</u>	<u>(Exp b)</u>	<u>B</u>	<u>(Exp b)</u>
<u>Control Variables</u>						
Gender	.82***	2.26	.98***	2.67	.73***	2.08
Age	.28***	1.33	.18*	1.19	.14	1.14
Religiosity	-.37***	.69	-.15	.86	-.25*	.78
<u>Strain Variables</u>						
Parent Strain			.42***	1.52	.38***	1.46
School Strain			.25***	1.28	.06	1.07
Peer Strain			.09	1.09	.02	1.02
Economic Strain			.12*	1.13	.02	1.02
Negative Life Events			.11*	1.12	.10	1.10
Physical Victimization			.52***	1.69	.38***	1.46
<u>Negative Affective States</u>						
Anger					.52***	1.68
Depression					.71***	2.04
Constant		-.90**		-2.16***		-2.78***
Model χ^2		72.13***		211.44***		432.01***
Observations				2,066		

*** p<0.001, ** p<0.01, * p<0.05

Model 2 shows the results when the dependent variable is regressed on the various measures of strain (condition b). After controlling gender, age, and religiosity; the coefficients of parental strain ($b=.42$; $p<0.001$), school strain ($b=.25$; $p<0.001$), economic strain ($b=.12$; $p<0.05$), negative life events strain ($b=.11$; $p<0.05$), and physical victimization strain ($b=.52$; $p<0.001$) are all significant and in the expected direction. Peer rejection is the only source of strain that did not have any direct significant impact on suicidal ideation of adolescents according to these results. Thus, Hypothesis 1 predicting that each of the included measures of strain will be significantly associated with suicidal ideation is supported except for peer strain. In addition, while age's significance level decreased ($b=.18$; $P<0.05$) and religiosity lost its statistical significance, gender's coefficient increased and its significance level remained the same ($b=.98$; $P<0.001$) with the inclusion of strain variables.

Models 3 fulfill condition (c) of tests of mediation. Model 3 shows logistic regression results when anger and depression are added as a predictor variable. Although parental strain ($b=0.38$; $p<0.001$) and physical victimization strain ($b=0.38$; $p<0.001$) remained highly significant; all of the significant strains reported in Model 2 are reduced in terms of effect size by the addition of anger ($b=.52$; $p<0.001$) and depression ($b=.71$; $p<0.001$). School strain, economic strain, and negative life events strain even lost their statistical significance with the inclusion of emotional variables. Because (a) strain variables in this study were significantly associated with negative affective states, (b) all the strain variables except peer strain significantly predicted the suicidal ideation and (c) the original focal relationship between strains and suicidal ideation was eliminated or reduced with the inclusion of anger and depression, hypothesis 2 is also supported. This means that anger and depression completely or at least partially mediate the effects of strains on adolescents' suicidal thinking. Among control variables, gender remains significant

($b=.73$; $p<0.001$) and age loses whereas religiosity ($b=-.25$; $p<0.05$) gains back significance in Model 3.

Logistic Regression Results for Suicidal Attempt

The strategy applied in suicidal ideation analyses were also followed for suicidal attempt analyses. Condition (a) that the emotions must associate with strains was tested and achieved previously (Table 2). Logistic regression results for suicidal attempt are shown in Table 5. Model 1 illustrates the effects of the control variables on adolescent suicidal attempt when no other predictors are included in the model. Results indicate that being female is positively associated with suicidal thinking ($b=.51$, $p<0.01$). Similarly being older is also positively associated ($b=.42$; $p<0.001$) with suicidal ideation. On the other hand, religiosity ($b=-.69$; $p<0.001$) is negatively associated with suicidal ideation.

Model 2 shows the results when the dependent variable is regressed on the various measures of strain (condition b). After controlling for gender, age, and religiosity; the coefficients of parental strain ($b=.33$; $p<0.01$), school strain ($b=.35$; $p<0.001$), peer strain ($b=.28$; $p<0.05$), negative life events strain ($b=.22$; $p<0.001$), and physical victimization strain ($b=.37$; $p<0.001$) are all significant and in the expected direction. Economic deprivation is the only source of strain that did not have any direct significant impact on suicidal attempt of adolescents according to these results. Thus, Hypothesis 2 predicting that each of the included measures of strain will be significantly associated with suicidal attempt is supported except for economic strain. In addition, coefficients of being female ($b=.73$; $P<0.001$), being old ($b=.27$; $P<0.05$), and religiosity ($b=-.42$; $P<0.01$) are still significant even with the inclusion of strain variables.

Table 5.
Logistic Regression Models Predicting Suicidal Attempt

	Model 1		Model 2		Model 3	
	<u>B</u>	<u>(Exp b)</u>	<u>B</u>	<u>(Exp b)</u>	<u>B</u>	<u>(Exp b)</u>
<u>Control Variables</u>						
Gender	.51**	1.66	.73***	2.07	.46*	2.08
Age	.42***	1.52	.27*	1.31	.24*	1.14
Religiosity	-.69***	.50	-.42**	.66	-.52***	.78
<u>Strain Variables</u>						
Parental Strain			.33**	1.39	.29**	1.46
School Strain			.35***	1.41	.23**	1.07
Peer Strain			.28*	1.32	.23	1.02
Economic Strain			.09	1.09	-.01	1.02
Negative Life Events			.22***	1.24	.21***	1.10
Physical Victimization			.37***	1.45	.26*	1.46
<u>Negative Affective States</u>						
Anger					.37***	1.68
Depression					.52***	2.04
Constant	-1.21***		-2.90***		-3.30***	
Model χ^2	51.87***		164.62***		225.73***	
Observations			2,066			

*** p<0.001, ** p<0.01, * p<0.05

Models 3 fulfill condition (c) of tests of mediation. Model 3 shows logistic regression results when anger and depression are added as a predictor variable. Although parental strain ($b=.29$; $p<0.01$) and negative life events strain ($b=.21$; $p<0.001$) kept their significance levels; all of the significant strains reported in Model 2 are reduced in terms of effect size by the addition of anger ($b=.37$; $p<0.001$) and depression ($b=.52$; $p<0.001$). Peer strain even lost its statistical significance with the inclusion of emotional variables. Because (a) strain variables in this study were significantly associated with negative affective states, (b) all the strain variables except peer strain significantly predicted the suicidal attempt and (c) the original focal relationship between strains and suicidal attempt was eliminated or reduced with the inclusion of anger and depression, hypothesis 3 is also supported. This means that anger and depression completely or at least partially mediates the effects of strains on adolescents' suicidal attempt. It is also worth noting that being female ($b=.46$; $p<0.05$), being older ($b=.24$; $p<0.05$), and being religious ($b=-.52$; $p<0.001$) remained significant in Model 3 too.

CHAPTER 7. DISCUSSION

In this study, suicidal behaviors (suicidal ideation and suicidal attempt) among Turkish adolescents were studied using Agnew's General Strain Theory. Agnew (2006) specified strains that were more likely to lead to deviance, therefore a corresponding set of strains (parent strain, school strain, peer strain, economic strain, negative life events strain, and physical victimization strain) were selected. He also stated that these strains lead to deviance because they lead to negative affective states such as anger and depression. The effects of these strains on suicidal ideation and suicidal attempt, including tests of mediating effects of negative emotions on relationship between strains and these suicidal behaviors were investigated. The results of this study indicate that GST provides a useful theoretical model for researchers of adolescence suicidality. Many of the strains measured were significantly associated with both suicidal ideation and suicidal attempt, even after controls for several demographic variables. The results also indicate that some of the effects of strains were mediated by negative affective states.

Hypotheses about the direct effects of strains on suicidal ideation and attempt were strongly supported. All of the adolescent-reported strains with the exception of peer strain were significantly associated with adolescent suicidal ideation at both the bivariate and multivariate levels (Hypothesis 1). Turkish adolescents having frequently arguing or fighting parents, failing to integrate into school environment, perceiving relative economic deprivation, and experiencing devastating life hassles and physical violence are at greater risk of suicidal thinking, which is a strong antecedent of later suicidal attempt and completed suicide. Findings also supported Hypothesis 3, as all of the adolescent-reported strains with the exception of economic strain were significantly associated with adolescent suicidal attempt. Turkish adolescents having frequently

arguing or fighting parents, failing to integrate into school environment, depriving of peer support, experiencing devastating life hassles and physical violence are at greater risk of suicidal attempt, which is the strongest predictor of later completed suicide.

Although there is a strong association between suicidal ideation and suicidal attempt on bivariate level and most of the strains that lead one also lead to the other, logistic regression results indicated that some strains might be specific to a certain suicidal behavior. For instance, the peer strain did not appear significant on suicidal ideation but it did on suicidal attempt. Vice versa, economic strain were significantly associated with suicidal ideation but not with suicidal attempt. These findings imply that suicidal behaviors might differ in terms of their risk factors; thus, instead of combining different types of suicidal behaviors (ideation, attempt, plan, etc.) into one dependent variable, researchers should focus on each suicidal behavior separately. Further research is required in this respect to be able to comprehend the reasons beyond these differences. One possible explanation for why economic deprivation was significantly associated with suicidal ideation but was not effective enough to significantly predict suicidal attempt can be Durkheim's (1951) argument that poverty might be considered as a protective factor against suicide because it places physical limits on expectations and goals, thus is a source of regulation.

On the other hand, support for the hypothesis about the mediation effects of negative emotions on relationships between strains and these suicidal behaviors were limited. Hypothesis 2, that strains will indirectly affect suicidal ideation through negative emotions was partly supported. After anger and depressive symptoms were added into the model, the influences of school strain, economic strain, and negative life events strain lost their statistical significance. Effect sizes of parental strain and physical victimization have also decreased, which may signal a potential mediation effect; however, those strains remained highly significant even in the final

model. Similarly, Hypothesis 4 that strains will indirectly affect suicidal attempt through negative emotions was also partly supported. After anger and depressive symptoms were added into the model, peer strain dropped from statistical significance, and school strain and physical victimization strain lost some significance. Effect sizes of parental strain and negative life events strain also decreased, as a sign of potential mediation affect; but they kept their significance level. Independent impact of negative life events on suicidal attempt found in this study is consistent with some previous research (Cheng et al. 2001; Wang et al.2012). Wang and his colleagues (2012) indicated that the relationship between stressful life events and suicide attempts persisted even after adjusting for mental disorders and sociodemographic variables. Similarly, Cheng et al.'s (2001) study also showed that loss events retained their independent effects after adjusting for the effects of depressive disorders. Contrary to GST, it appears that some strains have direct influences on suicidal ideation and attempt that cannot be mediated by depression or anger. This finding provides credit for the social researchers emphasizing the significant independent impacts of social/environmental risk factors on adolescent suicidal behaviors.

Finding that depression is a stronger mediator of strains compared to anger is not surprising, because results also indicated that strains led to depressive symptoms more than they led to anger. Although anger occupied a special place in GST, Agnew (2001:322) has argued that individuals who respond to strain with feelings of depression are less likely to engage in “other-directed crime” (versus self-directed behavior, such as suicidal behaviors) than are those who respond to strain with anger. Relative supremacy of depression against anger found in this study is also consistent with previous suicide research. Depressive symptoms have been more

influential than any other mental risk factors in predicting suicide (Bertolote and Fleischmann 2002; Groholt et al. 2000; Sourander et al. 2001; Thompson et al. 2005).

Results in regards to the control variables were consistent with previous research. The girls in this sample were also more likely to report suicidal behaviors than boys. Canetto and Sakinofsky's (1998) argument that women are better reporters of health history might be a good explanation, given that girls also reported higher levels of depression and anger than boys. Considering the highly masculine social structure in Turkey, these findings might also represent the reflection of oppression on Turkish female adolescents. Students identified themselves as religious were less likely to report suicidal behaviors, which is generally explained by the argument that religion helps people to cope better with life stresses, reduce the incidence of depression and substance misuse, facilitate recovery from depression, enhance social support and provide sources of hope and meaning (Cook 2014; Koenig et al. 2012).

The present study examined self-reported suicide ideation and attempts rather than official records of completed suicides. Hence, the findings cannot be applied directly to completed suicides. However, the relationship between these suicidal behaviors and completed suicide is very strong (Lewinsohn, Rohde, and Seeley 1996). For instance, a meta-analysis estimated that the risk of completed suicide among individuals who attempted suicide is 38–40 times higher than that of the general population (Brown, Have, and Henriques 2005). Furthermore, studying self-reported suicidal behavior complements the research on recorded suicide because it helps to overcome key methodological limitations associated with official records (Thorlindsson and Bjarnason 1998). Official records rarely include direct measures of key social variables such as connections with family members or peers. Finally, as completed

suicides are extremely rare, it would be impossible to conduct the type of analysis reported above by using completed suicide as the dependent variable.

This study contributes to literatures of both suicide and GST. The first contribution to the literature on suicide is the insights we provided about the suicidal behaviors of adolescents in a Muslim country. It is worth noting that the major part of the suicide literature are dominated by non-Muslim Western and randomly Eastern studies. Muslim countries have made relatively few contributions to studies about suicide. Many Islamic countries do not even collect national suicide statistics and/or they do not report such statistics to the World Health Organization (Khan 1998). This may be due to the lack of available funding for suicide research or because little attention is paid to the suicide problem (Cardinal 2008). Another reason may be a lack of interest by researchers due to the generally held belief that suicide is a rare event in Muslim countries (Khan and Hyder 2006). Although limited research shows that traditionally suicide rates are low in Islamic countries (Lester 2006), results of this study shows that rates of suicidal thinking and attempted suicide among adolescents in Turkey do not appear to be lower as compared to adolescents in non-Muslim countries.

In addition to providing insights about the suicidal behaviors of adolescents in a Muslim country, this study examined both individual- and structural-level predictors' influences on adolescent suicidal behaviors with guidance of a broad deviance theory. Although there is consistent evidence for the influence of different demographic, social, and psychological factors on suicidal behaviors of adolescents, joint investigation of these elements has received less attention (Kidd et. al 2011). This might be due to the fact that these studies are not guided by a theory that shed light on the process. Originally developed by Agnew (1991) to explain crime

and deviance, GST enabled us to integrate both macro- and micro-level explanations of suicidal behaviors in a single study.

Major contribution of this study to the literature on GST is that it tested the theory in a different social context and on a different type of deviant behavior. Choosing Turkish adolescents as the population is a considerable contribution for the international development of GST. Since its introduction in 1992, Agnew's theory has gained much empirical support (Agnew 2012); however, the large amount of this support was obtained from studies conducted in the United States. Societies differ in the magnitude of particular strains, so certain strains may have more severe consequences in some societies than others. Also people in different societies may differ in their subjective interpretation of strains because of cultural differences. Thus, in this study, applicability of the theory is tested in a European-Asian and Muslim country, Turkey, which has a completely different societal structure than US. For example, results of this study indicated that economic strain was not a significant predictor of suicidal attempts of Turkish adolescents whereas studies conducted in U.S. suggested that economic problems were significantly associated with suicidal attempt of American adolescents (Dubow et al. 1989). Because there is a culturally strong focus on economic success in American society, economic problems might create more pressure on Americans than they do on Turks. Likewise, majority of the supportive studies tested the GST on other-directed delinquencies such as property or violent crimes (Agnew 2006). Suicidal behaviors differ from other deviant behaviors with their more complicated and self-directed natures. This study showed that GST can be useful for researchers of suicidality as well.

The major limitation to this research is that the data are cross-sectional in nature, and thus causal predictions are limited. Although the theoretical approach and past research guiding these

analyses improve our ability to infer directionality, longitudinal analyses with these data are needed to truly assess causal effects. It is assumed that negative social environments lead to negative emotions; however, it is also likely that adolescents who are depressive and angry tend to perceive their environment more negatively. Second limitation is related to the demographic characteristics/generalizability of the sample. The participant city, Istanbul, is a metropolitan industrial city with a population of 15 million, which makes it socially different from other cities of Turkey. Thus, generalizability of the results to all Turkish adolescents clearly is not possible within the context of a single study. Third limitation to this research relates to the excluded measures of strain. Agnew (2001) noted a number of strains that were likely to lead to delinquency but are not available within this data set (i.e., child neglect and abuse, work related strain, homelessness, and criminal victimization).

Regarding the policy implications, findings underscores the importance of recognizing that psychological/emotional risk factors of suicidal behaviors, in this case, anger and depression, are partly reactions to adverse social/environmental circumstances. As such, along with psychological stressors, treatment and prevention programming needs to take into account a variety of culturally appropriate social/environmental stressors that may increase suicide risk for adolescence. Although the clinical treatment is still crucial for mentally ill, the effects of depression and anger on adolescent suicidal behaviors may also be buffered by improving adolescents' relations with their social environment (family, peer, and school); and by providing them the social mechanisms that offer support and advice when needed.

Adolescent suicide is a major public concern worldwide. Suicidal behaviors are generally the previous steps to the completed suicide, thus need to be examined thoroughly. Although various risk factors of adolescent suicidal behaviors were determined, few studies have

simultaneously examined the effects of individual- and structural-level factors. This might be due to the fact that these studies are not guided by a theory that shed light on the process. Present study tested Agnew's GST to explain suicidal ideation and suicidal attempt among adolescents in Istanbul, Turkey. The results of this study indicate that GST provides a useful theoretical model for researchers of adolescence suicidality. Many of the strains measured were significantly associated with both suicidal ideation and suicidal attempt, even after controls for several demographic variables. The results also indicated that some of the effects of strains were mediated by negative affective states.

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