‘The differences in strain between males and females and how strain explains delinquency’

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Abstract

There is still a lot of delinquency among youth: there were over 15.000 youthful delinquents known in the Netherlands in 2016. Of those youthful delinquents over 11.000 were male. But how can this large amount of male youthful delinquents be explained? General Strain Theory (GST) argues that strain can cause delinquency. Strain is caused by events which are stressful, or when a situation is deemed unfair. According to GST there are gender differences in the types of strain people experience: in this research it is hypothesized that males experience more strainful events that are more likely to cause crime and that females experience more strainful events that are less likely to cause crime. Furthermore GST argues that there are different coping strategies regarding strain: it is hypothesized that males are more likely to resort to delinquency because of strain and that females in their turn are more likely to resort to alcohol- and drug use. This research shows that females do experience more strain that is less likely to cause crime. Males do not experience more strain that is more likely to cause crime. Males do, however, resort more to delinquency, but there was no indication that this was because of their experienced strain. Females do resort more to drug use because of their experienced strain, but they do not resort to alcohol use.

Keywords: Strain, General Strain Theory, delinquency, coping, alcohol use, drug use

Introduction

In recent years the overall crime rates have gone down; where there were over 1.2 million registered crimes in 2010, there were only about 830.00 registered crimes in 2017 (Centraal Bureau voor de Statistiek, 2018). The crime rates among youth have also gone down; in 2010 there were approximately 17.000 young offenders known by Halt and by 2016 this has dropped to 15.640 (Centraal Bureau voor de Statistiek, 2017). Halt is an organization specialized in youth crime and the young offenders that are known by Halt are between the ages of 12 and 23, so not all are minors (Halt, n.d.). Although crime rates among youth have gone down in the past years, it is when you hear about incidents involving some form of crime among youth, you mostly hear that boys are the ones that are involved in criminal behaviour: in 2016 there was a total of about 15.640 young offenders known by bureau Halt and of those 15.640 young offenders, over 11.000 were male (Centraal Bureau voor de Statistiek, 2017). This leads to the question 'why are males more criminal?'.

Research shows that strain can cause criminal behaviour (Agnew, 1992). When people cannot achieve what they desire, they can feel strain between the goal they want to achieve and that what they actually have achieved. Strain theory focuses on negative relationships with others in which an individual is held back by those relationships so that positive goals cannot be achieved. The emotions that result from the negative relationships could lead to criminal behaviour (Agnew, 1992). Strain itself can be caused by multiple factors. If people lose positive stimuli, or experience things that can be considered traumatic, like death, family problems (e.g. divorce, financial problems) or problems in school, strain can occur (Agnew, 2001). The accumulation of all the strain a person has experienced is key in understanding criminal behaviour (Agnew, 2001). While you might think that males experience more things that can cause strain, since young males are more criminal than young females, this is not really the case (Broidy & Agnew, 1997). Agnew shows that males do not necessarily experience more strain than females, he even argues that it could be that females experience more strain than males (Broidy & Agnew, 1997). What could be possible explanations for the sex difference in delinquency are the types of strain each sex experiences and how they cope with their experienced strain.

There are many different life events that can cause strain, but not all of that experienced strain does lead to delinquent behaviour among children or adolescents (Agnew, 2001). While an event may cause strain, there are certain events that cause strain are more likely to cause crime than other strainful events. Bad relationships with parents have a very different impact on a child than being unpopular in school might have in relation to

delinquency (Agnew, 2001). Furthermore, bad relationships with parents cause more strain for females than for males (Broidy & Agnew, 1997). There are differences in strains that cause delinquency and strains that are less likely to cause delinquency, and there are also differences in the strains males and females experience. Therefore the research question:

(1) Is there a difference between male and female adolescents in strains that cause delinquency and strains that do not?

There is also a difference in the way people cope with strain. Females, for example, tend to cope with strain by internalizing these feelings, and males, on the contrary, tend to cope with their experienced strain externally (Hoffmann & Su, 1997). By internalizing their experienced strain, females become more depressed and do not resort to criminal behaviour but they rather resort to self-destructive behaviours like alcohol- and drug use. Males externalize their experienced strain and they tend to become aggressive and more delinquent as a result of that (Hoffmann & Su, 1997). Agnew (2009) also believes that males are more likely to resort to delinquency because of their external coping. This external/criminal coping males experience is also due to a difference in emotional response to strain: while both males and females tend to become angry as a result of strain, female anger is accompanied with other emotional responses (e.g. depression) which causes in non-criminal coping (Agnew, 2009). Male anger is often not accompanied by other emotions besides anger, and they are therefore more likely to resort to criminal coping. Agnew (2009) also believes that there are several types of strain that enhance the likelihood that an individual resorts to delinquency through coping with that strain. While there is already support for the difference in coping between males and females, there is not much research done on the strains that enhance criminal reactions. Therefore the research question:

(2) Is there a difference between male and female adolescents regarding internal and external coping with strain?

Classic strain theorists limit themselves to only one main type of strain (e.g. negative relationships) while strain is so versatile. Although research on General Strain Theory does look into multiple forms of strain, it mainly sticks either different causes of strain (e.g. strains caused by family matters, neighbourhood strains, peer related strains, negative life events)

(Agnew & White, 1992; Joon Jang, 2007) or just strain in general, used as a broad concept (Brezina, 1996). The aim of this research is to look at a differences in strain regarding gender and outcomes of such strain (e.g. delinquency or not). Furthermore, this research wants to explore Agnew's (2009) ideas on strains that enhance delinquent coping, as this is a relatively unexplored area within Agnew's GST.

Theory

As stated earlier, feelings of strain come into play when there is difference in what people want to achieve and what they actually achieve or when things do not go the way they want them to go (Agnew, 1992; 2001; 2009; Broidy & Agnew, 1997). When strain is experienced, there are emotions that come into play which help create a response to the experienced strain (Agnew, 2009). One possible outcome is that an individual resorts to crime because of strain. Anger is an important emotion that is key in explaining the behaviour strain causes, but there are other emotions, like depression, that can cause other responses to strain (e.g. drug abuse, eating disorders) (Agnew, 2009; Broidy & Agnew, 1997). This is the main idea of General Strain Theory, or GST for short (Agnew, 1992; 2001; Broidy & Agnew, 1997).

There are different ways in which strain is caused (Agnew, 1992). Classic strain theories limit themselves to only one possible cause for strain: negative relationships that prevent others from their desired goal that has a positive value. General Strain Theory (GST) has built on the ideas of classic strain theory and expanded to three types of strain caused by negative relationships (Agnew, 1992). Firstly, individuals can be hindered from reaching their positively valued goals by others. Besides that, positive stimuli can be taken away by others. Finally, others can also present negative stimuli to the individual (Agnew, 1992). I will elaborate on each below.

Failure to achieve positively valued goals

Positively valued goals are things people want to achieve or expect to achieve (Agnew, 1992). The failure to achieve expected goals as opposed to aspirations is more embedded in reality as compared to the ideal aspirations that people want to achieve (Agnew, 1992). When comparing their more realistically embedded expected goals to what they actually achieve, it is expected that when people are not able to achieve their expectations, they feel that they have failed (Agnew, 1992). According to the classic strain theories developed by Cloward and Ohlin (1960), Cohen (1955), and Merton (1938), what people want to achieve is for example monetary success or attaining a higher socio- economic class (Agnew, 1992). These are culturally embedded aspirations and they are often not possible to achieve for lower-class people because they are most likely to be prevented from achieving this by others around them and/or the societal system (Agnew, 1992). Not achieving these aspirations, although they might not seem realistic for all people, can cause strain.

It is suggested by Robert Agnew (2001) that the strain caused through wanting to achieve monetary success is related to crime. Wanting to achieve monetary success has to do

with personal traits (e.g. sensation seeking) and to resolve the strain created by monetary success, that success is relatively easy to achieve through crime (e.g. property crime, theft). Status attainment, on the other hand, is only weakly related to crime, because it is not easy to achieve through crime and crime could even be disadvantageous in order to attain a higher status since crime is valued negatively by society (Agnew, 2001). This, however, does apply to adults and older adolescents but not necessarily to younger adolescents.

Agnew, Brezina, Wright and Cullen (2002) did research on children from the ages 7 to 11 and they found that the possible strain caused by their parents income (or strain caused by monetary success of the parents) does not lead to delinquent behaviour of the child. They did not account for possible strain caused by an inability of reaching monetary success for the child itself. Research done by Robert Agnew (2001) does suggest that the strain caused by the inability to gain monetary success does lead to delinquency primarily among adults and adolescents.

Goals that are positively valued among primarily adolescents are for example getting good grades and having a good relationship their parents and others dear to them (Agnew, 1992; Agnew, Brezina, Wright & Cullen, 2002). When adolescents fail to get good grades or have a poor relationship with their parents or other people dear to them, they can experience strain. Such feelings of strain can, for example, come into existence through comparing the inputs and the outcomes of certain events, like failing to get good grades (Agnew, 1992). If the comparison between input and outcome leads to an equal input/outcome ratio, the outcome is deemed fair, but if this ratio is unequal, the outcome is deemed unfair (Agnew, 1992). When the outcome is unfair and it is to their disadvantage, they will experience distress and that might lead to delinquent behaviour (Agnew, 1992). There is empirical support for the notion that disadvantageous unfair outcomes may lead to anger and frustration, and anger is an important factor in GST since it contributes to delinquent behaviour (Agnew, 1992).

Agnew (2001) elaborates further on the notion of unfair outcomes: there are six factors that contribute to the feeling of unfair outcomes. Firstly, people must feel that their strain is undeserved (e.g. not their fault). Secondly, their strain must not be in service of a higher purpose (e.g. a country, gang, God). If it would be in service of a higher purpose, it would not feel unfair. Strain must also result in harm in order to feel unjust. The process of deciding whether strain is unfair also plays a role. Furthermore, people have to feel that they are treated disrespectful, and, finally, the experienced strain must violate social norms (Agnew, 2001). Some forms of strain can be seen as unfair or unjust, but if it is the victim's own fault or that it is by accident or chance, the strain is not very likely to cause criminal behaviour. In other

cases, where strain is not caused by chance, accident or the victim itself (or if they do not believe it is their fault), strain is more strongly related to crime (Agnew, 2001).

Removal of positive stimuli and/or the presentation of negative stimuli

Besides the failure to achieve positively valued goals, the removal of positive stimuli or the presentation of negative stimuli are also a source of strain. When family or other loved ones become ill, pass away or end their relationship with an individual feelings of strain can be experienced, because positively stimuli are removed in the life of an individual (Agnew, 1992). These possible losses do not have to be actual losses; they can also be anticipated losses. To deal with this (anticipated) loss, people can seek to prevent, retrieve, seek revenge for or seek substitute for the loss. It is also argued that some might start taking drugs to hide the negative impact of the strainful event (Agnew, 1992).

Besides the removal of positive stimuli, negative stimuli can also be presented. Negative stimuli can be people and negative events that present themselves to individuals (Agnew, 1992). As a reaction to these negative stimuli, one can try to escape the negative situation, end the negative stimuli, seek revenge towards the source of the negative stimuli or they can start taking drugs to supress any negative feelings caused by the negative stimuli (Agnew, 1992). Examples of negative stimuli are child abuse and negative relationships with peers and family. According to Agnew, Brezina, Wright and Cullen (2002) negative relationships within the family create strain which causes adolescents to become more delinquent. Agnew (2001) suggest that also bad relationships with teachers have a similar effect on adolescents. Negative relationships with peers, however, are seen as strainful, but they are not likely to cause delinquent behaviour among adolescents (Agnew, Brezina, Wright & Cullen (2002). Furthermore, child abuse is also an important cause of strain which can cause delinquent behaviour among adolescents (Agnew, 2001). Besides that homelessness is also seen as a type of negative stimulus, it is additionally caused by the presentation of other negative stimuli like child abuse or bad relationships; in order to escape these negative events youth can run away and become homeless (Agnew, 2001). Baron (2004) also found that homelessness is a form of strain that is related to crime among youth. Besides that, he also found that strain caused by victimization contributes to criminal behaviour among youth.

Table 1: List of strain related and not related to crime (based on: Agnew, 2001; 2009)

Strain not related to crime	Crime-related strains
Not overly strict behaviour of parents and/or teachers	Parental rejection
Sickness of family members or others close to an individual	Overly strict behaviour of parents and/or teachers
Death of family members or others close to an individual	Child abuse
Unpopularity	Negative school experiences (e.g. bad grades, bad relationship with teachers)
	Criminal victimization
	Homelessness
	Discrimination

Gender differences in relation to types of strain

Not all people who experience strain show criminal behaviour (Agnew, 1992; 2001; Broidy & Agnew, 1997). There are, however, far more males engaging in criminal behaviour than females (Centraal Bureau voor de Statistiek, 2017; 2018). While it might seem that males experience more stressful events that can cause strain, Broidy and Agnew (1997) found that this is not the case and females might even experience more strainful events; this applies to both adults and adolescents.

There are three main types of strainful events, as described earlier, and this distinction is used in existing literature (Agnew, 1992; 2009). Besides the three different types of strain there is also a difference between males and females in what types of strainful events they experience (Broidy & Agnew, 1997).

In general, relational strains like having a poor relationship with your parents or teachers can be seen as strainful, but there is a gendered difference when you look at who experiences this type of strain; females are more likely than males to experience strain when they fail to achieve positive relationships with parents or teachers or when good relationships turn into poor ones or if they have never been good (Broidy & Agnew, 1997). Females value such positive relationships more than males do, and they are therefore more subjected to relational strains. These relational strains females experience (e.g. bad relationships with parents and/or teachers) are more likely to cause criminal behaviour, but because of the different emotional responses between males and females to strain, relational strains are only more likely to cause crime among males than females (Agnew, 2001; 2009; Morash & Moon, 2007). Besides the fact that relational strains cause crime among males, victimization also is related to crime. Males experience more victimization than females and therefore they will experience more strain caused by victimization (Stafford & Galle, 1984). Victimization in its turn is related to crime, as victimization is an event from which one can ‘learn’. In response to

possible future victimization, one can learn to react with anger and/or crime in order to protect him- or herself from any future victimization (Baron, 2004). While it is argued that females can experience more strains, and that females may experience strains that are more likely to cause crime, in general the males experience more strains that are more likely to cause crime (Agnew, 2009). Therefore the following hypothesis:

H1: Males experience more strainful events that are more related to crime.
H2: Females experience more strainful events that are less related to crime.

Gender differences in relation to coping strategies

Besides the differences between males and females in the kinds of strain they experience, there are also differences between males and females in the ways they cope with strain. Baron (2007) found that even when adolescents are experiencing the same strain, females are less likely to resort to crime than males.

When strain is experienced, people can try to avoid or escape the strainful situation, they can try to compensate for the experienced strain or retaliate against the experienced strain (Brezina, 1996). In order to avoid strainful situations people can run away from home or skip school; drug use is also an option in order to escape feelings of strain. When people want to compensate for the experienced strain, you can think of stealing the item that causes the strain in the case of materialistic strain. Retaliation as a response to strain does not always remove the feelings of strain, but it can help them to maintain a sense of justice (Brezina, 1996). Broidy and Agnew (1997) suggest that females cope with the strain they experience by engaging in non-criminal behaviours. They can become depressed, develop eating disorders or they can resort to alcohol and/or drug abuse. They cope with their strain internally, and through this internal coping female youth or adolescents want to prevent themselves from hurting the people in their social networks by becoming delinquent (Broidy & Agnew, 1997; Hoffmann & Su, 1997). Where females are afraid to hurt the people around them, males are more individualistic and care less for good relationships with others (Hoffmann & Su, 1997). Male children or adolescents are more likely to cope with their experienced strain externally (Hoffmann & Su, 1997). By showing anger openly, males confirm their masculinity, and this protects males from feeling, for example, depressed (Broidy & Agnew, 1997). Anger is a key reason why people respond to strain with crime, since they are related to each other, and because male anger is not reduced by other emotions, it is much more likely that males respond to strain with crime (Broidy & Agnew, 1997).

Social control also plays part in the way people cope with strain: those with more social control are in general less likely to become delinquent (Paternoster & Mazerolle, 1994). When people have a higher social control, they tend to have a higher attachment to their parents, they tend to believe more in social values and, at last, they tend to have a higher commitment and involvement in school (Wiatrowski, Griswold & Roberts, 1981). In their research Paternoster and Mazerolle (1994) found that especially a higher belief in social values and a higher commitment and involvement in school in the form of high grades meant that youth was less delinquent. They also found that females experience more social control than males. This is in line with the goals females value positively (Broidy & Agnew, 1997). Furthermore, those with more social control are less delinquent (Paternoster & Mazerolle, 1994).

Research shows that female children or adolescents attribute a high value to positive relationships and maintaining these relationships, and because they do so, they are afraid to hurt people around them. By responding to strain with delinquency or anger, these relationships will be damaged (Hoffmann & Su, 1997). Females also have more social control than males (Paternoster & Mazerolle, 1994) Because of this, it is suggested that females engage in less criminal behaviour than males. Hoffmann and Su (1997) also hypothesized this, but after testing their hypotheses, they could not find significant differences between males and females when looking at delinquency and drug use, as ways of coping with strain. Although Hoffmann and Su (1997) could not find any significant results for this, it proves to be an area that others would like to explore further (Brezina, 1996).

Besides the main effect that strain can cause delinquency or alcohol- or drug use, strains such as discrimination and being a victim of bullying or abuse can enhance criminal coping (Agnew, 2009). Such strains enhance criminal coping because when such strains are experienced, those who experience such strains are exposed to violent actors who are the cause of such strain. Moreover, these strains are more related to delinquency than other strains (e.g. serious life events like death or illness), which are not related to crime and do not enhance delinquency. Therefore it is hypothesized that:

H3: Males are more likely to resort to delinquency than females will do, as a result of coping with strain related to crime.

H4: Females are more likely to resort to alcohol and drug use than males will do, as a result of coping with strain less related to crime.

Methods

The data used in this study comes from the Second International Self-Report Delinquency study (ISRD-2) which examined adolescents from the seventh to the ninth grade, from 30 countries all over the world. The data was collected in 30 countries all over the world. These countries include Armenia, Aruba, Austria, Belgium, Bosnia and Herzegovina, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Lithuania, the Netherlands, the Netherlands Antilles, Norway, Poland, Portugal, Russia, Slovenia, Spain, Suriname, Sweden, Switzerland, United States and Venezuela (Enzmann et al., 2015). A total of 68.507 respondents participated in the study. In this research, however, the focus is on the Netherlands. There was a total of 2330 respondents from the Netherlands who participated.

From 2005-2007 data was collected both through pen and paper surveys and through computer surveys. The sample was conducted in three steps: in the first step cities were selected, followed by the random selection of schools and the random selection of specific classes within the school (Enzmann et al., 2015). The cities were selected so that they would be representative for the country, with distinctions made between small towns, medium cities and large cities (Marshall & Enzmann, 2012).

The respondents were mainly between the age of 12 and 15, although there were 55 cases of the total sample (e.g. all countries) in which the respondents were below the age of 12 and there were 153 cases of the total sample in which the respondents were older than 18. The exact range of ages is not available, since they are hidden in the data. Only the range of ages is available (Enzmann et al., 2015).

In the final sample of respondents from the Netherlands only adolescents younger than 18 participated. Although the aim of the ISRD-2 was to reach pupils from the ages 12 to 15, the final sample consists of respondents ranging from younger than 12 up until respondents below the age of 18.

If a respondent had over 30% missing answers on any item, he or she is excluded from the data. None of all the used variables had over 10% missing values. The final number of respondents in this data is 1669.

Measurements

Dependent variables

In order to measure several constructs, scales were created. In order to create these scales, the individual items that were used to form these scales, were transformed to percentages of the

maximum possible answers ranging from 0 to 100. These scales were created by taking the mean scores of the variables used in the scales.

To measure the construct of *life events that can cause strain*, 19 variables were divided into two categories: types of strain that are not likely to cause delinquency (Strain I), and types of strain that are more likely to cause delinquency (Strain II). In line with Hoffmann and Su (1997), and Paternoster and Mazerolle (1994) that such negative life events include the divorce or separation of their parents, illness or death of a family member among other things. The distinction between strains that are less likely to cause crime and the strains that are more likely to cause crime are based on the distinctions Agnew (2001) makes (see table 1).

The variables indicating strainful events that are not likely to cause crime, are the death of a brother or a sister, the death of a father or a mother, a serious illness of the respondent his- or herself, a serious illness of one of the parents, alcohol- or drug use of one of the parents, violence between the parents, separation or divorce of the parents and if the parents tell their child at what time he or she should be home. These items, however, have a very low correlation with each other, since all of them do measure strain, but they are very different from each other. This is an explanation for the low Cronbach's Alpha of 0.321.

The variables indicating strainful events that are more likely to cause crime, are discrimination, being a victim of a robbery, being a victim of assault, being a victim of theft, being a victim of bullying, repeating a grade, poor school achievement, not getting along with their father, not getting along with their mother, not spending a lot of time with your family, not having dinner with you family and your parents not knowing who you go out with. These variables also have very low correlations and a low Cronbach's Alpha of 0.451. These items also measure strain, but these events do not have much in common, as they are very different from each other as well.

In previous research strain scales have been known to have low alpha levels, as the items measuring strain are not expected to be correlated (Hoffmann & Su, 1997).

In both cases the items that are part of the constructs are not expected to correlate, since they all measure very different things. The strain scales have a minimum of '0' indicating that the respondent does not experience any strain. For 'Strain that is less likely to cause crime' the maximum is 88.89 and for 'Strain more likely to cause crime' the maximum is 85.11. The maximum score indicates the highest mean score of strain that a respondent can experience. The higher the score on the strain scales, the higher the experienced strain.

Both strain constructs are used as both dependent and independent variables.

Alcohol- and *drug use* is respectively measured by the variables in the Second International Self-Report Delinquency that report alcohol- and drug use. Alcohol use was measured by asking the respondent whether he or she has ever had a beer, wine or breezers, or if they ever have had strong spirits (like gin, rum etc.). Drug use was measured by asking if the respondent has ever used soft drugs like weed and hash, if they ever had drugs like XTC, and if they ever had drugs like LSD, heroin or coke. The original variables measuring alcohol- and drug use consisted of 'yes' and 'no' categories with each item.

Both the overall measures indicating alcohol use and drug use are made into dichotomous variables. When a respondent has ever had any alcohol, the value '1' indicates that the respondent does use alcohol. When a respondent has never had any alcoholic beverage, a value of '0' indicates that the respondent does not use alcohol. The same applies to drug use: if a respondent has reported that he or she has ever used drugs, the value '1' applies to them, indicating drug use. When no drugs is used, the value '0' indicates that the respondent has never used any form of drugs. The variables were made dichotomous in this research in order to be able to conduct logistic regression analyses.

Delinquency is also measured by the variables in the Second International Self-Report Delinquency that indicate delinquent behaviour by the respondent. Delinquency is measured by taking the mean score of the 14 items measuring delinquency. Before taking the mean score of the 14 items, each singular item was recoded in such way that the values of that item ranged from the minimum possible percentage score of '0' when the respondent indicated not to have engaged in that specific delinquent action. The maximum possible score was '100' indicating that the respondent has engaged in that specific action. The scale that was created has an acceptable Cronbach's Alpha ($\alpha = 0.776$). These items measuring delinquency include: damage of property, stealing something from a shop, breaking into a building with the purpose of stealing something, stealing a bike or scooter, stealing a motorbike or car, illegal downloading, hacking, steal something out of a car, snatch a purse or bag, carrying weapons, threatening someone with a weapon, participating in a group fight, intentionally beating up someone, and dealing drugs.

Independent variables

Sex is also used to predict alcohol use, drug use and delinquency. It is a dichotomous variable with '0' indicating that the respondent is female and with '1' indicating that a respondent is male.

Control variables

Family attachment is measured by their relationship with their family and the support they receive from them. Bonding with the family and joint activities are also part of the construct that forms family attachment. This, also, is in line with the measurement of family attachment by both Hoffmann and Su (1997), and Paternoster and Mazerolle (1994). Overall five items were combined to create this scale ($\alpha = 0.575$). These items include: not getting along with their father (four answer categories), not getting along with their mother (four answer categories), spending time with the family in their free time (six answer categories), having dinner with their family (eight answer categories) and their parents knowing who their children hang out with (three answer categories). In each case the lowest score indicates a 'no(t)' or most negative answer option. The highest score indicates that something is 'very well' or it indicates a 'yes' or 'always' as answer. The scale was created by transforming each item to a matching percentage on a scale from '0' to '100'. By taking the mean of the items, the scale was created.

One's positive attitude towards school and their academic achievement are part of their *school attachment*, as is their teachers' feelings about them. A similar measurement of school attachment was previously used by Wiatrowski, Griswold and Roberts (1981). To come to this scale, 13 items were combined ($\alpha = 0.724$). This construct is measured by the variables measuring: hours spent on homework (six answer categories), usually liking school (four answer categories), not repeating grades (three answer categories), not skipping class (three answer categories), and school achievement (three answer categories). The items indicating missing school, having teachers who notice when the respondent is doing well in school, liking their school, having other activities in school (e.g. sports, music), not experiencing a lot of stealing in school, experience not a lot of fighting in school, having not a lot of things in school that are broken and/or vandalized and not having a lot of drug use in their school have four categories each. The lowest scores indicate the most negative/most disadvantageous answer, often indicating a 'no', 'never' or 'not at all'. The highest scores were the most positive scores possible. The scale was also created by transforming each item to a matching percentage on a scale from '0' to '100'. By taking the mean of the items, the scale was created.

Table 2: Descriptive statistics

	N	Minimum	Maximum	Mean	S.D.
Delinquency	1669	0	100	14.87	14.58
Alcohol use	1669	0	1	0.72	0.45
Drug use	1669	0	1	0.18	0.38
Sex (Male = 1)	1669	0	1	0.49	0.50
Strain I	1669	0	88.89	26.01	13.20
Strain II	1669	4.17	85.11	22.73	10.12
Family attachment	1669	0	100	81.99	15.15
School attachment	1669	7.69	95.38	65.77	14.20

Analysis

The first two hypotheses state that *'Males experience more strainful events that are more related to crime'* and *'Females experience more strainful events that are less related to crime'.* By using multiple linear regression the first two hypotheses are tested.

The last two hypotheses state that *'Males are more likely to cope with strain related to crime by resorting to delinquency than females will do'* and *'Females are more likely to cope with strain less related to crime by resorting to alcohol and drug use than males will do'*. These last hypotheses will be tested by using a multiple regression analysis for the third hypothesis and two logistic regression analyses for the fourth and last hypothesis. These three analyses will be conducted with an interaction between the type of strain and sex. There will be controlled for family attachment and school attachment.

Table 3: Hypotheses

Hypotheses	
H1	*Males experience more strainful events that are more related to crime than females.*
H2	*Females experience more strainful events that are less related to crime than males.*
H3	*Males are more likely to resort to delinquency than females will do, as a result of coping with strain related to crime.*
H4	*Females are more likely to resort to alcohol and drug use than males will do, as a result of coping with strain less related to crime.*

Results

There are four assumptions that should be met when conducting multiple regression analysis: the assumption addressing multicollinearity, the assumption of normality, the assumption of linearity and the assumption regarding homoscedasticity of residuals. For logistic regression analysis there are two assumptions: the assumption addressing multicollinearity and the assumption of logit linearity.

To see if the assumption regarding multicollinearity is met, a Pearson correlation is conducted. The correlations show that there are many significant correlations with $p < 0.05$. None of these correlations, however, has a Pearson's *r* that is larger than 0.80 (see table 4). For further inspection a linear regression is conducted to test if the Variance Inflation Factor is higher than 10. This is not the case, so there is no indication of multicollinearity in any case. The assumption for normality does not seem to be violated since the residuals are relatively close to the diagonal line (see figures 1, 3 and 5 in the appendix). In the scatterplot there is no clear pattern visible, which indicates that the assumptions of normality, linearity and heteroscedasticity are no problem for any further analysis with this multiple regression analysis (see figures 2, 4 and 6 in the appendix). For the logistic regression the assumption of logit linearity should not be violated. In the case of the fourth hypothesis regarding drug use, the logit linearity assumption was not violated, as all the significance levels show no significant results. Regarding alcohol use the logit linearity assumption was partly violated, as there were significant values for family attachment. This violation of the logit linearity will be taken into account with the interpretation of the results, as this will be done cautiously.

Table 4: Correlations

	1	2	3	4	5	6	7	8
1. Delinquency	-							
2. Alcohol use	0.271**	-						
3. Drug use	0.468**	0.260**	-					
4. Sex (Male = 1)	0.236**	0.039	0.033	-				
5. Strain I	0.177**	0.110**	0.151**	-0.157**	-			
6. Strain II	0.278**	0.139**	0.239**	0.017	0.275**	-		
7. Family attachment	-0.299**	-0.153**	-0.255**	-0.052*	-0.210**	-0.747**	-	
8. School attachment	-0.314**	-0.149**	-0.316**	-0.155**	-0.086**	-0.384**	0.320**	-

*p < 0.05, **p < 0.01

When testing the first two hypothesis (see Table 5 and 6), the results show that there is a negative significant result, indicating that females experience significantly more strain that is less related to crime than males (B = -4.150, t = -6.503, $p < 0.001$). When controlled for both family and school attachment, there are still significant results indicating that females experience more strain that is less related to crime (B = -4.625, t = -7.343, $p < 0.001$) (Table 5). While there are significant results indicating that females experience more strain that is not related to crime, a second regression analysis indicates that there are no significant results suggesting any relationship between sex and strain that is more related to crime (B = 0.340, t = 0.686, p = 0.493). Only when there is controlled for both family and school attachment, a significant result is found, only it is the opposite of what was expected: males seem to experience more strain that is not related to crime when controlled for family and school attachment (B = -0.691, t = -2.088, p = 0.037) (Table 6).

Table 5: Multiple Regression analysis of strains that are not likely to cause delinquency on gender

	Model 1		**Model 2**	
	B	S.E.	B	S.E
Constant	28.046	0.447	45.747	2.032
Sex (male = 1)	-4.150***	0.638	-4.625***	0.630
Family attachment			-0.177***	0.022
School attachment			-0.045	0.023
R^2	0.025		0.074	

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

Table 6: Multiple Regression analysis of strains that are more likely to cause delinquency on gender

	Model 1		**Model 2**	
	B	S.E.	B	S.E
Constant	22.565	0.347	66.701	1.067
Sex (male = 1)	0.340	0.496	-0.691*	0.331
Family attachment			-0.481***	0.011
School attachment			-0.063***	0.012
R^2	0.000		0.566	

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

The multiple regression analysis which tests the third hypothesis, shows that there is no significant indication that an interaction effect of strain on the relationship between sex and

delinquency exists when there is not controlled for family attachment and school attachment (B = 0.054, t = 0.822, p = 0.411) (see table 7). There seems to be a significant main effect of sex on delinquency, where males are more delinquent than females (B = 3.632, t = 2.323, p = 0.020). There is, however, no significant effect found for the interaction term (B = 0.076, t = 1.213, p = 0.225), meaning that there is no indication that strain that is more likely to cause delinquency has no enhancing effect in resorting to delinquency for males. The control variables of family attachment and school attachment indicate that delinquency drops significantly by respectively -0.131 and -0.291 because of this attachment (B = -0.131, t = -4.119, p < 0.001; B = -0.291, t = -12.144, p < 0.001) (see table 7).

Table 7: Multiple Regression Analysis Predicting Delinquency

	Model 1		**Model 2**		**Model 3**		**Model 4**	
	B	S.E.	B	S.E	B	S.E	B	S.E.
Constant	11.489	0.486	2.593	0.877	3.198	1.145	40.223	3.858
Sex (male = 1)	6.882***	0.694	6.749***	0.666	5.519**	1.638	3.632*	1.564
Strain II			0.394***	0.033	0.367***	0.046	0.083	0.057
Sex*Strain II					0.054	0.066	0.076	0.063
Family attachment							-0.131***	0.032
School attachment							-0.291***	0.024
R^2	0.056		0.131		0.131		0.216	

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

To test the fourth hypothesis regarding alcohol use, we see that the model is statistically significant (χ^2 (df = 5, N = 1669) = 75.117, p < 0.001, Cox and Snell R^2 = 0.044, Nagelkerke R^2 = 0.063) and it is 72.1% accurate in predicting whether females are more likely to use alcohol because of the strain they experience. According to the Hosmer and Lemeshow test the fits well with the data, since this test is not significant (χ^2 (df = 8, N = 1669) = 10.213, p = 0.250). There is no indication in the model that females are more likely to resort to alcohol use because of the strain they experience, as p = 0.704, and thus not significant. By adding the control variables family attachment and school attachment, we see that alcohol use drops in both cases significantly (p < 0.001).

Table 8: Logistic Regression Analysis Predicting Alcohol Use

	B	S.E.	Exp(B) [95%CI]
Model 1 (72% accurate in predicting alcohol use)			
Constant	0.862	0.075	
Sex (female = 1)	0.172	0.109	1.188 [0.959, 1.472]
Model 2 (72% accurate in predicting alcohol use)			
Constant	0.285		
Sex (female = 1)	0.262*	0.112	1.299 [1.044, 1.617]
Strain I	0.021***	0.004	1.021 [1.013, 1.030]
Model 3 (72% accurate in predicting alcohol use)			
Constant	0.281		
Sex (female = 1)	0.270	0.243	1.310 [0.814, 2.110]
Strain I	0.021**	0.007	1.021 [1.008, 1.034]
Sex*Strain I	0.000	0.009	1.000 [0.983, 1.018]
Model 4 (72.1% accurate in predicting alcohol use)			
Constant	3.233		
Sex (female = 1)	0.050	0.251	1.051 [0.643, 1.718]
Strain I	0.018**	0.007	1.018 [1.005, 1.031]
Sex*Strain I	-0.003	0.009	0.997 [0.979, 1.015]
Family attachment	-0.018***	0.004	0.982 [0.974, 0.991]
School attachment	-0.018***	0.004	0.982 [0.974, 0.991]

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

Testing the fourth hypothesis regarding drug use, by means of a logistic regression, shows that the model is statistically significant (χ^2 (*df* = 5, *N* = 1669) = 226.701, $p < 0.001$, Cox and Snell $R^2 = 0.127$, Nagelkerke $R^2 = 0.210$) and it is 83.5% accurate in predicting whether females are more likely to use alcohol because of the strain they experience. The model seems to go well with the data, as the Hosmer and Lemeshow test suggests (χ^2 (*df* = 8, *N* = 1669) = 7.574, $p = 0.476$). The interaction between sex and strain has a significant result ($p = 0.005$) suggesting that females experience significantly more drug use because of the strain they experience, strain which is less related to delinquency. The odds ratio implies that there is a slightly higher chance that the strain less related to delinquency leads to more drug use by females.

Table 9: Logistic Regression Analysis Predicting Drug Use

	B	S.E.	Exp(B) [95%CI]
Model 1 (82.4% accurate in predicting drug use)			
Constant	-1.631		
Sex (female = 1)	0.174	0.129	1.191 [0.925, 1.532]
Model 2 (82.3% accurate in predicting drug use)			
Constant	-2.543		
Sex (female = 1)	0.308*	0.132	1.360 [1.050, 1.762]
Strain I	0.031***	0.005	1.031 [1.021, 1.041]
Model 3 (82.4% accurate in predicting drug use)			
Constant	-3.171		
Sex (female = 1)	1.410***	0.319	4.094 [2.190, 7.653]
Strain I	0.012	0.007	1.012 [0.999, 1.026]
Sex*Strain I	0.038***	0.010	1.038 [1.019, 1.058]
Model 4 (83.5% accurate in predicting drug use)			
Constant	2.384		
Sex (female = 1)	0.868**	0.334	2.382 [1.237, 4.588]
Strain I	0.006	0.007	1.006 [0.992, 1.020]
Sex*Strain I	0.029**	0.010	1.029 [1.009, 1.050]
Family attachment	-0.024***	0.004	0.976 [0.968, 0.985]
School attachment	-0.049***	0.005	0.952 [0.943, 0.962]

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

In short, it can be said that the second hypothesis can be confirmed: Females do experience more strainful events that are less related to crime than males. The third hypothesis can also be confirmed, as males are more likely to resort to delinquency because of the experienced strain related to delinquency. Hypothesis four is partly confirmed, as females are more likely to resort to drug use when they experience strains less related to crime; it does, however, not apply to females and alcohol use.

Table 10: Confirmation of Hypotheses

Hypotheses		Confirmed?
H1	*Males experience more strainful events that are more related to crime.*	No
H2	*Females experience more strainful events that are less related to crime.*	Yes
H3	*Males are more likely to resort to delinquency than females will do, as a result of coping with strain related to crime.*	No, only main effect
H4	*Females are more likely to resort to alcohol and drug use than males will do, as a result of coping with strain less related to crime.*	Partly, only drug use

Conclusion and Discussion

Robert Agnew (1992, 2001; Broidy & Agnew, 1997; Agnew, Brezina, Wright & Cullen, 2002), has done a lot of research on his General Strain Theory (GST). His main argument is that strain causes delinquency among adolescents. Previous research was only able to provide partial support for GST (Paternoster & Mazerolle, 1994; Hoffmann & Su, 1997). This research also tried to provide support for GST and this was tested on a sample of adolescents in order to see if GST, in fact, does apply to adolescents. This research tries to provide answers for two research questions; the first research question states '*Is there a difference between male and female adolescents in the types of strain they experience?*' and the second research question is '*Is there a difference between male and female adolescents in the way they are able to cope with strain?*'.

With the use of the hypotheses, it can be said that there is an indication that there is a difference in the types of strain males and females experience: females do experience more strain that is less likely to cause crime, but there is no significant indication that males experience more strain that is more likely to cause crime. There is, however, a difference in the way males and females cope with their strain.

As the first hypothesis suggested, males were expected to experience more strains that are more likely to cause crime. This could not be confirmed, but due to this expectation it influenced the construction of the third hypothesis. Put shortly, the third and fourth hypothesis suggested that males are more likely to cope with their experienced strain (e.g. strain that is more likely to cause crime) by resorting to delinquency and that females are more likely to resort to alcohol and drug use as result of their experienced strain (e.g. strain that is less likely to cause crime). Hypothesis three could not be confirmed and there was only partial confirmation of the fourth hypothesis. There is only partial support for the idea that different types of strain have different effects on the coping process. Therefore, these results suggest that there are differences in coping between males and females, but it cannot be totally confirmed because of the fact that not all results were significant. This research supports Agnew's GST partially, as not all the hypotheses could be confirmed.

This results have to be interpreted cautiously due to the fact that there were some problems regarding low Cronbach's Alpha measures and a violation of the logit linearity assumption. Both these problems are related to family attachment. For further research, the problem regarding the low alpha of the family attachment scale could possibly be solved by using a more elaborate measure of family attachment through more items. The used data only had limited items that measured family attachment.

Furthermore, the strain measures also were limited and they could also be more elaborate in future research, as there are many more stressors that can cause strain than there are used in this research. For example, it is not measured if a respondent was homeless, while that is also a major source of strain that is related to crime (Agnew, 2009). Financial strain is also a strain that is not really included in the data (e.g. only weakly suggested by certain measures, but not explicitly measured), but it is said to be a type of strain that is related to crime since it is relatively easy to resolve financial problems by resorting to delinquency (e.g. theft, robbery, pickpocketing) (Agnew, 2001). Furthermore, Agnew (2009) suggests that financial strains are strains that enhance external/delinquent coping.

Besides limited measures of certain constructs, there are certain things missing in the data that are of importance when looking into GST. For instance, the data lacks measures of emotional responses, which could also help predict whether strain causes delinquency. Anger is such an emotion that is important in explaining delinquency: Agnew (1992) argues that anger is an important mediator when wanting to predict if strain causes delinquency. When other emotions, like depression or anxiety, come into play, the outcome of strain could differ drastically: anger which is accompanied by depression or anxiety would not lead to delinquency, but rather to eating disorders or other internal coping mechanisms (Broidy & Agnew, 1997). This was not further explored in the theory, as the data does not provide items that measure emotional responses.

The duration of any experienced strain can also influence the magnitude of the stressor. Any stressor in this research only counts as one strainful event, while some strainful events have a longer duration than others and can affect the respondent more than other strains. For further research the duration of a strainful event can be taken into consideration.

Aside from the critique, this research does provide a test of GST, and while not all hypotheses were confirmed, it can still provide some information on GST and how it applies to adolescents. While it was hoped that the used distinction between ‘strain more likely to cause crime’ and ‘strain less likely to cause crime’ proved to be of more significance, it can be seen as an area that could be explored more, as results did significantly indicate that females experience more strain that is less likely to cause crime. It also seems worth to explore Agnew’s (2009) ideas, which suggested that some strains enhance delinquent coping. It is relatively unexplored area. The results of this research show that there is an indication that such strains influence the coping mechanisms of males and females, as it showed that strains that are less likely to cause crime influence in such a way that coping through drug use was enhanced for females. As noted previously, past test of GST only provided partial support

for GST (Paternoster & Mazerolle, 1994; Hoffmann & Su, 1997); this is not different for this study. General Strain Theory is not fully capable of explaining differences in delinquency for males and females through the test of GST in this study. The same can be said for the gendered differences in coping with strain and how strain influences coping. Further exploration and testing of GST is needed to provide a more complete image of GST, but there are indications that GST has the potential to be a good explanation for delinquency and the different impacts of different strains on individuals.

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Appendix

Figure 1

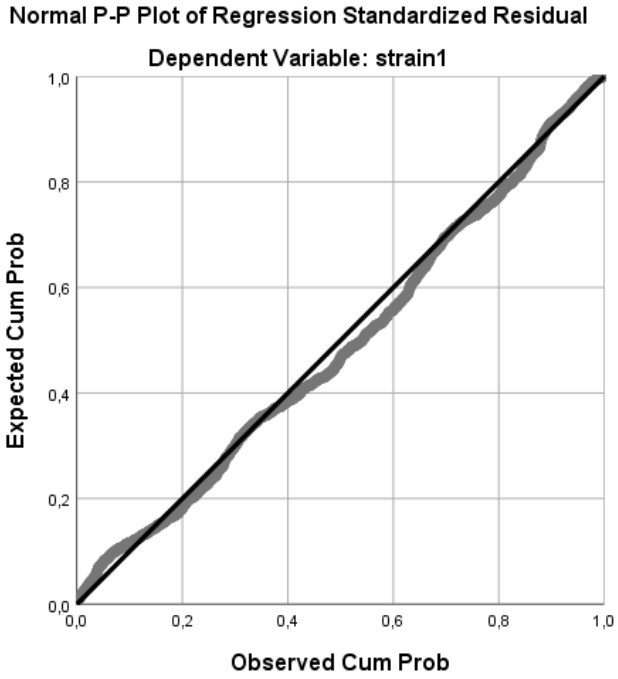

Figure 2

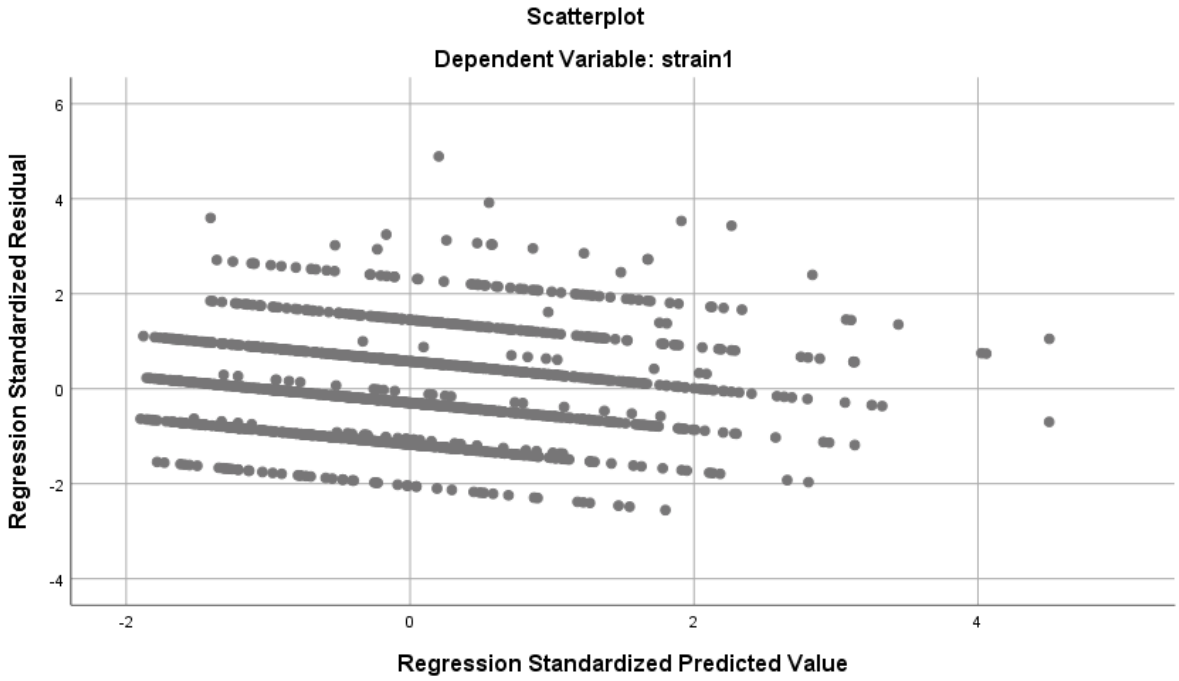

Figure 3

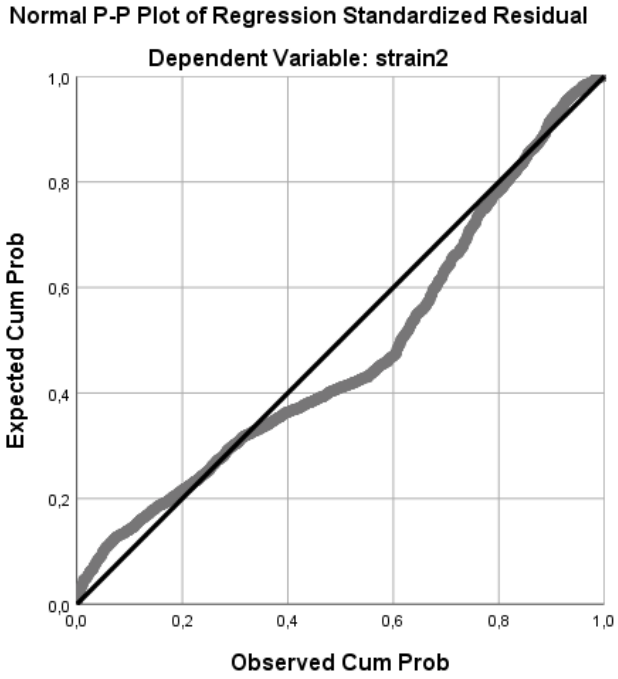

Figure 4

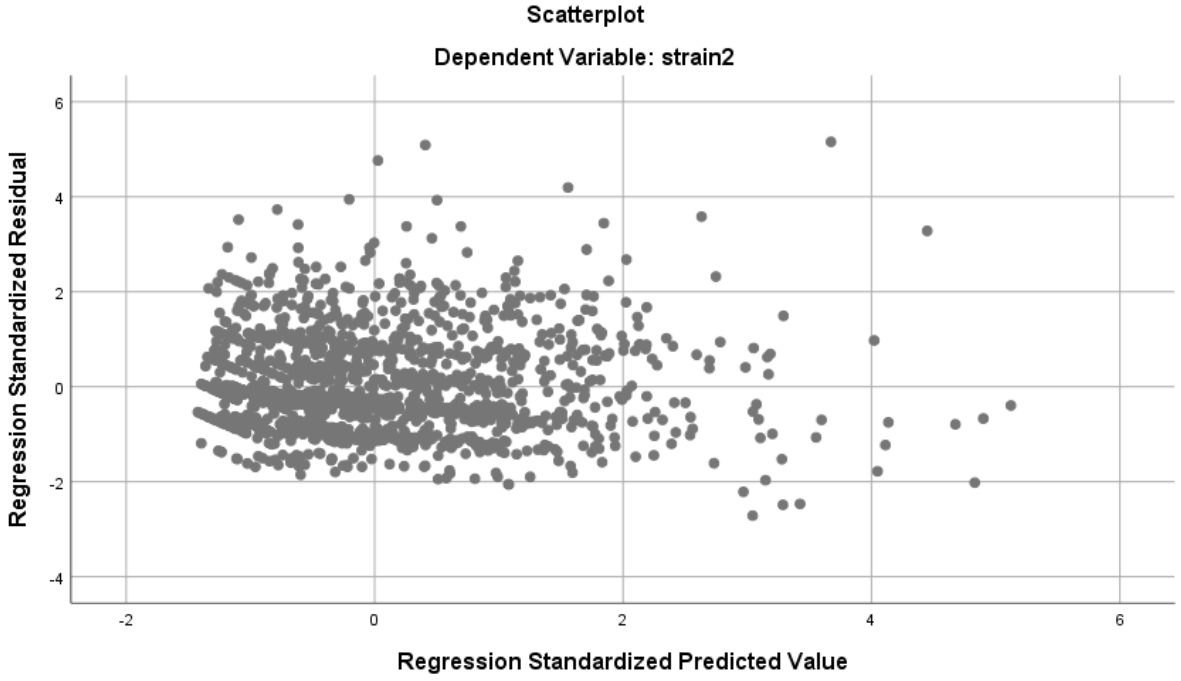

Figure 5

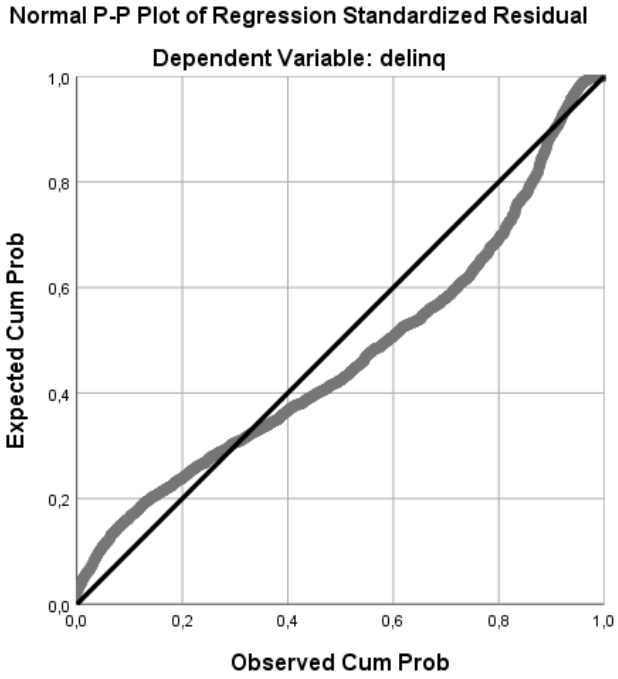
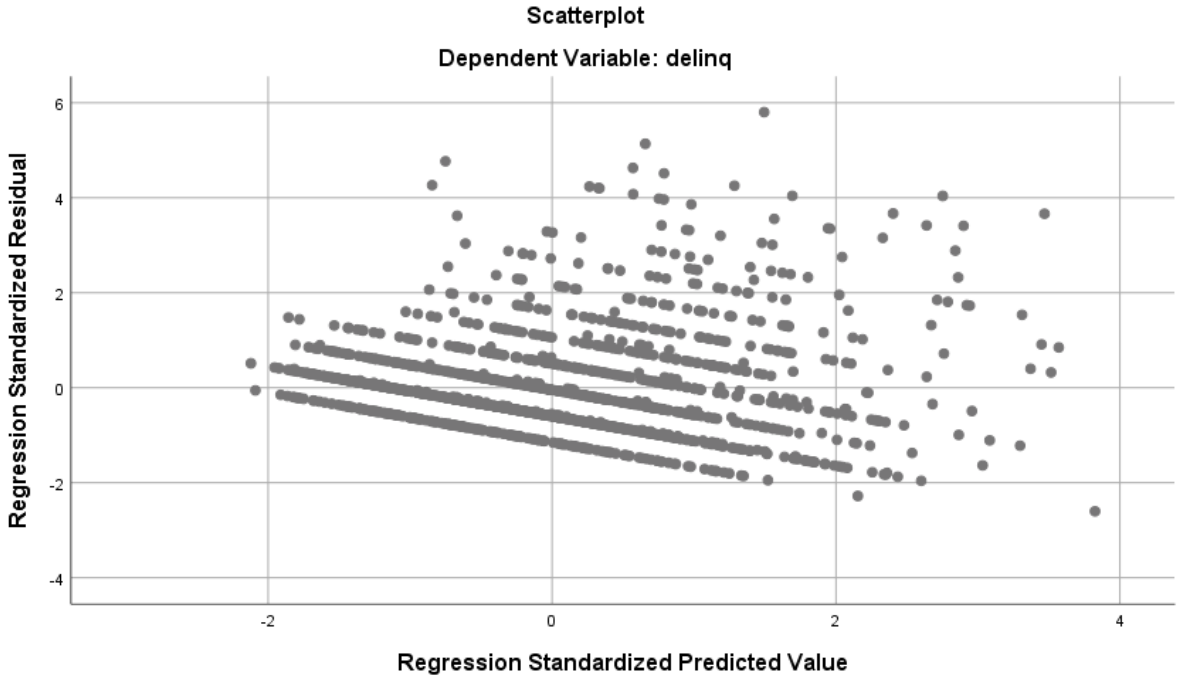
Figure 6