The Change in Loneliness in Adolescents and Emerging Adults over the Last Decades: A Meta-Analysis

Judith de Haas, 4100509

Dr. Marlies Maes

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Abstract

In the last couple of years, the general view is that people are becoming lonelier. The media even speaks of a loneliness epidemic. But is that really the case? This study will focus on the change in loneliness in adolescents and emerging adults over the last decades. In addition, we will look whether there is a different trend in adolescents compared to emerging adults. A meta-analysis has been conducted by using data from the MASLO-database. The meta-analysis was based on 630 effect sizes, published between 1979 and 2016, covering 319,770 participants. The results showed stability in loneliness in adolescents and emerging adults (p = .263). However, if we look at the age groups separately, we found that adolescents had become slightly less lonely (B = -0.189) and emerging adults had become slightly lonelier (B = 0.230). This result showed that it is important to look at the two groups separately because it allows us to have a better understanding of the change in loneliness within these groups. In future research, we could look more closely at the reasons for the change in loneliness.

Keywords: Loneliness, Adolescents, Emerging Adults, Change, Meta-analysis

De afgelopen jaren zijn er geluiden in de media die zeggen dat mensen eenzamer zijn geworden. Journalisten spraken zelfs van een eenzaamheid epidemie. Maar is dat eigenlijk wel zo? Deze studie focust zich op de verandering van eenzaamheid bij jongeren en jongvolwassenen in de laatste decennia. Daarnaast zal er ook gekeken worden naar het verschil in de verandering van eenzaamheid tussen jongeren en jongvolwassenen. Hiervoor was een meta-analyse uitgevoerd door gebruik te maken van data van het MASLO-database. De meta-analyse bestond uit 630 studies, die gepubliceerd waren tussen 1979 tot en met 2016, met in totaal 319,770 deelnemers. De resultaten lieten stabiliteit zien in de eenzaamheid bij jongeren en jongvolwassenen in de laatste decennia (p = .263). Maar als we kijken naar de leeftijdsgroepen apart, dan zagen we dat jongeren een beetje minder eenzaam waren geworden (B = -0.189) en jongvolwassenen een beetje eenzamer (B = 0.230). De resultaten lieten zien dat het belangrijk is om naar de leeftijdsgroepen apart te kijken. Het helpt ons de verandering in de eenzaamheid beter begrijpen. In toekomstig onderzoek zouden we meer kunnen kijken naar de redenen voor de verandering in eenzaamheid.

Kernwoorden: Eenzaamheid, Jongeren, Jongvolwassenen, Verandering, Meta-analyse

The Change in Loneliness in Adolescents and Emerging Adults over the Last Decades: A Meta-Analysis

In the last couple of years, the shared view has been that there is an increase in loneliness among individuals over the world. In the media, journalists even speak of a loneliness epidemic (Alberti, 2018; Clark et al., 2015). Loneliness can be defined as a discrepancy between someone's preferred and realized social relationships (Clark et al., 2015; Twenge et al., 2019). When people are not satisfied with their social relationships, this can lead to feelings of loneliness. Loneliness can cause different health problems, including poor cardiovascular health, sleep problems, and a decreased immune function (Drake et al., 2016). The feeling of loneliness has been observed in humans for a long time. Loneliness emerged in its modern sense as a term and recognizable experience since the beginning of the 19th century (Alberti, 2018).

Over the last decades research on loneliness has increased exponentially (Cacioppo & Cacioppo, 2018). Even though most research has focused on loneliness in elderly, it is important to mention that loneliness is detected over the whole lifespan (Vasileiou et al., 2019). Also, in adolescence and emerging adulthood loneliness is observed. During this critical time in life development, loneliness may have a big impact (Vasileiou et al., 2019). In adolescence, high levels of loneliness can cause depression and suicidal thoughts (Cavanaugh & Buehler, 2016). Given that loneliness can have an impact on adolescents and emerging adults, and given the discussion about a loneliness epidemic (Alberti, 2018; Clark et al., 2015), researchers are interested in the change in loneliness in adolescents and emerging adults. Examination of the potential changes in loneliness over the decades can provide new insights into loneliness in the two age groups. These new insights can add to the discussion on the change in loneliness. Previous research has been inconclusive about the change in loneliness. It is unclear whether there has been an increase or a decrease in loneliness in adolescents and emerging adults over the last decades.

Increase of Loneliness

Over the last decades, it could be argued that loneliness has increased. There are different reasons that could explain the increase in loneliness in adolescents and emerging adults. Firstly, there was a decrease in in-person social interaction over the last decades (Twenge et al., 2019). For example, adolescents socialize less in-person with their friends, they see their friends less in real life and go to fewer parties. In-person social interaction is a protective factor against loneliness (Twenge et al. 2019). Secondly, digital media use has increased in modern time (Twenge et al., 2019). Some studies support the idea that digital

media use leads to more loneliness (Primack et al., 2017), however other studies do not find an association (Nowland et al., 2017). In the research of Nowland et al. (2017), they found that it mostly depends on how the digital media is used: is digital media used to enhance social relationships, or is it used as a way to withdraw from the social world? Withdrawing from the social world could lead to more loneliness (Nowland et al., 2017). Thirdly, empathetic tendency negatively predicts loneliness in emerging adults (Pamukçu & Meydan, 2010). Over the last decades, there was a decline in empathy in American college students (Konrath et al., 2011). During this time, narcissism, which correlates negatively with empathy, has risen in college students (Konrath et al., 2011). Young adults have become more self-centered in recent years and this generation of young adults are now also referred to as "Generation Me". Fourthly, in the period between 1988 and 2011 the secure attachment in college students in the USA has decreased while the insecure attachment has increased (Konrath et al., 2014). This is mostly due to an increased negative view of other people. An insecure attachment could lead to loneliness because people with an insecure attachment have more difficulties with relationships (Akdogan, 2017; DiTommaso et al., 2003).

In line with the possible hypothesis that there is an increase in loneliness in adolescents and emerging adults over the last decades, Twenge et al. (2019) indeed found an increased loneliness in American adolescents and entering college students between the 1980s and 2010s. Moreover, Madsen et al. (2015) found that loneliness was increased in adolescents in Denmark between 1991 and 2014. The loneliness especially increased in adolescents with high and middle parental occupational social class.

Decrease of Loneliness

On the other hand, there are also reasonable arguments that can be given to support the idea of a decrease in loneliness in adolescents and emerging adults over the last decades. The first reason for a decrease could be that the desire to be with other people has changed. Adolescents and college students in the USA have fewer friends and in addition have less desire for more friendships (Clark et al., 2015). They have become more individualistic and independent. The need to be surrounded by other people has decreased (Clark et al., 2015), which could mean that loneliness has decreased. A second reason for a decrease could be that between 1988 and 2008 the self-esteem of middle and high school students, and college students in the USA has increased (Gentiles et al., 2010). This increase in self-esteem could have led to a decrease in loneliness in the students during this time. Adolescents with low self-esteem tend to feel less accepted by their peers, which is a risk factor for feelings of loneliness (Vanhalst et al., 2013). Self-esteem positively contributes to feeling competent and

having a positive self-image (Gentiles et al., 2010). People who have high self-esteem are generally happier, have a higher life satisfaction, and are less lonely, compared to people with low self-esteem (Vanhalst et al., 2013). Concluding, a decreased desire for friendships and an increased self-esteem indicate a declining trend of loneliness over time for adolescents and emerging adults.

In line with the possible hypothesis that loneliness has decreased in adolescents and emerging adults over the last decades, Clark et al. (2015) reported a decrease in loneliness in American college students between 1978 and 2009, and in high school students between 1991 and 2012 (Clark et al., 2015).

In conclusion, there are studies that show an increase in loneliness in adolescents and emerging adults over the decades, as well as studies that show a decrease. None of these studies support a stability in loneliness in the two age groups. However, when we look at other age groups, some studies do show a stability in loneliness over the decades. There are studies focused on older adults (70+ years old) who have found no increase or decrease in loneliness (Dahlberg et al., 2018; Eloranta et al., 2015). It can be hypothesized that the stability in loneliness could be the same for adolescents and emerging adults since there is evidence for both an increase and a decrease. Moreover, it is possible that the stability varies between groups. There could be moderation effects at play that explain the change or no change in loneliness.

Moderation Effect of Gender and Age Group

The change in loneliness can be attributed to different factors. Literature suggests that gender could be a moderation factor (Maes et al., 2019). However, the results are inconclusive, some studies show that males have become lonelier over the last decades compared to females, in contrast other studies show the opposite. In addition, there are studies that do not show a difference (Maes et al., 2019). Therefore, no conclusion can be drawn regarding the difference in the change of loneliness between males and females.

Next to gender, another factor should be considered is that the change in loneliness could also be different between adolescents and emerging adults over the last decades. In both adolescence and emerging adulthood loneliness can be a part of life. During the mid- and late adolescence, around 18% of the subjects show an increase in loneliness (Vanhalst et al., 2013). In the transition to college, approximately 57% of the emerging adults feel lonelier, while 37% feel less lonely (Drake et al., 2016). Unfortunately, these numbers do not show the difference in time over the last decades. In addition, we are not sure whether there is a difference in the change of loneliness between the two age groups over the last decades. In the

current study, we are interested if there is a difference in the change of loneliness in gender or age group. Looking at the factors gender and age group can give us more insight into the change in loneliness over the decades. The new insights can contribute to the loneliness discussion and can be useful for future research.

Current Study

The findings of the change in loneliness in adolescents and emerging adults are very inconsistent in the literature. Therefore, the current study will focus on the change of loneliness in the two age groups over the last decades. Because previous studies have shown conflicting results, the hypothesis is that loneliness has not changed in adolescents and emerging adults over the last decades. Next to this, we will also focus on the moderation effect of gender and age group in the change in loneliness over the decades. It is difficult to predict whether there is a difference and how these factors will affect the change in loneliness.

The research question will be answered with a meta-analysis. To find a trend over the years, a cross-temporal meta-analysis is conducted. In a cross-temporal meta-analysis averages of loneliness in different years will be compared with each other (Gentile et al., 2010). Adolescents and emerging adults in one time point will be compared with adolescents and emerging adults in another time point to see if there is a change in loneliness. With the results, a trend in the change in loneliness in the two age groups over the last decades will be seen.

Method

Literature Search

For the present study, the MASLO (the Meta Analytic Study of Loneliness) database was used, which is a big database that aims to include all studies that used one of the main standardized loneliness questionnaires (Maes et al., 2019). The literature search was conducted by using the databases PsycINFO, ERIC, PubMed, and Web of Science, using key terms of standardized loneliness questionnaires. More information about the literature search can be found in Maes et al. (2019). After completing the literature search the project included 2,317 studies from over 60 countries.

Selection of Studies

The first step was to select the studies with the relevant age groups adolescents (12-17.9 years) and emerging adults (18-24.9 years). All the other age groups were excluded from the dataset. After this screening, 1170 studies remained.

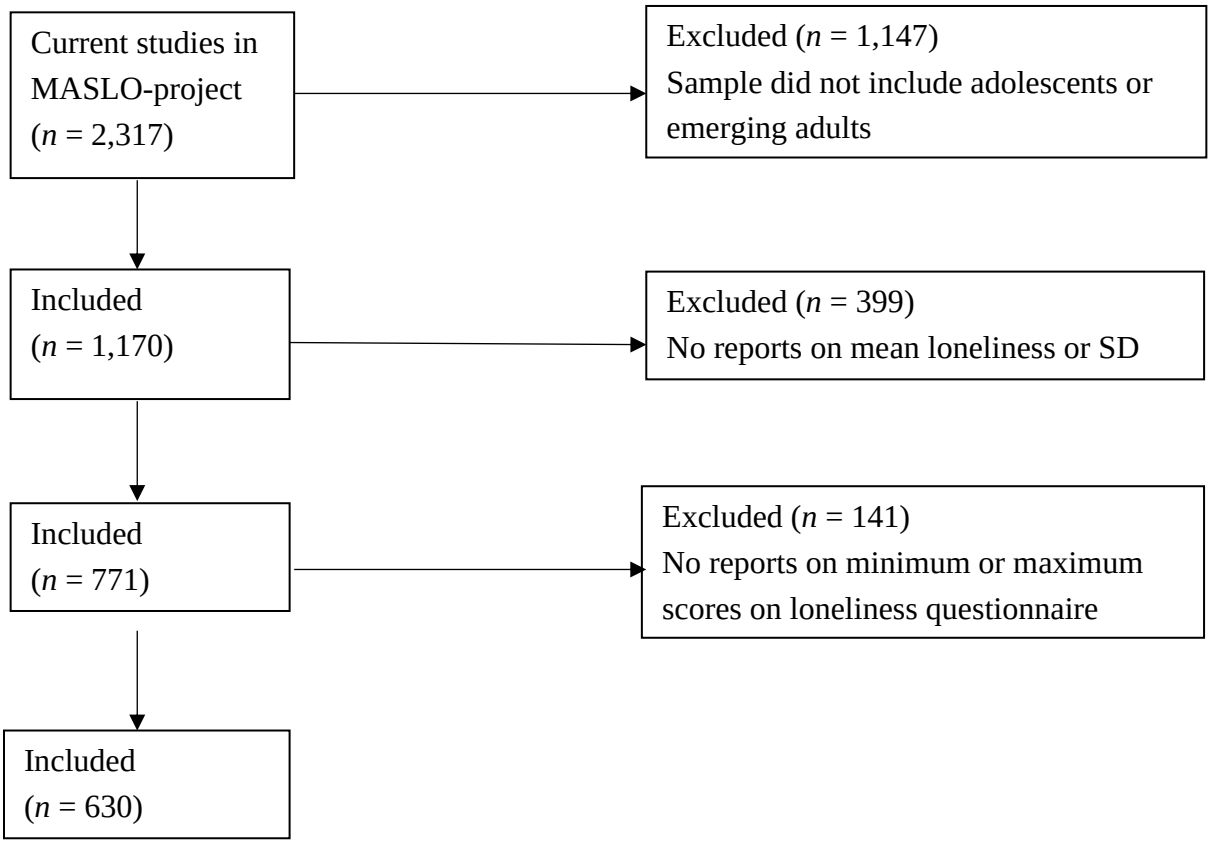
The second step was to select the studies that reported data on mean loneliness and the standard deviation of the mean loneliness. These variables are needed to make a comparison

between the year of publication of the study and the mean loneliness of the study. All studies with missing data on one or both variables and studies with mistakes in one of the variables were excluded. After this exclusion, 771 studies remained.

The third step was to select only the studies with data on minimum and maximum scores on loneliness included in the questionnaires. These were necessary for calculating the effect sizes. The final database consisted of 630 studies. For an overview of the included and excluded studies, see the flow diagram in Figure 1.

Figure 1

Flow Diagram Selection of Studies



In some studies, there was a mean loneliness score for every subscale of the questionnaire. We have decided to only include one mean loneliness score for each study. One loneliness score per study could state enough about the change in loneliness in adolescents and emerging adults. When there was more than one subscale, we decided to keep the total loneliness score. If there was not a total score available, we kept the peer-related, social, or the subscale with the most items. These subscales were chosen because we were most interested in the social aspects of loneliness and the relationship between peers. If there were multiple questionnaires used in a study, the data of the UCLA loneliness scale was kept. The UCLA questionnaire was, because it is a broad questionnaire, that contains diverse items,

has a good internal reliability, and focuses on participants' evaluations of different qualitative features of their social networks (Weeks & Asher, 2012). In all studies with multiple questionnaires, the UCLA questionnaire was always one of them. After this selection, for most studies, one mean loneliness remained. If there were still multiple mean loneliness scores for a study, the mean score of the subscales was computed.

The studies selected were published between 1979 and 2016. In total, 47 countries were included, most studies were from the United States (*k* = 289). In the studies the sample sizes varied between 5 and 11,440, with a total of 319,770 participants (*M* = 507.57, *SD* = 1043.75). The mean age of the participants in the studies varied between 11.45 and 29.42 (*M* = 18.035, *SD* = 3.50). The mean percentage of males in the studies was 42.6% (*SD* = 0.18).

Study Coding

A manual was developed for the coding of the studies. The coding included sample size, number of males and females, year of publication, the country in which the study was conducted, and data on the loneliness scale and the mean score of loneliness. The studies were coded by a team of graduate and undergraduate social sciences students. An experienced researcher on the MASLO-project checked the reports coded by the student to verify if the rules provided by the manual were followed.

The year of publication was used to give an indication in the change in loneliness in adolescents and emerging adults. Before the analysis, the year of publication was recoded. The oldest study in 1979 was coded as 0, and the newest studies in 2016 were coded as 37. The two age groups were also recoded. The age group 'adolescents' was coded as 2, and the age group 'emerging adults' was coded as 3.

Effect Size Calculations

In the MASLO-database some mean loneliness scores were given as a mean score and others as a sum score. To make it possible to compare the mean loneliness scores, the scores were recoded into POMP (percentage of maximum possible) scores (Cohen et al., 1999). The POMP score is a number between 0 to 100, 0 reflects low levels of loneliness and 100 reflects high levels of loneliness. If the mean loneliness scores were reversed, a low mean loneliness score reflected high loneliness, the scores were first calculated into POMP scores and thereafter reversed. A POMP score of the mean loneliness was calculated by using the following formula: $POMP\_mean = \frac{Mean\ scores\ of\ loneliness}{maximum\ score - minimum\ score} \times 100$. Also, the standard deviation was recoded into POMP scores using the formula:

$POMP\_SD = \frac{SD\ score}{maximum\ score - minimun\ score} \times 100$. The POMP_SD scores were recoded into POMP standard error, the standard error was needed as weighting factor for the analyses. Studies with a big sample size would get a more weight, than studies with a small sample size. The following formula was used to make the POMP_SE: $POMP\_SE = \frac{POMP\_SD}{\sqrt{N}}$. The mean POMP scores varied between 0.44 and 88.82 (*M* = 30.70, *SD* = 11.41). In the current study, the mean loneliness and the POMP_mean were used for the effect size.

Statistical Analysis

To answer the research questions a cross-temporal meta-analysis was conducted. Moreover, we used an analysis to test for moderation and lastly a publication bias analysis. The analyses were conducted by using the statistic program JASP (JASP Team, 2020). The first analysis was a basic meta-analysis. The random effect analysis was used to study the change in loneliness in adolescents and emerging adults. A random effect analysis is used when there is the assumption that the effect sizes of the studies are not the same (Borenstein et al., 2009). The standard default Restricted Maximal Likelihood was used in JASP.

The next analysis was a moderator variable analysis, this analysis is used to test which factors can explain the variability in effect sizes (Field & Gillet, 2010). Two moderators were considered, the first was gender and the second was age group (adolescents and emerging adults). They were added in the meta-analysis separately. If the moderation was significant, we looked more closely at the direction of the analysis.

At last, a publication bias analysis was conducted. It is important to assess if the studies that are used are a biased selection, because of possible unpublished studies. Sometimes not all studies are published. Studies with non-significant, unexpected results, a small sample size, or a small effect are not always published. This analysis was done by constructing a Funnel Plot and the Egger's linear regression method.

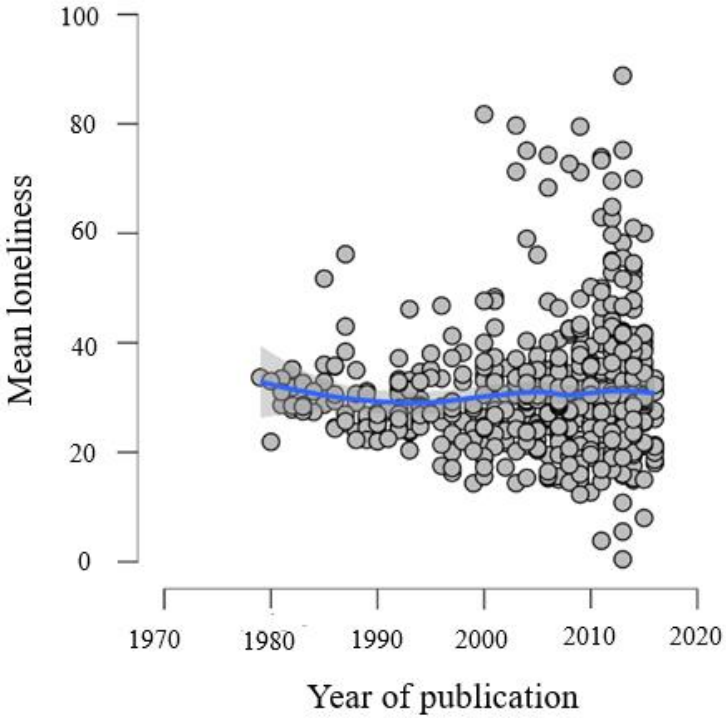
Results

Change in Loneliness in Adolescents and Emerging Adults

In the first analysis we assessed if there was a change in loneliness in adolescents and emerging adults over the last decades. The change in loneliness in the two age groups was not significant, $p = .263$, $B = 0.059$ ($SE_B = 0.052$, 95% CI [-0.044 , 0.162]). The 630 observed effect sizes are presented in Figure 2, with the year of study publication on the x-axis, and the mean loneliness on the y-axis. As can be seen in Figure 2, the mean loneliness remained stable over the decades, which supports the hypothesis.

Figure 2

Descriptive of Mean Loneliness and Year of Publication



Note: For the mean loneliness scores the POMP_mean was used.

There was heterogeneity among the effect sizes (Q = 733258.035, p <.001). Therefore, moderators could be at play that explain the variability in effect sizes. This was also supported by the variance (I^2 = 99.98%).

Moderation of Change in Loneliness

For this study, two moderators were considered that could explain the non-existent change in loneliness in adolescents and emerging adults. The first moderator that was considered is gender. No significant interaction between gender and year of publication could be found (Q = 3.354, p = .340), indicating that gender did not moderate the change in the mean loneliness over the last decades (B = 0.166, SE_B = 0.316, 95% CI [-0.453 , 0.786]).

The second moderator that was considered was the effect of the age group on the change in loneliness over the decades. A significant interaction between age group and year of publication could be found (Q = 46.657, p < .001), indicating that age group did moderate the change in the mean loneliness over the last decades in adolescents and emerging adults. Because of the significant interaction, we looked more closely at the direction of the interaction. For both adolescents and emerging adults, we conducted separate meta-analysis by including first only adolescents and thereafter only emerging adults in the analysis. The analysis with only the adolescents was significant (Q = 4.918, p = .027, B = -0.189, SE_B =

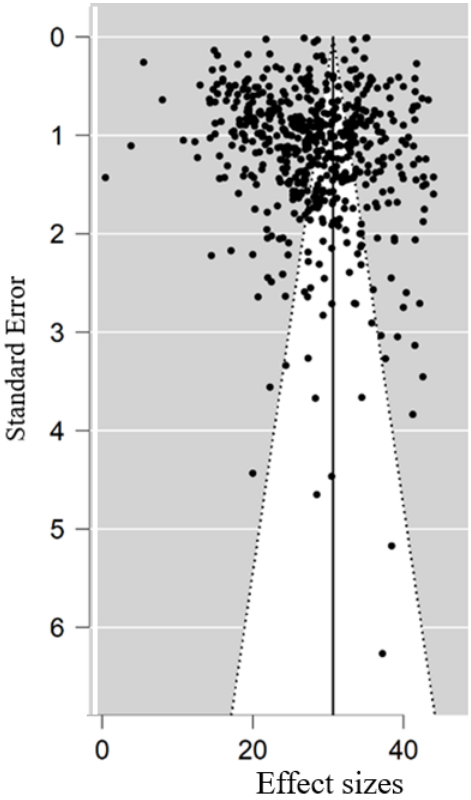
0,085, 95% CI [-0.357 , -0.022]) and the analysis with only emerging adults was also significant (Q = 13.104, p < .001, B = 0.230, SE_B = 0.064, 95% CI [0.106 , 0.355]). The effect sizes of both adolescents and emerging adults were small. The effect size of mean loneliness in adolescents was negative, which means that adolescents have become slightly less lonely. However, the effect size on mean loneliness in emerging adults was positive, which means that emerging adults have become slightly lonelier.

Publication Bias

The presence of publication bias on the results of the study was examined by using two techniques. First, to get an indication, a funnel plot was created. The expectation was that there would be a symmetrically shaped figure, which indicates that there is no publication bias. As shown in Figure 3, the funnel plot could indicate there is a symmetrically shaped figure, which could indicate there was not a publication bias. Second, to confirm the finding of no publication bias, an Egger's regression analysis was conducted. This analysis was significant (z = 3.381, p <.001). On basis of the Egger's regression analysis, there might be a publication bias. Based on both the funnel plot and Egger's regression analysis, there may be a publication bias, but because of the discrepancy in the findings, it remains unclear. It should be noted however that a publication bias is less relevant for the current study because we focused on mean loneliness. The mean loneliness is usually a factor in publication of the results of a study. Most often, studies are not published when there is a combination of results that are not in line with the hypothesis, non-significant results, small effect size, and small sample size. These factors were irrelevant for the current study and thus the publication bias will affect our results less.

Figure 3

Funnel Plot of Effect Sizes



Discussion

The aim of this meta-analysis was to examine the change in loneliness in adolescents and emerging adults over the last decades. Overall, we found no significant change in loneliness in the two age groups together. However, when we separate the two age groups, we found that in the adolescents there was a small significant decrease in loneliness, and for emerging adults there was a small significant increase in loneliness.

Change in Loneliness Overall

Over the last decades, we found no change in loneliness in adolescents and emerging adults. This was in line with the stated hypothesis. Previous literature research was inconclusive about trends in loneliness in adolescents and emerging adults, some studies found an increase (Madsen et al., 2015; Twenge et al., 2019) and others a decrease (Clark et al., 2015) in loneliness. The effect sizes in the studies that observed an increase or decrease in loneliness were all small, which could explain the stability we found in the current study.

Also, cultural trends could help in explaining the stability in loneliness. Over the last decades, empathy (Konrath et al., 2011) and insecure attachment (Konrath et al., 2014) decreased, which is associated with an increase in loneliness (Akdogan, 2017; DiTomasso et al., 2003; Pamukçu & Meydan, 2010). However, over the last decades, self-esteem increased

(Gentiles et al., 2010), which is associated with a decrease in loneliness (Vanhalst et al., 2013). Taken those three together, we could explain that there was a stability in loneliness in adolescents and emerging adults over the decades.

In the current study, we studied the moderation effect of gender on the change in loneliness in adolescents and emerging adults. The results showed no moderating effect on gender, implying that gender differences did not influence the stability in loneliness in these two age groups.

Comparing Adolescents and Emerging Adults

Besides a moderation effect of gender, we also examined the moderation effect of age group on the change in loneliness. The results showed a moderation effect in the change in loneliness between adolescents (12-17.9 years) and emerging adults (18-24.9 years). The analyses showed that adolescents became slightly less lonely over the decades, and emerging adults became slightly lonelier. The decrease in loneliness in adolescents and increase in loneliness in emerging adults over the decades could explain the stability in the first analysis. The two age groups are in balance in loneliness over the decades. This finding highlights the importance of studying the different age groups separately. The difference that was found between the age groups adds information about the change in loneliness.

There could be a few explanations for the results that we obtained. The reason for the small decrease in loneliness in adolescents could be that, between 2002 and 2010 adolescents found it easier to communicate with their parents (Brooks et al., 2015). Most adolescents in European and North American countries have a better connection with their parents. Parental support helps in feeling less lonely (Cavanaugh & Buehler, 2016). This means that the loneliness in adolescents could have decreased because it had become easier for them to talk with their parents. During emerging adulthood, the relationship between parents and children changes (Aquilino, 1997). Parents have less influence on their emerging adults, while during adolescence parents still have much influence on them (Aquilino, 1997). This could be the reason for the decrease in loneliness in adolescents, but not in emerging adults.

Another reason that could explain the difference in the change in loneliness in emerging adults in comparison to adolescents is that emerging adults are les often married and have less sex than a few decades ago (Twenge et al., 2017). Getting married at a later age could have led to fewer emerging adults living with a partner and more living on their own. The living arrangements of emerging adults and reduced intimate contact lead to more loneliness in emerging adults (Hysing et al., 2020; Twenge et al., 2017). This is different for adolescents, since most adolescents still live with their parents.

Strengths and Limitations

The current study has a couple of strengths. For example, the study was conducted by running a meta-analysis. A meta-analysis makes it possible to be all-encompassing and follow trends over a longer period of time (Crocetti, 2016). An advantage of this is that it gives more insight into the topic compared to studies that only include one or a few time points, it makes possible to be put in a historical context, which can be important for research. Another strength is that our data included a diverse group of countries and therefore represents a lot of adolescents and emerging adults all over the world. However, it should be noted that most countries included which were in the study are western countries. Lastly, we examined the age groups adolescents and emerging adults separately. This gave us more insight into the change in loneliness and can contribute to future research.

Besides the strengths, there were also some limitations. Firstly, we were unable to include many studies from the 1980s. This means that the conclusion on the mean loneliness in the 1980s is based on only a few studies. When there are fewer studies included, the weight of each study is higher than when there are a lot of studies included. Secondly, the age groups we defined are based on the mean age of the study samples. However, not all study samples were homogeneous in age. Some studies contained participants that were over 25 years and should not be in the age group emerging adults. The older age could have affected the mean loneliness of the study. Thirdly, for this study we decided to include the social or peer-related subscale or UCLA loneliness questionnaire if multiple mean loneliness scores for a study were given. The choice for these subscales and this questionnaire were made because they were most relevant for the current study, since peers are very important for adolescents and emerging adults and the UCLA is a broad and much used questionnaire. However, by choosing only these subscales and this questionnaire we did not consider all the data during the analysis.

Implications and Future Research

The results of the current study have some implications. They give us more insight into the change in loneliness in adolescents and emerging adults. It will help in putting the results in a historical context and spreading the knowledge of the change in loneliness in the two age groups and the difference between the groups. Moreover, the results contribute to the discussion about the change in loneliness. Journalists talk about a loneliness epidemic, however looking at the results, there is not a large increase in loneliness in adolescents and emerging adults. Future research should still look for ways to decrease loneliness in the two age groups, but it is not as bad as mind be thought.

Based on the results of this study there are some new questions that emerge which would be interesting to answer in future studies. The outcome of the study gives the implication that we should not assume that adolescents and emerging adults have become lonelier overall through the decades. Only when we analyze the data from the two different age groups separately, we can conclude that they have become a bit lonelier. In the current study, we did not examine the reason for the difference in the change of loneliness. What is the reason that adolescents became less lonely, and what changed over the last decades to make emerging adults lonelier? Did the internet, social media, or other changes in the world influence loneliness? Because we found that emerging adults became a bit lonelier, it is important that future research looks more closely at the reason for this change. A lot of research in loneliness focuses on older adults, but young people should also be considered.

Conclusion

To conclude, this study included 630 studies, published between 1979 and 2016, and showed that loneliness remained stable when both adolescents and emerging adults are included. We found that there are no gender differences in the change in loneliness. But when we asses both age groups separately, we find that adolescents became a little bit less lonely and emerging adults became a bit lonelier. Even though some journalists speak of a loneliness epidemic, our results imply that is not the case. However, we should look further into the reasons for the change in loneliness in adolescents and emerging adults in time.

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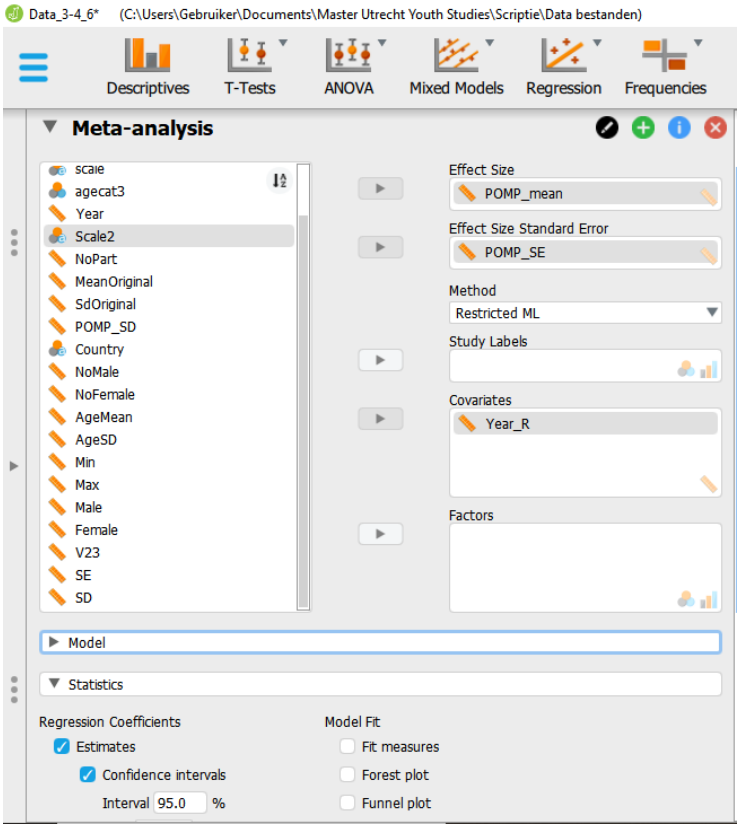
Appendix A

JASP-Syntax

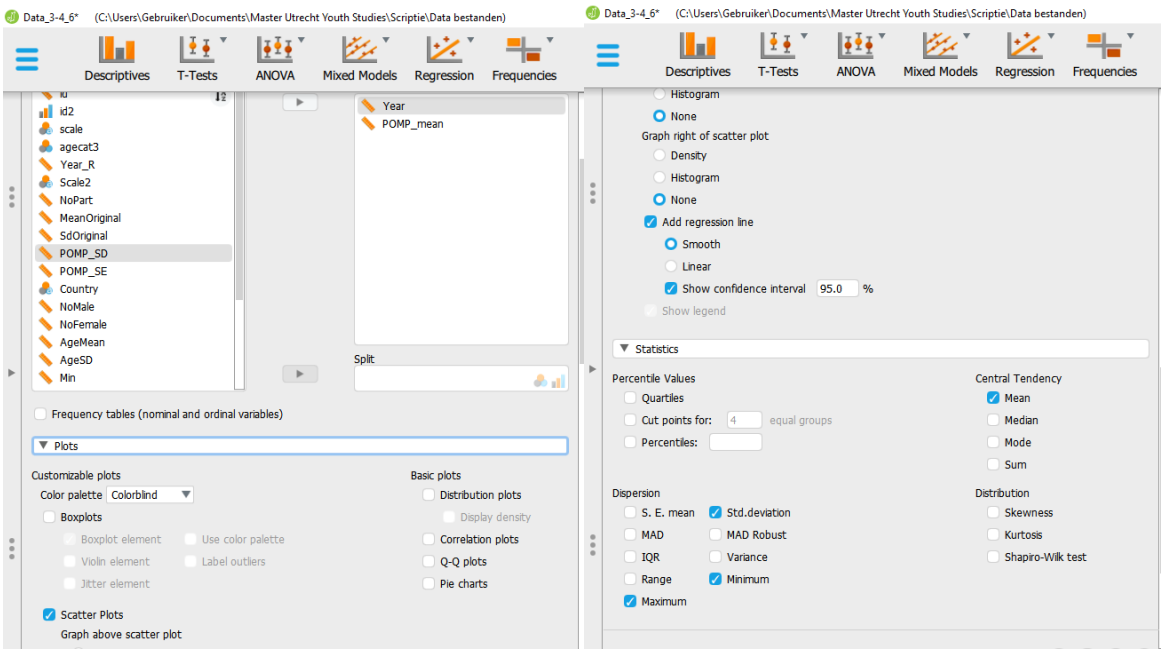
Syntax 1

Meta-Analyses Change Loneliness Adolescents and Emerging Adults



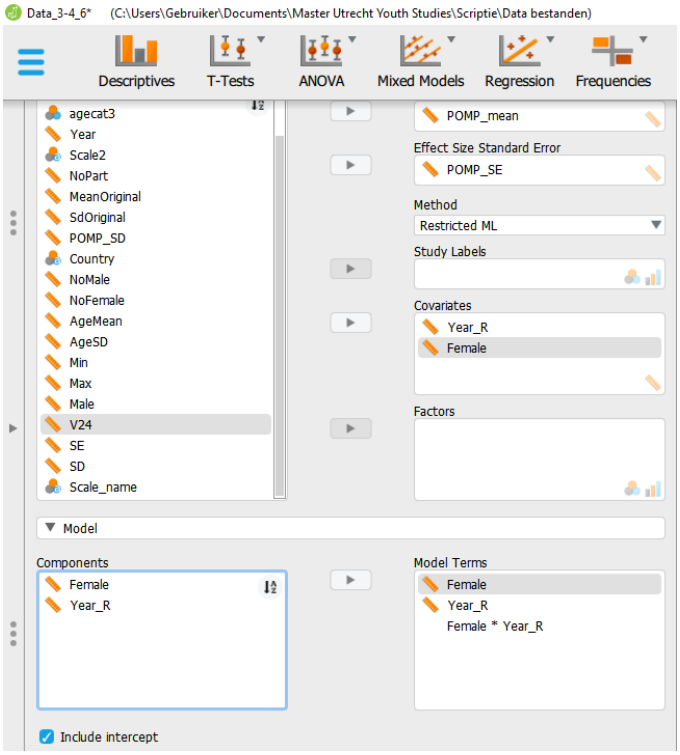
Syntax 2

Plot Year and POMP_Mean



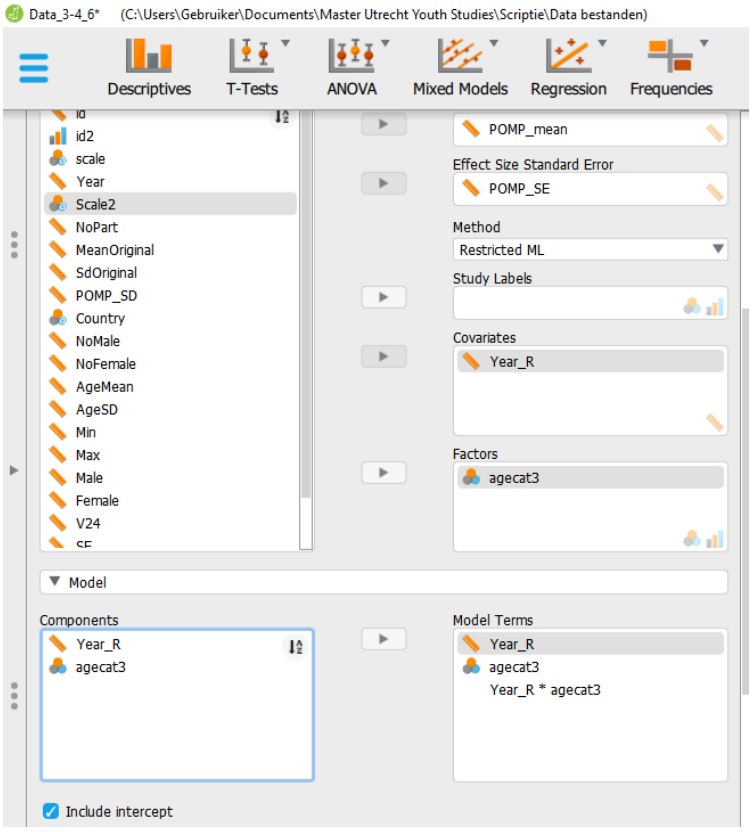
Syntax 3

Moderation Gender



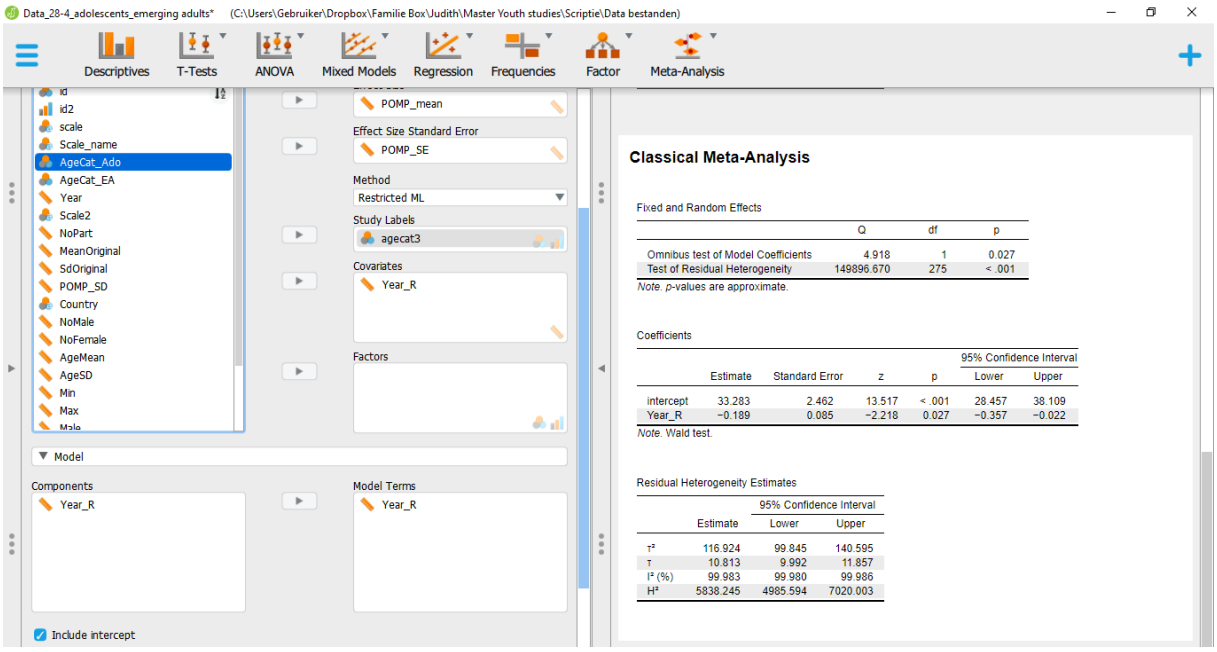
Syntax 4

Moderation Age Group



Syntax 5

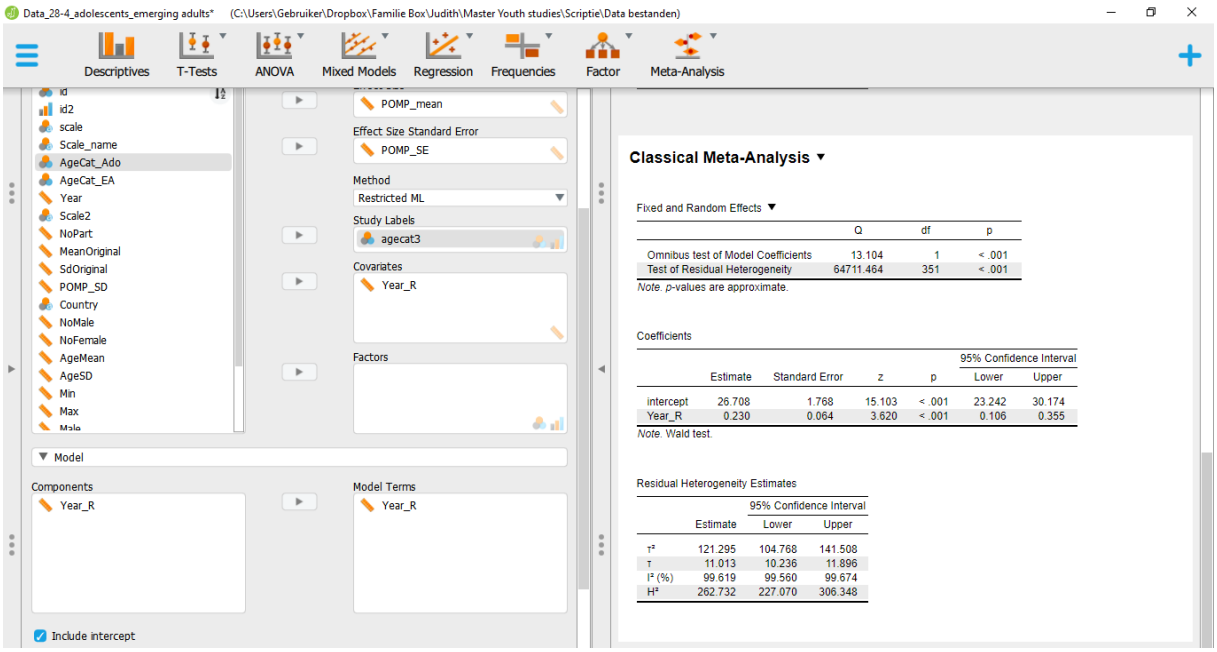
Moderation Adolescents



Note: Filter applied AgeCat3 = 2

Syntax 6

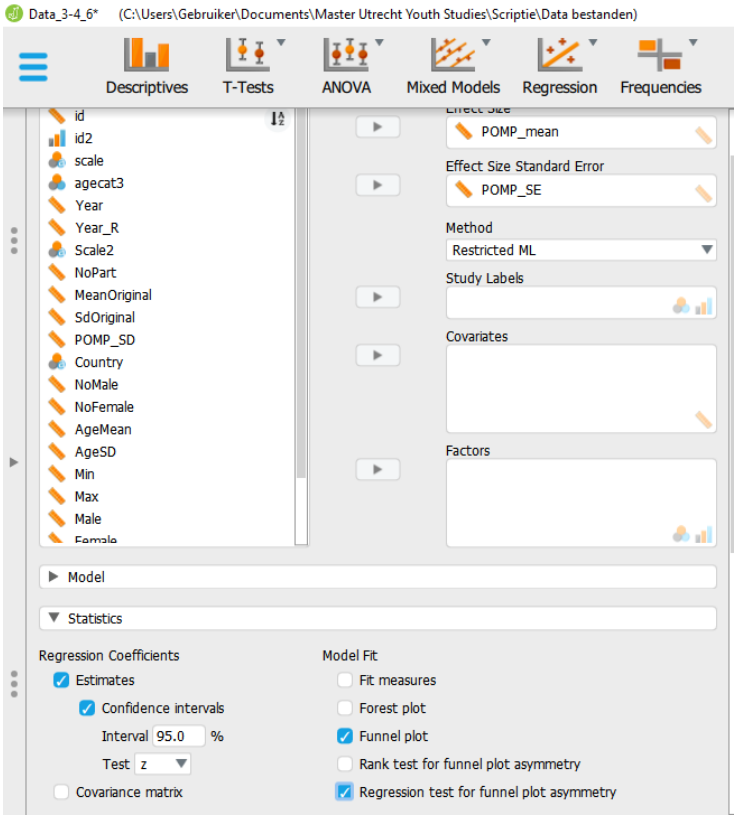
Moderation Emerging Adults



Note: Filter applied AgeCat3 = 3

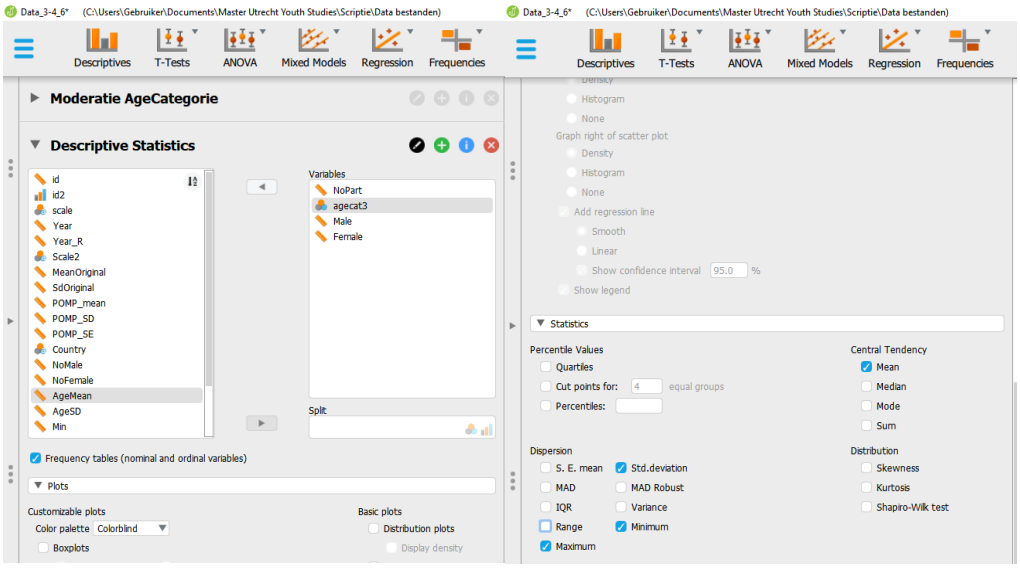
Syntax 7

Publication Bias Funnel Plot and Egger's Regression Test



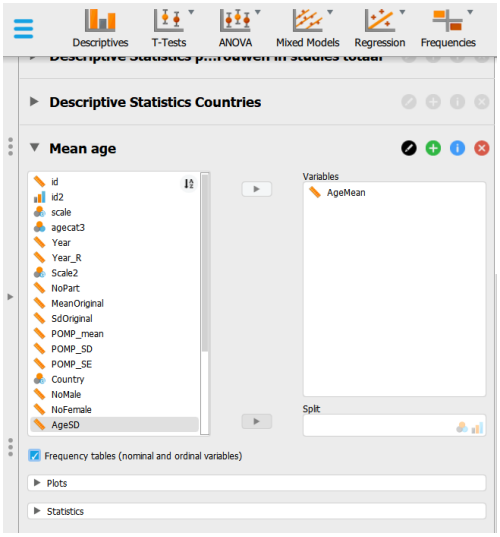
Syntax 8

Descriptives Number of Partcipants, Gender and AgeCat3



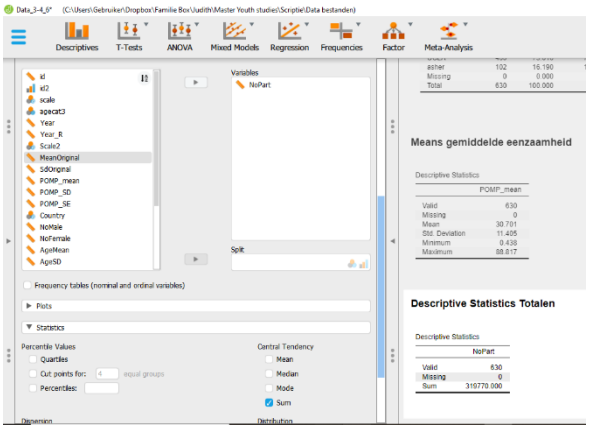
Syntax 9

Descriptives Mean Age



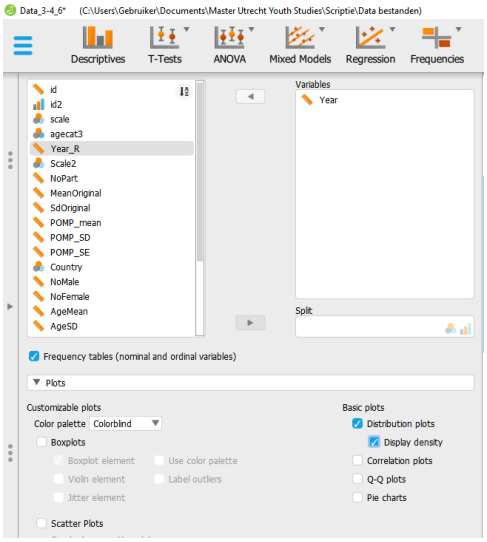
Syntax 10

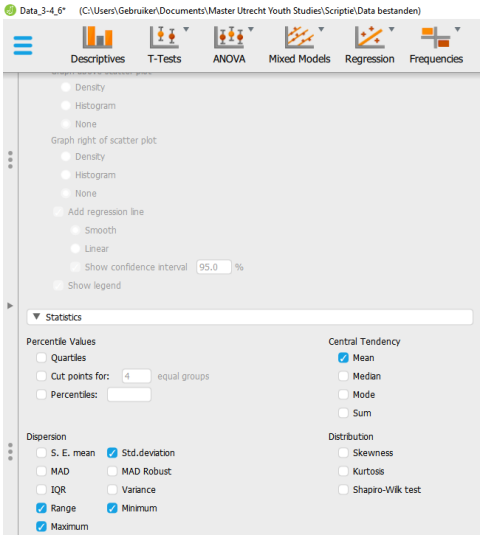
Descriptives Total number of participants



Syntax 11

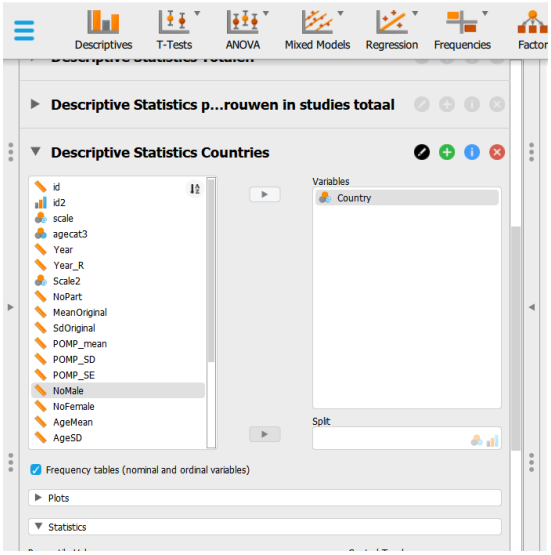
Descriptives Year of Publication





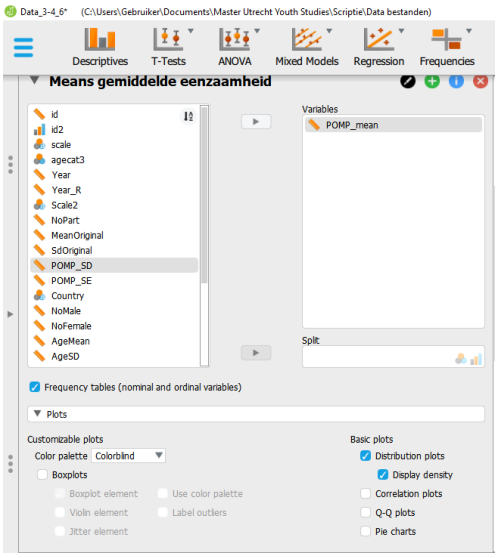
Syntax 12

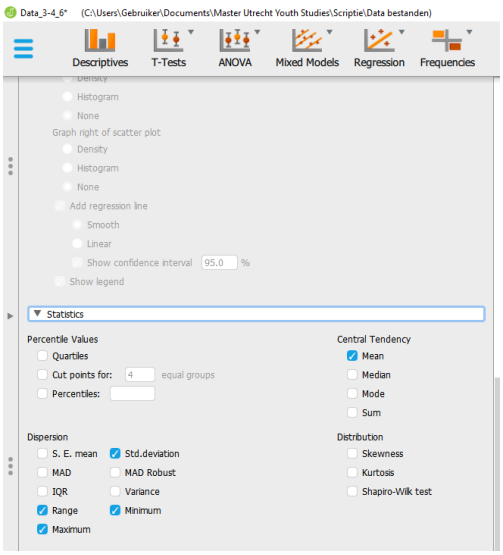
Descriptives Number of Countries



Syntax 13

Descriptives POMP_mean





Appendix B

Igitur-Form

Information about your thesis

Please save this form, modify it and e-mail it to your supervisor together with the digital final version of your thesis. For further questions see: http://studion.fss.uu.nl/helpdesk/student/scrol

Student nummer:	4100509
Initials & prefixes:	J.M. de
Family name:	Haas
Master:	Youth Studies

Begeleider

Name supervisor/assesor: *	Marlies Maes
Name 2th assesor:	Luzia Heu

Scriptie

Title thesis: *	The Change in Loneliness in Adolescents and Emerging Adults over the Last Decades: A Meta-Analysis
Language thesis: *	English
Abstract:	In the last couple of years, the general view is that people are becoming lonelier. The media even speaks of a loneliness epidemic. But is that really the case? This study will focus on the change in loneliness in adolescents and emerging adults over the last decades. In addition, we will look whether there is a different trend in adolescents compared to emerging adults. A meta-analysis has been conducted by using data from the MASLO-database. The meta-analysis was based on 630 effect sizes, published between 1979 and 2016, covering 319,770 participants. The results showed stability in loneliness in adolescents and emerging adults (p = .263). However, if we look at the age groups separately, we found that adolescents had become slightly less lonely (B = -0.189) and emerging adults had become slightly lonelier (B = 0.230). This result showed that it is important to look at the two groups separately because it allows us to have a better understanding of the change in loneliness within these groups. In future research, we could look more closely at the reasons for the change in loneliness.

Key words: (seperated by ;)	Loneliness; Adolescents; Emerging Adults; Change; Meta-analysis
Make public: *	Yes/ ~~No~~
Make public after date:	

Ingevuld op: * 17-6-2021

Door: * J.M. (Judith) de Haas

* = Obliged to fill in

Appendix C

Registration Form Research Activities

Judith de Haas
4100509

Research Activities	**Total number of Hours**	**Signature YS staff**
MASLO training Total	10 hours	
Giving MASLO Training	4 hours	
Coding February	5 hours	
Coding March	6 hours	
Coding April	5 hours	
Coding May	9 hours	
Coding June		

Total		