Mask Off: Influence of Personality and Trust in Government on Young Adults' Adherence to COVID-19 Restrictions

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Abstract

For citizens' safety, governments all over the world enacted regulations to restrict the spread of COVID-19 in 2020. Especially in the Netherlands, these regulations encountered disapproval, protests, and riots, causing many young males getting arrested. As the measures are part of a collective effort, it is necessary to investigate, why some people adhere to the restrictions, and others disregard them.

Recent research dealt with that question and found trust being related to compliance with COVID-19 measures. The present study examined how trust in government and the personality traits conscientiousness and neuroticism influence the tendency to adhere to COVID-19 restrictions imposed by the Dutch government. To investigate how attitude, trust and intention interact, as well as the role of personality, an online questionnaire survey design was employed. Via social media, a convenience sample of young adults in the age of 18-29 was collected (N=85). Results showed trust in government to be a moderator of the relationship between attitude and behaviour intention: for low trusting individuals, attitude is a stronger predictor of behaviour intention than it is for highly trusting individuals. Further, there were no statistically significant relationships between attitude and neuroticism or conscientiousness.

Based on the results, proposals for action were deduced suggesting trust as an important consideration to ensure adherence to protective measures. Possible recommendations might include the amelioration of communication regarding the use of protective measures, as well as interventions enhancing trust in the government.

Keywords: COVID-19, Theory of Planned Behavior, trust, Big-5

1. Influence of Personality and Trust in Government on Young Adults' Adherence to COVID-19 Restrictions

With the beginning of the year 2020, the novel Coronavirus spread and led to a global pandemic. The World Health Organization declared it an official pandemic in March 2020, and the virus kept spreading since then, victimizing over 177.108.695 lives and killing over 3.840.223 people (data status 19.06.2021), so far (World Health Organization, 2020a; World Health Organization, 2020b; World Health Organization, 2020c). For citizens safety and protection, governments all over the world enact regulations that aim to dampen the spread of COVID-19 (U.S. Chamber of Commerce, 2020). Besides social distancing there are curfews, face mask obligations, shop closing, and more restrictions being put on the citizens. These measures are part of a collective effort to reduce COVID-19 case numbers and victims, and the restrictions are more effective, if all citizens take part in them (Harring et al., 2021). That is not the case, and there are groups of people disregarding the restrictions. In order to ensure the safety of all citizens, to avoid the collapse of the health care system, and to develop interventions to encourage citizens to adhere to those measures, it is important to investigate the reasons for that.

Although the Netherlands, compared to other European countries, released restrictions later and tried to enact softer measures, January 2021 brings complications with those restrictions (BBC News, 2020; U.S. Chamber of Commerce, 2020; BBC News, 2021). Rioting and protesting the curfew enacted on the Dutch public, disturbed the peace in the Netherlands, and the violence in those riots increased (BBC News, 2021). Violent hooligans committed arson, theft, and property damage (Deutsche Welle, 2021a). As a result, police arrested more than 500 people (BBC News, 2021). With an anti-curfew motive, and with influence from conspiracy theories, many teenagers and young adults in their twenties were under those arrested (NU.nl., 2021). These regulations are meant for safety and the maintenance of the health care system; therefore, it is desirable that everyone complies with these to protect the whole citizenship. With riots and protests happening, as well as movements in several European countries advocating against COVID-19 and its regulations, it needs to be questioned what makes people comply to these measures and what makes them resist them. Communication via encrypted messenger services such as "Telegram", has impacted the anti-restriction culture in the Netherlands, and similar processes can be observed in other European countries as well, such as the "Querdenker" movement in Germany (Iqbal et al., 2020; Reichardt et al., 2021). In general, young adults and especially young men have a higher tendency of non-compliance to the measures (Barari et al., 2020; Roy-Chowdhury et

al., 2020). Due to their likeliness to carry COVID-19 without displaying severe symptoms, and thus being asymptomatic carriers of the virus, the WHO has dedicated an appeal to increase compliance in young adults (Nebehay & Reuters, 2020). As young adults are unlikely to catch a severe case of COVID-19, and potentially have a bigger social network around them, their perception of personal risk might be decreased in that regard, while still being able to transmit the virus to a wide array of people (Nivette et al., 2021).

1.2 Theoretical framework

1.2.1 Trust. Since the beginning of the pandemic, there has been research examining these phenomena, taking into consideration different aspects that influence behaviour and behaviour intention. Studies have been considering what makes people disregard restrictions, or belief in conspiracy theories (Karić & Međedović, 2021). Analytical thinking, as well as trust in government, have been mentioned to positively influence the tendency to reject conspiracy beliefs and theories related to the COVID-19 pandemic (Jovančević & Milićević, 2020; Karić & Međedović, 2021; Swami & Barron, 2020). Thus, mistrust has been found to contribute to unwillingness to comply to official recommendations concerning the pandemic (Freeman et al., 2020). Other research found working memory capacity, the ability to selectively attend to goal-relevant information without distraction, to influence compliance to social-distancing guidelines (Xie et al., 2020). The growing prevalence of conspiracy beliefs on citizens in European countries, and the influence that trust in government has on the belief in these conspiracies has an impact on the adherence to the restrictions enacted by the government (Georgiou et al., 2020; Henderson et al., 2020). In addition to that, research by Nivette et al., 2021 showed, that low trust in the government affects young adults especially in their COVID-19 related health behaviour. Therefore, it is important to investigate the role of general attitude towards the government and the trust citizens have in it, to predict adherence to COVID-19 measures. Thus, it is important to see what the effect of trust in a European government on adherence to pandemic related measures is. Research focusing on trust in companies and governmental organizations found that trust can be divided in three subcategories namely benevolence, competence, and integrity (McEvily & Tortoriello, 2011).

If a person trusts in the government, he/she thinks of the government as benevolent, competent, and integrated (Grimmelikhuijsen & Knies, 2017; McEvily & Tortoriello, 2011)[1].

1.2.2 Personality. Further, personality has been suggested to be a factor influencing behaviour and behaviour intention, and research focused on several personality traits and their effect on compliance. Research considering different personality factors, found them to be influencing people's behaviour in the pandemic as well. For instance, a study by Zajenkowski et al. (2020) examined the influence of the Dark Triad (based on Big 5) on compliance. The Dark Triad, which describes relations and manifestations of Narcissism, Machiavellianism and Psychopathy, was found to negatively influence compliance and could predict protest behaviour against COVID-19 restrictions (Hardin et al., 2021; Zajenkowski et al., 2020). Other research has shown a correlation between agreeableness and compliance with those measures (Götz et al., 2020). Additionally, recent findings showed that neuroticism, conscientiousness, and openness are predictors for staying home during the ongoing pandemic, therefore complying to government's protective measures (Zajenkowski et al., 2020; Götz et al., 2020). These recent findings suggest, that personality affects behaviour, and specifically pandemic related behaviour.

Moreover, the knowledge on personality factors and their impact on people's compliance enables to tailor interventions to groups that show low compliance to restrictions and obligations enacted by the government. The knowledge of what influences people's adherence might also be useful when deciding on pandemic related measures, so that restrictions that are easier to adhere to can be designed. This way, an increase in adherence to the measures may be achieved which would help by limiting the spread of the COVID-19 and other pathogens in possible future pandemics. Similar interventions tailored to certain personality types and factors, have suggested success when dealing with alcohol use amongst young adults and adolescents (Castellanos & Conrod, 2006; Conrod et al., 2006). Especially neuroticism and contentiousness have been found to have a particular influence on trust in authorities, as the research by Freitag and Ackermann (2016) suggests. Amongst the personality traits formulated in Big-Five personality inventory (BFI) (Allport & Odbert, 1936), these two, therefore, seem particularly relevant in the context of adherence to the

[1] There are other models explaining trust, but since the objective of this research is to enable targeted interventions, the marketing-inspired model of trust by McEvily and Tortoriello (2011) is considered more relevant here.

restrictions of wearing a mask, social distancing, curfews, shop closing, and general hygiene measures.

Neuroticism describes the negative affectivity a person carries, negative emotions, anxiety as well as self-consciousness (Goldberg, 1995; Tupes & Cristal, 1992). People scoring high on neuroticism tend to irrational beliefs, are often unevenly tempered and potentially emotionally unbalanced. Further, they worry excessively, and frequently experience fear, anger, frustration, and loneliness. High levels of stress can provoke less risk taking and increased caution (Cho et al., 2016). Moreover, it was found that a tendency to neuroticism can bear an increased ability to judge correctly, whether a source is trustworthy or not. Interpreting this personality trait in respect of the current topic, it evokes the question whether the experience of negative emotions, anxiety and worry influence behaviour related to the COVID-19 restrictions in any way. Excessive worrying might contribute to the adherence to the measures, but it might also contribute to worrying about the reliability of the government. Further, the high levels of stress could potentially reinforce to the compliance. Especially considering the ability to judge correctly, this trait is ambivalent, and it needs to be examined, whether these people are more trusting in the government or -opposed to that - more fearing towards it.

Conscientiousness is defined by how reflecting and deliberating a person is or acts. People scoring high on conscientiousness are dutiful, achievement oriented and are likely to display self-discipline as well as self-control (Roberts et al., 2005). Especially in respect to health-relevant behaviour, this trait has been suggested frequently. For highly conscientious individuals, socially induced impulse control facilitates their goal directed behaviour, such as thinking before acting, following rules and norms, and planning in general (John & Srivastava, 1999). In context of Coronavirus-measures, this could suggest strong adherence to the restrictions, and the increased self-discipline might contribute to persistence during a curfew or social distancing. Especially when considering health-relevant behaviour, this trait might make citizens compliant to restrictions. The two traits neuroticism and conscientiousness therefore seem to substantiate two behavioural tendencies and characteristics that might influence adherence to restrictions vastly. Since the behaviour of a person is dependent on the personality traits they possess, other factors potentially influencing behaviour, apart from personality and trust, should be considered (Hoyt et al., 2009; Rhodes et al., 2007). External factors such as the opinion of the social environment might be relevant for the intention and behaviour of adherence as well.

1.2.3 Theory of Planned Behaviour. The theory of planned behaviour (TPB) by Ajzen (1991), aims to explain the behaviour of people, by their beliefs. The theory considers variables that might affect the execution of behaviour in people, which includes attitude, subjective norm, perceived behavioural control, intention, while outlining the relations between those concepts. Especially in connection to health-related behaviour, it has successfully predicted intention of people to perform a certain behaviour, such as using contraceptives or exercising (Albarracin et al., 2001; Nguyen et al., 1997). Authors have suggested an advantage in integrating personality in the TPB to diminish the variance of the model by Ajzen (e.g., Hoyt et al., 2009; Rhodes et al., 2007). Studies in the context of COVID-19, considering intentions and specifically the Theory of Planned Behaviour, have been conducted as well (e.g., Ahmad et al., 2020; Andarge et al., 2020; Chan et al., 2020; Das et al., 2020). Unfortunately, European countries have largely been left out in that research, and because of considerable constitutional and governmental differences, European circumstances cannot be assumed to be comparable to countries such as Bangladesh or China. In relation to subjective norm, research by Hassan et al. (2016) showed that its impact greatly varies across countries. Therefore, and because of the difference in government systems, separate research needs to be done considering the Netherlands.

Further, authors have suggested an advantage in integrating personality in the TPB to diminish the variance of the model by Ajzen (e.g., Hoyt et al., 2009; Rhodes et al., 2007). Personality, as well as other background factors, are assumed to influence behaviour and behaviour intention only indirectly, through attitude, subjective norm and perceived behavioural control (Ajzen, 2020). According to Ajzen, the personality markedness of a person influences their attitude, how they perceive the opinion of their normative environment, as well as how capable they perceive themselves to act in a certain way. Further, research considering the theory of planned behaviour in different context showed that trust can substantiate a moderating role on the relationship of attitude and intention (e.g., Carfora et al., 2019; Petrovskaya & Haleem, 2021).

So far, research is missing considering the effect of neuroticism, conscientiousness, perceived behavioural control attitude and subjective norm, intention, on adherence to COVID-19 restrictions, considering trust in government.

1.2.4 Aim of the present study. In order to be able to increase the compliance to COVID-19 regulations of the public, thus ensure its safety, and ideally predict behaviour, research is needed on what factors influence citizens and specifically European inhabitants in

regard to their compliance to Corona-regulations. What the present study is focusing on, is how trust in government and personality traits influence the tendency to adhere to COVID-19 restrictions in young adults. Further, it can be investigated on dispositional factors affecting attitude, PBC and subjective norm.

Due to recent developments in the Netherlands, the focus will lie on the Dutch population in the age of 18-29, as this age group was mainly involved with the rioting. Recent news articles show that the cost for young adults and teenagers is high, constituting a burden for their mental health and development (Deutsche Welle, 2021b; Wallis, 2020). Their mental wellbeing is suffering especially from the curfew since freedom and social contact are strictly limited (Comiteau, 2021; Varga et al., 2021).

Thus, the aim of this paper is the analysis of variables assumed to influence the citizens' execution of requested behaviour. Based on the Theory of Planned Behaviour, in addition to the Big 5 personality inventory, the factors to be analyzed are namely "neuroticism", "conscientiousness", "attitude", "behaviour intention", and "adherence", "perceived behaviour control" (PBC), "subjective norm" as well as "trust in government" (see Fig. 1). Therefore, it can be hypothesized that;

H1.1 Neuroticism is negatively correlated with attitude towards the adherence

H1.2 Conscientiousness is positively correlated with the attitude towards adherence

H2.1 Neuroticism relates negatively to subjective norm

H2.2 Conscientiousness relates positively to subjective norm

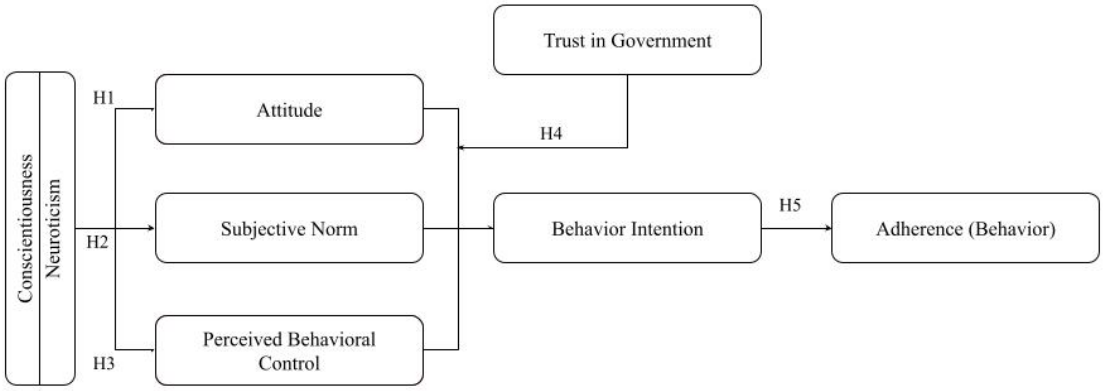
H3.1 Neuroticism is negatively correlated with PBC

H3.2 Conscientiousness is positively correlated PBC

H4 The relationship between attitude and behaviour intention is moderated by trust in the Dutch government

H5 Behaviour intention is positively related to adherence

Figure 1. Visualization of conceptual framework, including independent, dependent variables and moderator used in the analysis.



1.3 Explanatory note

The conceptual framework depicted in Figure 1 hypotheses a causal relationship between the personality traits conscientiousness and neuroticism, and the three predictors attitude, subjective norm, and perceived behavioural control. Those three predictors correlate with behaviour intention, which in turn determines the behaviour of citizens, namely adherence to COVID-19 restrictions. Trust in government is moderating the relationship between attitude and intention, but not the relationship between subjective norm or PBC and intention. Perceived behavioural control describes the perception of one's own capabilities and control over the situation, which, by definition, is not influenced by trust in government, but rather by trust in one's own abilities. Subjective norm, describing the belief that the social environment of a person would approve a behaviour in question, can also be expected to be independent from trust in government, since it considers the social norms of important people relative to the person in question, not the government.

2. Method

2.1 Sampling frame and participants

Participants were recruited using convenience and snowball sampling. Responses were mainly collected on a university in-house test subject pool platform exclusive to students of the faculty Behavioural, Management and Social Sciences of the University of Twente. More than half of the responses were collected using the social media platforms reddit, Telegram and Facebook. There, groups, threads, subreddits and channels were approached to spread the questionnaire that thematized COVID-19, a lockdown, or curfews. The inclusion criteria comprised (a) aged 18-29 years, (b) an existing internet connection for the use of the online questionnaire, (c) speaking English, and (d) (at least 1 year) residency in NL or Dutch

citizenship. Further, an Ethical approval of this study was obtained by the Ethics Committee and Examination Board of the University of Twente.

A total of 184 responses were gathered. The obtained data was trimmed, as there were incomplete responses, resulting in the final data set containing 85 responses. Participants that completed less than 99% of the questionnaire, that did not fulfill age group criteria, and that did not live in the Netherlands for the last year were excluded. That way, 99 responses were removed from the data set, since these responses did not deliver enough data for analysis.

The mean age of the sample is 23.4 and an age range between 18 and 29 years (*SD*age =3.39) (see Table 1). There were 42 male participants taking part in the survey, 41 females did, and most participants reported Dutch citizenship. Among non-Dutch participants, respondents lived on average 4.6 years in the Netherlands, ranging between one year and 25 years (SD=5.07) (see Appendix A, Table 6). Further, it can be said that half of the participants indicated a high school degree as their highest educational degree (see Table 1).

Table 1. Description of the sample.

	Category	N	%
Gender	Male	42	49.4
	Female	41	48.2
	Non-binary / third gender	1	1.2
	Prefer not to say	1	1.2
Nationality	Dutch	56	65.9
	German	19	22.4
	Other	10	11.8
Educational Degree	High School degree (e.g., HAVO, VWO, Abitur. Mittlere Reife, European or International Baccalaureate)	43	50.6
	Bachelor's degree	28	32.9
	Master's degree	10	11.8
	PhD	2	2.4
	Other	2	2.4

2.2. Design

For the present study, a cross-sectional survey design was used. The adherence to the enacted COVID-19 restrictions, is considered the dependent variable. Further, the independent variables “neuroticism”, “conscientiousness”, “attitude”, “subjective norm”, “behaviour intention” and “perceived behaviour control” are included. “Trust in government” is considered as moderator of attitude and behaviour intention. Additionally, control variables that were used included socio-demographic variables such as age, gender, highest obtained education, and nationality/residency. The questionnaire was provided in English (see Appendix B).

2.3. Instruments

A small pilot study with 4 participants was conducted to ensure the understanding and coherence of all items. Results of that pilot study with revealed unambiguous and good understanding of the questions.

Apart from demographic data items, all questions were in a closed format, measuring 70 items, containing 8 scales.

2.3.1 Demographic data. The first section of the questionnaire requests demographic data. For the age, participants could enter numbers between 18 and 29, if they are older or younger, they were forwarded to the end of the survey. A question about the highest obtained education gave an array of educational levels. Next, the residency of the participant was requested. To ensure that participants have an opinion on the Dutch government, it was required that they were either Dutch citizens or have been living at least one year in the Netherlands. That time span seems enough to develop an opinion on the Dutch government, especially in a globally exceptional situation. This abnormal situation is politically charged, as one can derive from reports and news coverage (Meyer-Ohlendorf, 2021). A question about nationality gave the options *Dutch* and *other*. If the participant indicated *other*, he/she was forwarded to a question about whether they have been living in the Netherlands for more than one year. If the participant was not a Dutch citizen and had not been living in the Netherlands for the past year, he/she was forwarded to the end of the survey. Participants that indicated that they have been living in the Netherlands for at least one year, were forwarded to a question that asked about the exact time they have. A text entry field enabled them to put in the number of years. Finally, individuals indicated their gender by a drop-down menu choosing between *female*, *male*, *non-binary* and *unwilling to say*.

2.3.2 Personality. The independent variables "neuroticism" and "conscientiousness" were measured by the established Big-Five personality inventory (BFI). Items from the BFI were answered on a 5-point-likert scale, ranging from strongly disagree to strongly agree. The subscale "neuroticism" measured the personality trait neuroticism in 8 items and relied on the Big-5 personality model (Goldberg, 1992; John, Naumann, & Soto, 2008). The trait conscientiousness was measured by 9 items derived from the Big-5 personality inventory as well (Goldberg, 1992; John, Naumann, & Soto, 2008).

In the present sample, the scale neuroticism based on Big-5 exhibited good internal consistency (α=.85) (see Appendix C, Table 7), as did the scale measuring conscientiousness (α=.81) (see Appendix C, Table 7).[2]

2.3.3 Trust in government. The independent variable "trust in the Dutch government" was measured by 12 items that consist of three subscales, namely *competence* (5 items), *benevolence* (3 items) and *integrity* (4 items). The items were based on a study by Grimmelikhuijsen & Knies (2017) and the scale possesses sufficient internal consistency and is suitable to measure trust in government for the purposes of this paper. Participants answered the questions on a 5-point-likert scale, which ranged from strongly agree to strongly disagree.

For the current sample, the scale measuring the trust of participants in the Dutch government yielded an excellent Cronbach's alpha of α=.95, a KMO-value of .90 and a significant Bartlett's sphericity of p<.05 (see Appendix C, Table 7). The factor analysis revealed two strong factors, which can be titled *Benevolence* and *Competence* (see Appendix, Table 10). Based on the construction of this scale, three factors were to be expected, since the scale was based on the subscale competence, benevolence, and integrity. The factor analysis showed that benevolence and integrity measure the same construct, so the scale can be summarized into two factors. Those two strong factors found in the FA explain 77% of the

[2] A confirmatory factor analysis with varimax rotation was conducted for each scale. Both scales yielded a satisfactory KMO of .84 for neuroticism and .78 for conscientiousness (see Appendix C, Table 7), as well as a significant Bartletts sphericity. The scale neuroticism showed 2 factors, which can be labeled *nervousness* and *mood* (see Appendix C, Table 8). The scale conscientiousness showed 2 factors, which can be titled *work conscience* and *work efficacy* (see Appendix C, Table 9). Given the similarity of content between these two factors, they were not considered in the analysis.

variance for the entire scale. Since the factor analysis suggested possible separation of trust regarding benevolence and competence, this was considered in the analysis involving the variable trust.

2.3.4 Theory of planned behaviour. Based on the Theory of Planned Behaviour (TPB) and the test construction manual for that model by Ajzen (2006), 20 items measure attitude, behaviour intention, subjective norm, and perceived behavioural control. Participants answered on a Seven-point bipolar adjective scales ranging from bad to good, unpleasant to pleasant, disagree to agree, true to false and likely to unlikely (see Appendix B).

The scale that measured perceived behavioural control contained five items. Results from the present sample show that with a KMO of .78 and significant bartlett's sphericity of $p<.05$ (see Appendix C, Table 7), the scale PBC shows 1 factor, that explains 57,8% of the variance for the entire scale. In addition to that, the scale showed a high Cronbach's alpha of $\alpha=.80$, indicating good reliability (see Appendix C, Table 7).

Since Ajzen (2002) defines attitude as being comprised of two components, namely affective (perceived enjoyment) and instrumental (perceived benefit), the scale attitude was divided into two separate subscales. Each scale had the same five items, so all items are answered twice, with two different Likert scales (see Appendix B). The first subscale, where respondents choose on a scale ranging from bad to good, exhibited a KMO of .79 as well as a significant bartletts sphericity of $p<.05$ (see Appendix C, Table 7). Thus, it was eligible for a factor analysis. One factor explains 66.4% of the scale, and it possessed a good reliability with a Cronbach's alpha of $\alpha=.86$ (see Appendix C, Table 7). The second subscale, that gave participants the option to report from unpleasant to pleasant, yielded a good reliability with a Cronbach's alpha of $\alpha=.79$ (see Appendix C, Table 7). For this subscale, one factor explains 55.8% of the variance of the scale.

The scale subjective norm, containing five items, displayed a KMO value of .81 and statistically significant bartletts sphericity of $p<.05$. Here, one factor explains 59.6% of the variance of the scale. The reliability of the scale was good, since the Cronbach's alpha yielded $\alpha=.81$ (see Appendix C, Table 7).

Five items measure the scale behaviour intention, which reached a KMO of .88 and a significant p-value for its Bartletts sphericity. One factor explains the whole scale and explains 76.7% of the variance. Additionally, the scale scored an excellent Cronbach's alpha of $\alpha=.92$, supporting the reliability. (see Appendix C, Table 7).

2.3.5 Dependent variable. In order to measure the adherence of the participants regarding Coronavirus-restrictions, a scale testing actual behaviour needed to be employed. That dependent variable "*adherence*" was measured by asking questions designed to measure that behaviour, and ideally only people scoring full points on all those items, adhere to all government-required measures. Questions about mask wearing, social distancing, a curfew and frequent hand washing were employed. Non-adherence to the measures in that context means intentional disobedience out of doubt or mistrust in regulations and/or government.

For the present sample, the scale *adherence*, containing fifteen items, showed a KMO measure of .87, with a bartletts sphericity value of $p<.05$ (see Appendix C, Table 7). The whole scale reached a Cronbach's alpha of $\alpha=.89$, which supports the reliability of the scale. Four factors were found in a factor analysis with varimax rotation, explaining 72% of the variance. Based on the content of the items, those factors can be labeled hygiene, social distancing, tissues, and new habits (see Appendix C, Table 11). This factor analysis showed the scope of the scale, but the variable behaviour is measured in terms of adherence or non-adherence, thus the factors found did not influence further analysis.

2.4. Procedure

The online questionnaire was created on the platform Qualtrics (www.qualtrics.com). Participants were informed that they will be asked to take a survey that asks about opinion and attitude related to COVID-19. Before participants filled in the questionnaire, they needed to consent to the conditions, that their participation was anonymous and that they are free to withdraw from it at any given time, and that they were going to be provided with further information about the study after their completed participation. Further, it was mentioned that a final report may be sent to them.

Additionally, the debriefing stated that the survey would take up 10 minutes to complete, and more detailed information on how data security is ensured, as well as how the data is handled.

After the survey was completed, a debriefing was shown which contained more information about the purpose of the study, informing about the measuring of personality traits, which is not mentioned in the briefing. Thus, consent was requested a second time, since the willingness to participate might have changed by that debriefing. Finally, a text entry field gave the opportunity to receive the final report by entering one's email address.

2.5. Data analysis

In order to answer the research question "How does trust in government and personality traits influence the tendency to adhere to COVID-19 restrictions imposed by the

Dutch government in young adults?" and investigate the hypotheses, the Statistical Package for Social Sciences (SPSS) was used for analysis. The application was used for general descriptive statistics, frequencies and internal consistency ratings from the sample and the scale created.

The variables were tested for normal distribution using the Shapiro-Wilk test. The variables conscientiousness, neuroticism and trust are normally distributed (see Appendix D, Fig. 3-5), while the variables *attitude, subjective norm, PBC, intention* as well as *adherence* ($p<.05$) gave reason to think that the data is not normally distributed (see Appendix D, Table 8). Further analysis for normal distributions of all variables showed nearly normally distributed histograms, as well as Q-Q plots with trend following data, clustered around the expected normal. Thus, the variables attitude (see Appendix D, Figure 6), subjective norm (see Appendix D, Figure 7), PBC (see Appendix D, Figure 8), intention (see Appendix D, Figure 9) and adherence (see Appendix D, Figure 10) are considered normally.

In order to test H1.1 and H1.2, a Pearson r correlation as well as a multiple regression, with personality (conscientiousness and neuroticism) and attitude was executed. Further, H2.1 and H2.2, as well as H3.1 and H3.2 were tested with a Pearson r correlation and multiple regressions, considering personality and subjective norm as well as perceived behavioural control. In addition to that, H4 was tested by a linear regression, with attitude as independent and behaviour intention as dependent variable, considering trust in government as moderating effect on that interaction. Finally, H5 was tested with a linear regression, where behaviour intention was the independent variable and behaviour as dependent variable.

4. Results

4.1 General Findings

Item mean scores reveal that the behaviour intention in the present sample was relatively high, with participants scoring 5.4 on the items, on average. Also, behaviour yields an item mean of 3.2. That suggests that the sample, on average, tends to adhere to the measures, and intents to do so even more. Similarly, the average attitude score reaches 4, the average social norm score yields 4.2 while the level perceived behavioural control on average is 5.3. Further, participants score high on average on the trust in government scale, with a mean of 3.3. Finally, the average level of neuroticism in the sample is 2.9 and the mean for conscientiousness is 3.5 (see Table 2).

4.2 Relationship of personality, attitude, subjective norm, and perceived behavioural control

To test H1, H2, and H3, a Pearson r correlation test was conducted (see Table 2), followed by multiple regressions. Strong correlations are assumed to show a Pearson r value between .5 and 1.0 or -.5 and -1.0, while medium associations are between .3 and .5 or -.3 and -.5. Weak associations are considered to range from .1 to .3 or -.1 and -.3 (Hemphill, 2003).

The correlational analysis showed no statistically significant relation between neuroticism and attitude (r=.12, N=85; p=.27), neither did it for conscientiousness and attitude (r=-.06, N=85; p=.57). Thus, Hypothesis 1.1 and 1.2 were rejected, and the results are in support of the null hypothesis. Further, there was no significant correlation between neuroticism and subjective norm (r=.09, N=85; p=.34), but a statistically significant correlation between conscientiousness and subjective norm (r=.21, N=85; p<.05). Moreover, neither conscientiousness (r=.07, N=85; p=.49) nor neuroticism (r=.08, N=85; p=.45) did correlate with perceived behavioural control (see Table 2).

Testing the correlations between the remaining variables, significant relations between trust, intention, attitude, subjective norm and PBC are shown. Correlations involving trust are generally weaker, but significant (see Table 2). Intention strongly and positively correlates to attitude, to subjective norm, PBC and trust. Further, attitude highly correlates with subjective norm, with PBC and with. In addition, subjective norm strongly relates to PBC, and moderately to trust. Finally, PBC and trust are moderately correlated as well. It must be pointed out, that neuroticism is positively related with intention, opposing the hypotheses.

In order to reject Hypothesis 1, 2 and 3, multiple regressions were run. First, conscientiousness and neuroticism were considered predictors of subjective norm. Results show a low R^2 of .06 (see Appendix D, Table 13), and no significant fit of the model [F(2,82)=2.83, p=.06] (see Appendix D, Table 14). Therefore, neither conscientiousness (ß=.24, p=.03), nor neuroticism (ß=.15, p=.17) were significant predictors of subjective norm (see Table 3).

Further, a multiple regression considering conscientiousness and neuroticism as predictors for attitude, did not turn out significant either. The model exhibits a low R^2 of .01 (see Appendix D, Table 13), and does not fit significantly [F(2,82)=.66, p=.52] (see Appendix D, Table 14). Thus, conscientiousness (ß=-.03, p=.76) and neuroticism (ß=.11, p=.32) are no significant predictors of attitude (see Table 3).

Additionally, conscientiousness and neuroticism were considered predictors of perceived behavioural control in a multiple regression. Results show an R^2 of .02 (see Appendix D, Table 13), and no significant fit of the model [F(2,82)=.69, p=.50] (see Appendix D, Table 14). Therefore, it can be said, that conscientiousness (ß=.10, p=.37) and neuroticism (ß=.11, p=.34) are not significantly predicting perceived behavioural control (see Table 3).

Since none of the regression analyses were significant, hypotheses 1.1, 1.2, 2.1, 2.2, 3.1 and 3.2 need to be rejected and the null hypotheses are accepted.

Table 2. Descriptive statistics and Pearson r correlations for H1-H3.

		M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Age	23.4	3.4	-								
2.	Conscientiousness	3.5	.6	.10	-							
3.	Neuroticism	2.9	.8	-.26**	-.24**	-						
4.	Attitude	3.3	1.1	-.28**	-.06	.12	-					
5.	Subjective Norm	4.2	1.3	-.17	.21*	.09	.52**	-				
6.	PBC	5.3	1.3	-.22*	.07	.08	.74**	.65**	-			
7.	Trust	3.9	1.4	.28**	.04	-.04	-.65**	-.37**	-.42**	-		
8.	Intention	5.4	1.7	-.31**	.03	.19*	.86**	.66**	.84**	-.62**	-	
9.	Adherence	3.2	.9	-.19*	.14	.15	.69**	.50**	.70**	-.44**	.75**	-

*Note. **p<.01. Correlation is significant at the 0.01 level (1-tailed). *p<.05. Correlation is significant at the 0.05 level (1-tailed).*

Table 3. Regression results for analyses of neuroticism and conscientiousness with different dependent variables

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1[a]	(Constant)	12.372	5.389		2.296	.024
	Neuroticism	.161	.116	.153	1.386	.169
	Conscientiousness	.278	.125	.244	2.215	.030
2[b]	(Constant)	37.12	10.93		3.40	.00
	Neuroticism	.23	.23	.11	.99	.32
	Conscientiousness	-.08	.25	-.03	-.31	.76
3[c]	(Constant)	20.31	5.54		3.66	.00
	Neuroticism	.11	.12	.11	.95	.34
	Conscientiousness	.12	.13	.10	.90	.37

a. Dependent Variable: Subjective Norm
b. Dependent Variable: Attitude
c. Dependent Variable: PBC

4.3 Moderating effect of trust in government on the relationship between attitude and behaviour intention

In order to investigate the effect of trust in government on the relationship between attitude and behaviour intention, a linear regression was run. As predictor variable, attitude was considered, while the outcome variable was intention. The moderator variable *trust in government* was used, calculated by centering *attitude* and *trust in government* around the mean, and then multiplying the variables. Reviewing the results of the moderation analysis with the interaction term trust in government, it can be said that the model was found to be statistically significant, explaining 78% of the model (R^2=.78) (see Table 3). Thus, trust in government is a significant moderator of the relationship between attitude and intention [F(3,81)=98.4, p<.01] (see Appendix D, Table 15). A minimal, but positive interaction effect could be observed of trust on the relationship between attitude and intention (ß=.23, p<.01) (see Table 3). This effect shows that the relationship between attitude and intention is dependent on trust in government.

Table 3. Regression analysis with moderating effect of Trust (IVM) on relationship between Attitude (IV), and Behaviour Intention (DV)

	Unstandardized Coefficients		Standardized Coefficients				
	B	Std. Error	Beta	t	Sig.	R^2	Adjusted R^2
(Constant)	28.36	.53		53.92	.00**	.78	.78
Attitude (Mean Centred)	.44	.05	.67	9.19	.00**		
Trust (Mean Centred)	-.09	.05	-.12	-1.72	.09		
Attitude*Trust (Mean Centred)	-.01	.00	.23	3.91	.00**		

a. Dependent Variable: Behaviour Intention
b. *Note. **p<.01. significant at the 0.01 level (1-tailed). *p<.05. significant at the 0.05 level 1-tailed).*

Considering the main effect of attitude on intention, it turned out to be significantly different from 0 (p<0.05), and positively correlated with intention (ß=.67, p<.05). Contrary to that, the main effect of trust in government was not found to be significant, with a negative effect (ß=-.12; p=.09) (see Table 4).

In order to analyze the moderation effect more in detail, the level of trust in government was divided into 3 categories, to see the effect of low, high, and moderate trust. At *low* or *no trust*, the tertile boundaries were 12-27 (n=30, SD=6). For *moderate trust*, the tertile boundaries were set to 29-37 (n=27, SD=2.6). Finally, *high trust* was set to trust scores between 38 and 58 (n=28, SD=5.5) (see Figure 2). Based on the high Nagelkerke value of R^2=.80 (see Figure 2) for the group *no trust,* simple linear regressions were run for each tertile group, underlining the results observed. For the group *no trust*, the effect is statistically significant [F(1,29)=107.93; p<.01] (see Appendix D, Table 16). Part correlations reveal a large effect with a value of ß=.89, p<.01. Further, for *little trust* a similarly high effect can be observed, that is significant as well [F(1,26)=27.78; p<.01] and yields ß=.73, p<.01. Finally, the highest trust group shows a significant [F(1,27)=16.13; p<.01] correlation (ß=.62, p<.01) constituting a smaller effect (see Table 4). Thus, it can be said that the intention to adhere to measures of the group *no trust* is highly affected by their attitude, while attitude has a smaller impact in higher trusting groups (see Fig. 2). Figure 2 shows, that the steeper the regression line is, the higher the influence of attitude on intention is. That means, the less trust, the more influence attitude has on behaviour intention, and opposed to that, the more trusting an

individual is in the government, the less important their attitude is to their behavioural intention.

This effect shows that the less trusting an individual is, the stronger is attitude as a predictor of intention, whilst for highly trusting individuals, attitude is a weaker predictor for intention. A higher attitude (positive attitude) and trusting the government little, thus increases the chance to have the intention to adhere to the measures.

Table 4. Coefficients of analysis for hypothesis 4 with trust split up in tertile groups.

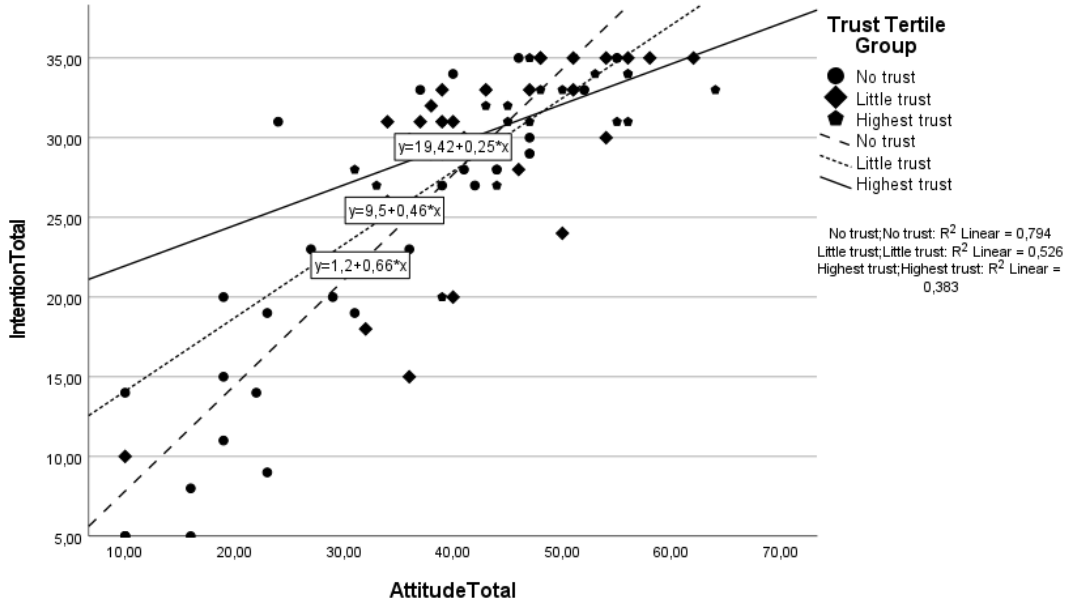
Trust Tertile Group		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
Low trust	(Constant)	1.20	2.12		.57	.57
	Attitude	.66	.06	.89	10.39	.00**
Moderate trust	(Constant)	9.50	3.87		2.46	.02*
	Attitude	.46	.09	.73	5.27	.00**
High trust	(Constant)	19.42	3.04		6.39	.00**
	Attitude	.25	.06	.62	4.02	.00**

a. Dependent Variable: Behaviour Intention

b. *Note. **p<.01. significant at the 0.01 level (1-tailed). *p<.05. significant at the 0.05 level 1-tailed).*

The results identify trust in government as a negative moderator of the relationship between attitude and intention. Therefore, the null hypothesis needs to be rejected, and the results of the moderation analysis are in support of hypothesis 4.

Figure 2. Grouped Scatter of Intention by Attitude, divided by trust tertile groups.



4.4 Relationship of behaviour intention and behaviour

A simple linear regression was employed to test H5 with behaviour as dependent variable and behaviour intention as independent variable (see Appendix D, Table 17). Results show a significant regression model [F(1,83)=104.5; p<.01] with an adjusted R^2 of .55, and ß=.75, p<.01. Thus, participants behaviour can be predicted by their intention, and their likelihood to adhere to the measures increases with their intention to do so (see Table 5). Resulting from that, H5 can be accepted and H0 needs to be rejected.

Table 5. Effect of behaviour intention on adherence.

	Unstandardized Coefficients		Standardized Coefficients				
	B	Std. Error	Beta	t	Sig.	R^2	Adjusted R^2
(Constant)	14.2	3.19		4.45	.00**	.56	.55
Intention	1.15	.11	.75	10.22	.00**		

a. Dependent Variable: Adherence

*Note. **p<.01. significant at the 0.01 level (1-tailed). *p<.05. significant at the 0.05 level 1-tailed).*

4.5 Additional results

To test the fit of the Theory of Planned Behaviour, and in order to confirm the findings by Ajzen (1991), an additional regression was conducted. Intention was used as dependent variable, while attitude, subjective norm, and perceived behavioural control were used as independent predictor variables, to see if intention is indeed determined by those factors, as the TPB suggests. Results indicate that there is a significant effect of the aforementioned

factors on intention [F(3,81=146.28; p<.01] with an high adjusted R^2 of .84 (see Appendix D, Table 19). Attitude (ß=.51, p<.01), subjective norm (ß=.17, p<.01), and PBC (ß=.34, p<.01) were found to be significant predictors in the model (see Appendix D, Table 19). Therefore, the results are in support of the Theory of Planned Behaviour.

Attitude, subjective norm and perceived behavioural control are considered to be independent determinants of intention in the TPB by Ajzen (1991). Therefore, and to analyze the influence of trust more in detail, another regression was run. Considering trust in government as moderator on the relationships between subjective norm and intention, as well as PBC and intention, neither effect was found statistically significant (see Appendix D, Table 20). That indicates that trust solely has a moderating effect on the relationship between attitude and behaviour intention, instead of on all three variables affecting behaviour intention according to the Theory of Planned Behaviour.

The factor analysis of the trust scale revealed a separation into two factors. Based on these results, two further moderation analysis were run, testing the difference in the effect of moderation of benevolence and competence. After the division of the items according to the factor loadings found in the analysis, a linear regression with *Intention* as dependent variable, *Attitude* as independent variable and *Trust in competence* as moderator was conducted (see Appendix D; Table 25). It revealed a significant moderating effect of *trust in competence* [F(3, 81)=98.40; p<.01], and a high adjusted R^2 of .75 (see Appendix D; Table 26). In addition, a simple linear regression with *Intention* (DV), *Attitude* (IV) and *Trust in benevolence*, showed a significant moderating effect of *trust in benevolence* [F(3,81)=101.45; p<.01] (see Appendix D, Table 28). It also yields a high Adjusted R-Square of .78 (see Appendix D; Table 27). That separation indicates a difference in reasons for trust in the government. For instance, the government is trusted when perceived as benevolent towards citizens but can also be trusted when perceived as competent.

Since mainly young men were found to be rioting against the COVID-19 measures, it needs to be analyzed, whether gender and age are relevant predictors as well. Since the portion of participants indicating identifying with a non-binary gender was minor, participants that answered this were excluded, as well as participants that did not want to expose their gender. Thus, two responses were removed for the analysis, and it was focused only on female and male. A one-way ANOVA investigating on the differences in adherence (DV) between gender (IV) showed a statistically significant difference between the group female and male F(1,84)=8.04, p<.001 (see Appendix, Table 21). While females performed on average with a sum score of 49.16 (SD=13.3) which is equivalent of a item mean score of 3.6,

males only reach an average of 41.7 (SD=11.1), equivalent to an item mean score of 2.9. Thus, there is a statistically significant difference between the two gender categories female and male. The adherence to COVID-19 measures is dependent on gender in this sample, and on average, women perform higher on adherence then men do (see Appendix D, Table 22). That supports the notion that men have a lower adherence to the measures.

A simple linear regression considering the influence of age (IV) on adherence to measures (DV) did not show statistically significant results, which indicates that there is no significant effect of age on the tendency to comply to governments precautions in the present sample (see Appendix D, Table 23). Lastly, an analysis of educational level and adherence did not end up statistically significant either (see Appendix D, Table 24). As the inclusion criteria for the sample were restricted to a rather young age group, and the sampling was mainly conducted on a university in-house website, these results were to be expected.

5. Conclusion and discussion

Based on the results, the research question "How does trust in government and personality traits influence the tendency to adhere to COVID-19 restrictions imposed by the Dutch government in young adults?" can be answered.

Considering hypotheses 1, 2 and 3, it can be concluded that personality is not correlated with behaviour intention as formerly assumed, thus neuroticism and conscientiousness do not have a noteworthy effect on the likeliness to adhere to COVID-19 measures. Therefore, there is no indication, that conscientious people are more adherent due to their increased self-discipline. Also, there is no significant support for people high on neuroticism being more trusting in the government or more fearing towards it. Opposed to that, a significant correlation between neuroticism and intention was found, indicating that people high on neuroticism tend to have a higher behavior intention.

Further, it can be said that hypothesis 4 can be accepted. Although the moderating effect was weak, the division of the sample in tertile groups showed that the effect *attitude* has on *intention* is dependent on the level of *trust*. Consequently, among low trusting individuals, attitude is a very strong predictor of intention to adhere to measures, but not so much for highly trusting individuals.

Finally, hypothesis 5 was accepted as well, which means that the behaviour in question is dependent on behaviour intention. That is equivalent to the theory of planned behaviour and supports the model. Also, the analysis conducted testing other assumptions of the theory of

planned behaviour, such as the three factors predicting intention, were in favor of the theory of planned behaviour.

Reflecting on the theoretical framework used, the theory of planned behaviour, it must be said that conscientiousness and neuroticism do not have an effect on *subjective norm*, *attitude* or *PBC*. Contrary to that, they also show, that *attitude*, *subjective norm* and *PBC* predict behaviour intention, which in turn influences adherence, the behaviour in question. That is in accordance with the TPB. Finally, trust in government was found to be a moderator of *attitude*, but not of *subjective norm* or *PBC*, which was to be expected, based on the definition of the two concepts. Therefore, the TPB with the extension of trust in government is able to predict the adherence of the target group to COVID-19 measures. Personality traits, namely conscientiousness and neuroticism do not play a role in that process. It must be said that the present model, based on the TPB does not visualize and explain the relation that was found between the level of attitude and trust in government, namely that the lower the attitude, the higher the influence trust has.

Taking those results into the context of existing literature and especially literature conducted in times of the COVID-19 pandemic, it must be said that the results about the impact of trust align with other results found in current literature, in which trust in government has an impact on the adherence to restrictions, as well (Georgiou et al., 2020; Henderson et al., 2020). Further, although research suggests a positive and significant correlation from neuroticism and conscientiousness with staying home in the pandemic, there were no indications for that in the present sample (Götz et al., 2020). According to that, the three factors subjective norm, attitude and PBC, which are predicting behaviour intention, are not affected by dispositional factors. That might be traced back to the age and size of the current sample compared to the sample of Götz et al. (2020), or the fact that the present study considered not only staying home during the pandemic, but also other COVID-19 related restrictions. Additionally, these results oppose the research by Freitag and Ackermann (2016), that showed a significant negative effect of neuroticism on trust in authorities, and a significant positive effect of conscientiousness on trust in authorities. Thus, the results concerning personality are inconsistent with the findings in existing research. The reasons for that are questionable, but the trust scale used in the present study might be a reason.

With respect to the scale measuring trust, which was adapted from Grimmelikhuijsen and Knies (2017), exhibited a different separation in subscales during the factor analysis than expected. Taking a closer look at the factors, a similar separation can be observed in the Trust,

Confidence and Cooperation model (TCC) by Earle and Siegrist (2008). That defines the variables social trust and confidence to predict cooperation. Similarities in definition can be seen between social trust, defining an aspect of trust based on morality; and benevolence, describing an aspect of trust based on perceived goodwill. Further, parallels can be seen between confidence, defined in the TCC model, and competence. That suggests that citizens may trust the government for different reasons, or that their trust has a focus. This insight is of importance when trying to achieve cooperation of the citizens, for instance in times of a pandemic. The framework by Earle and Siegerist (2008) delivers a framework that considers different aspects of trust, and the separation they used was observed in the current sample, as the factor analysis suggested. It focuses on cooperation of people; therefore, it gives a good foundation for further research concerning pandemic related measure research.

The contrary results of the present study concerning personality, which conflict with other recent findings, might be attributed to drawbacks in the study design. For instance, the questionnaire was provided solely in English to reach not only Dutch citizens but also people with other nationalities living in the Netherlands. On the other hand, that might have biased the sampling with respect to educational level, since not everyone, especially people of lower socioeconomic status, can be assumed to speak English on an advanced level. Further, there was a mistake found in the questionnaire during the data collection. People with Dutch citizenship were not asked about the length of their residency, which caused Dutch people to participate even though they did not live in the Netherlands for the past year, whereas Germans and others were rejected right away if not been living in the Netherlands. That might have resulted in participants not being concerned with the Dutch government, potential having more, or less trust in the government, since they are not immediately affected by its restrictions and policies. Further, a larger sample was sought for, due to the number of items and variables that were to be analyzed. Although the minimum sample size of 150 was reached, after deleting incomplete responses, the data set ended up considerably small. That might have affected the results, validity, and reliability of the research negatively, making it more vulnerable to outliers or possible sampling error.

Despite the drawbacks regarding the sampling, the present research delivers insights into how behaviour recommendations and restrictions during a pandemic are perceived by citizens. Trust showed to be an important factor to consider when making restrictions not only in times of a pandemic, but potentially in the general communication between government and citizens. Thus, interventions and proposals for actions can be deduced.

The separation of trust into three levels revealed a significant difference in influence of attitude on behaviour intention, depending on trust. Since attitude seemed to have an effect on behaviour intention, it was necessary to see the difference in influence for participants without trust in the government, and participants with strong reliance on the government. Individuals with low trust were found to be heavily influenced by their attitude in relation to behaviour intention, less so the stronger trusting groups. Thus, the more trust a participant possesses, the less influential their attitude is on their behaviour. That implies, that citizens with high trust towards the government, are reluctant in regard to their attitude towards the behaviour, while citizens being more skeptical towards the government, rely more on their attitude towards the behaviour. In context of COVID-19 measures, that means that people who do not trust the Dutch government, are either very positive in regard to hygiene, social distancing and wearing a mask, or they are very negative concerning these measures. Whether they think positive about it or not, then affects the likeliness of their intention to adhere. In turn, people that have a deep trust in the Dutch government, might have a strong attitude towards the measures or not, but their strong trust conveys them to behaviour intention.

Further research needs to be done to see whether people with low trust, low attitude, but high adherence have another predictor effecting their intention, since it can be assumed that people do not adhere without any reason. To compensate for drawbacks of the present study, the same questionnaire could be used with a bigger sample, but the same age group. Ideally, more Dutch universities would be involved. Also, the questionnaire should be translated to more languages to involve more participants, but also to avoid a biased data collection or sampling error, representing only higher educated Dutch citizens.

In addition to that, the scale measuring trust needs to be investigated on further, and it needs to be revised whether these results concerning the effect of attitude still hold up if tested with another trust scale, such as the TCC. In future research it must be acknowledged, that young people have a high mental toll in this pandemic, and that this might be another factor influencing behaviour. Besides that, also personal health risk might be a variable to be investigated since a low perceived individual risk could represent a reason for non-adherence. Young adults' resilience, their susceptibility to COVID or their perceived personal risk, as well as their socioeconomic status need to be considered, to control for further factors influencing behaviour intention or trust in the Dutch government. The present study was not successful in doing so and raises questions about whether the findings still uphold in a different sample, including more possible predictors. Additionally, to avoid a biased data collection, qualitative or quantitative studies could be done in social focal points, which

enables to investigate on income and socioeconomic status of participants, and their trust in the government. To ensure a response in that extended target group, personal interviews low socioeconomic status areas could be done. With further analysis of other factors such as the importance of subjective norm, social status, income, or education in this process and on the effect of attitude and trust, more measure optimizing implications can be deduced. Therefore, it is necessary to investigate further.

Nonetheless, the present study can deliver insights into the process of adherence and trust in the government in the context of a pandemic, so that recommendations for pandemic containing measures can be deduced. Trust is an important factor to ensure adherence to protective measures and therefore, that governments should aim to increase their trustworthiness. Further, people with little trust are more affected by their attitude, which suggests that measures should be as little unpleasant as possible, or that there should also be measures that compensate for drawbacks, so that the attitude towards the measures and government in the less trusting population group is positive. Thus, the less drawbacks a measure has, the more positive the attitude of citizens, and the more likely they are to adhere to them. Advantages could also be highlighted to outweigh perceived disadvantages. In addition to that, interventions evoking trust and communicating in a positive way might help increasing adherence. For that, posters or other advertisements could be used to highlight advantages and to fully inform citizens about the pandemic and its implications, avoiding misinformation spread.

In conclusion, present research showed, that trust in the Dutch government influences the tendency of the target group, to adhere to covid measures. That influence is larger, in people having a negative attitude towards the restrictions, and lower for people being positive about them. Contrary to the research question, personality traits do not influence this relationship. Due to trust being a significant predictor for intention, it should be investigated, whether that is the case for other European countries and other age groups. This finding is of importance for countries all over the world that record low trust in government, especially after a time full of political discourse.

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Appendices

Appendix A

Table 6. Descriptive statistic of length of residency among non-Dutch participants

	N	Minimum	Maximum	Mean	Std. Deviation
For how long ~~have~~ ~~you~~have you been living in the Netherlands (in years)?	29	1.00	25.00	4.57	5.07
Valid N (Listwise)	29				

Appendix B

Start of Block: Introduction

Mask Off: Influences on young adult's adherence to COVID-19 restrictions

This study examines factors related to the adherence to COVID-19 restrictions. If you agree to participate, you will be asked to answer survey questions that ask about your opinion and attitude. You are free to discontinue your participation at any time without penalty. You will be given additional information about the study after your participation is complete, and if you want to, the final report can be sent to you. If you agree to participate in the study, it may take up approximately 10 minutes to complete the survey. All data from this study will be kept from inappropriate disclosure and will be accessible only to the researchers and their faculty advisor. Data collected online will be stored on a password-protected website and stored and analysed anonymously. Data collected in person will be kept in a locked file cabinet, separate from consent forms, and all materials will be destroyed after 3 years. Thus, this study is anonymous and everything you indicate, cannot be traced back to you. This research study is being conducted by Nell Royal. The faculty supervisor is *Dr. Margôt Kuttschreuter*, Department of Psychology, Conflict, Risk and Safety, University of Twente. If you have questions or concerns about your participation in this study, you may contact **n.royal@student.utwente.nl**By clicking "Yes, I Agree" below, you are indicating that you have understood your role in this research, and consent to participate in this research study.

Do you agree with the conditions of participation mentioned above?

- ○ Yes, I agree
- ○ No, I disagree

Skip To: End of Survey If Consent form = No, I disagree

---

*

Please indicate your age.

_____

Skip To: End of Survey If Condition: Please indicate your age. Is Greater Than 29. Skip To: End of Survey.

Skip To: End of Survey If Condition: Please indicate your age. Is Less Than 18. Skip To: End of Survey.

Please indicate your gender.

- ○ Male
- ○ Female
- ○ Non-binary / third gender
- ○ Prefer not to say

Please indicate your highest obtained educational degree.

- ○ High School degree (e.g., HAVO, VWO, Abitur, Mittlere Reife, European or International Baccalaureate)
- ○ Bachelor's degree
- ○ Master's degree
- ○ PhD
- ○ Other, namely: _____

Please indicate your nationality.

▼ Dutch ... other

Skip To: End of Block If Nationality = Dutch
Skip To: nation2 If Nationality = German
Skip To: nation2 If Nationality = other

Have you been living in the Netherlands for the past year?

- ○ Yes
- ○ No

Skip To: End of Survey If Have you been living in the Netherlands for the past year? = No
Skip To: Q18 If Have you been living in the Netherlands for the past year? = Yes

For how long have you been living in the Netherlands (in years)?

_____

End of Block: Introduction

Start of Block: Neuroticism

To what extent do the following descriptions apply to you?
I see myself as someone who...

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Is depressed, blue	○	○	○	○	○
Is relaxed, handles stress fine	○	○	○	○	○
Can be tense	○	○	○	○	○
Worries a lot	○	○	○	○	○
Is emotionally stable, not easily upset	○	○	○	○	○
Can be moody	○	○	○	○	○
Remains calm in tense situations	○	○	○	○	○
Gets nervous easily	○	○	○	○	○

End of Block: Neuroticism

Start of Block: Conscientiousness

To what extent do the following descriptions apply to you?
I see myself as someone who...

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Does a thorough job	○	○	○	○	○
Can be somewhat careless	○	○	○	○	○
Is a reliable worker	○	○	○	○	○
Tends to be disorganized	○	○	○	○	○
Tends to be lazy	○	○	○	○	○
~~Perserves~~Preserves until the task is finished	○	○	○	○	○
Does things efficiently	○	○	○	○	○
Makes plans and follows through with them	○	○	○	○	○
Is easily distracted	○	○	○	○	○

End of Block: Conscientiousness

Start of Block: Attitude

Please indicate what the COVID-19 regulations mean to *you*, and what *you* think of them.

Please mind that the answering scale has changed.

	Bad	Moderately bad	Slightly bad	Neither good nor bad	Slightly good	Moderately good	Good	Unpleasant	Moderately unpleasant	Slightly unpleasant	Neither pleasant nor unpleasant	Slightly pleasant	Moderately pleasant	Pleasant
Wearing a mask when driving public transports, for me is	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Social distancing is	○	○	○	○	○	○	○	○	○	○	○	○	○	○
The curfew, as a way to reduce COVID-19 cases is	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Implementing frequent hand washing is	○	○	○	○	○	○	○	○	○	○	○	○	○	○
The regulations enacted by the Dutch government are	○	○	○	○	○	○	○	○	○	○	○	○	○	○

End of Block: Attitude

Start of Block: Subjective Norm

Please indicate what the COVID-19 means for your environment and the people around you.
Please mind that the answering scale has changed.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Most people close to me comply to the regulations enacted by the Dutch government	○	○	○	○	○	○	○
People in my environment are wearing masks frequently	○	○	○	○	○	○	○
My friends and family practice social distancing conscientious	○	○	○	○	○	○	○
During the curfew, most people I know complied with the curfew	○	○	○	○	○	○	○
Most people think it is important to wash your hands frequently	○	○	○	○	○	○	○

End of Block: Subjective Norm

Start of Block: Perceived Behavioural Control

Please indicate whether you find it hard to adhere to the measurements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I find it difficult to adhere to the regulations enacted by the government	○	○	○	○	○	○	○
It’s hard to wear masks regularly	○	○	○	○	○	○	○
I am confident that I am able to practice social distancing when needed	○	○	○	○	○	○	○
I am confident that I am able to adhere to the curfew when it is enacted	○	○	○	○	○	○	○
It is hard for me to wash my hands frequently	○	○	○	○	○	○	○

End of Block: Perceived Behavioural Control

Start of Block: Intention

Please indicate *your* willingness to ~~fulfill~~fulfil the regulations.

Please mind that the answering scale has changed.

	Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
I intent to adhere to the regulations enacted on the public	○	○	○	○	○	○	○
I plan to wear masks when the government oblige it for safety	○	○	○	○	○	○	○
I intent to adhere to social distance regulations	○	○	○	○	○	○	○
I plan to adhere to future curfews	○	○	○	○	○	○	○
I intent to wash my hands as frequently as possible	○	○	○	○	○	○	○

End of Block: Intention

Start of Block: Trust in government

In your opinion, to what extend are the following descriptions applicable to the Dutch government?

When it comes to COVID-19...

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
The Dutch government is capable	○	○	○	○	○
The Dutch government is effective	○	○	○	○	○
The Dutch government is ~~skillful~~skilful	○	○	○	○	○
The Dutch government is expert	○	○	○	○	○
The Dutch government carries out its duty very well	○	○	○	○	○

In your opinion, to what extend are the following descriptions applicable to the Dutch government?

If citizens need help...

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
The Dutch government will do its best to help them	○	○	○	○	○
The Dutch government acts in interest of citizens	○	○	○	○	○
The Dutch government is genuinely interested in the wellbeing of their inhabitants	○	○	○	○	○

In your opinion, to what extend are the following descriptions applicable to the Dutch government?

In my opinion...

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
The Dutch government approaches citizens in a sincere way	○	○	○	○	○
The Dutch government is genuine	○	○	○	○	○
The Dutch government keeps its promises	○	○	○	○	○
The Dutch government is honest	○	○	○	○	○

End of Block: Trust in government

Start of Block: Actual Behaviour

The following statements refer to possible protective behaviours that you may or may not have exhibited to prevent further spread of the COVID-19 outbreak.

Please indicate whether you have or have not applied these measures in the past month due to the viral outbreak:

	Always	Most of the time	About half the time	Sometimes	Never
Reduced the amount you go to school, college, ~~university~~university, or work	○	○	○	○	○
Cancelled or postponed a social event such as meeting friends, eating out or going to a sports event	○	○	○	○	○
Reduced the use of or changed the way you use public transport	○	○	○	○	○
Reduced the amount you go to shops	○	○	○	○	○
Kept away from crowded places	○	○	○	○	○
Cleaned or disinfected things you might touch (such as doorknob or hard surfaces) more often than usual	○	○	○	○	○
Carried sanitizing hand gel with you when out and about	○	○	○	○	○
Used sanitising hand gel to clean your hands, more often than usual	○	○	○	○	○
Reduced the amount you touch your eyes, nose and/or mouth	○	○	○	○	○
Followed a healthy diet or took vitamin supplements	○	○	○	○	○
Tried to avoid people who have the cold or corona-like symptoms	○	○	○	○	○
Usually carried tissues with you when out and about	○	○	○	○	○

Usually used tissues when sneezing or coughing	○	○	○	○	○
Washed your hands with soap and water more often than usual	○	○	○	○	○

End of Block: Actual Behaviour

Start of Block: Debriefing

Debriefing

Thank you for your participation in this study. As COVID-19 is spreading, it is important to tackle the pandemic as a collective effort. It is necessary that everyone practices precautionary measures, young citizens, as well as elderly people. The goal of this study was to understand whether the personality and trust in the Dutch government influences young adults' compliance to COVID-19 measurements. Specifically, two personality traits; conscientiousness and neuroticism, where investigated.

Your participation is greatly appreciated by the researchers involved. The data collected could possibly help designing interventions that may increase the adherence of young adults to COVID-19 measurements. If you have any questions about this study, please contact Nell Royal (**n.royal@student.utwente.nl**).

As indicated at the beginning, all data is kept anonymous and treated confidential. Now, that you have read the debriefing, do you still consent with your participation?

○ Yes, I consent

○ No, I want to withdraw from this study

In case that you would like to receive the final report when it is finished, please put your email address below. However, it is not mandatory to do so. Thank you!

_____

End of Block: Debriefing

Appendix C

Table 7. Reliability and validity statistics of the scales

Scale	Cronbach's Alpha	Kaiser-Meyer-Olkin Measure	Bartlett's Test of Sphericity (p)	N of Items
Neuroticism	.85	.84	.00**	8
Conscientiousness	.80	.78	.00**	9
Trust	.95	.90	.00**	12
Attitude (bad)	.87	.78	.00**	5
Attitude (unpleasant)	.79	.78	.00**	5
Subjective Norm	.81	.80	.00**	5
PBC	.80	.78	.00**	5
Intention	.92	.89	.00**	5
Adherence	.89	.87	.00**	14

*Note. **p<.01. significant at the 0.01 level.*

Table 8. Rotated Component Matrix for the scale measuring neuroticism.

	Component	
	Mood	Nervousness
Can be moody	.787	
Can be tense	.721	.231
Is depressed. blue	.694	.267
Is emotionally stable, not easily upset	.632	.551
Worries a lot	.596	.565
Gets nervous easily		.810
Remains calm in tense situations	.165	.782
Is relaxed. handles stress fine	.444	.601

Note. Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table 9. Rotated Component Matrix of the scale measuring conscientiousness.

	Component	
	Work conscience	Work efficacy
Does a thorough job	.782	.108
Is a reliable worker	.767	.129
Preserves until the task is finished	.720	.287
Can be somewhat careless	.614	.148
Tends to be lazy	.585	.275
Does things efficiently		.851
Makes plans and follows through with them	.401	.753
Tends to be disorganized	.150	.595
Is easily distracted	.318	.507

Note. Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table 10. Rotated component matrix with factor loadings derived from factor analysis of the scale "trust".

	Component	
	Benevolence	Competence
The Dutch government is genuinely interested in the wellbeing of their inhabitants	.879	.203
The Dutch government acts in interest of citizens	.854	.244
The Dutch government approaches citizens in a sincere way	.840	.326
The Dutch government is genuine	.822	.317
The Dutch government will do its best to help	.820	.213
The Dutch government is honest	.759	.378
The Dutch government keeps its promises	.631	.393
The Dutch government is expert	.170	.889
The Dutch government is effective	.244	.855
The Dutch government is ~~skillful~~skilful	.305	.831
The Dutch government is capable	.407	.809
The Dutch government carries out its duty very well	.404	.803

Note. Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table 11. Rotated component matrix with factor loadings derived from factor analysis of the scale measuring behaviour.

	Component			
	Hygiene	Social distancing	Tissues	New habits
Q15.8R	.845	.134	.119	.198
Q15.9R	.838	.133	.200	.109
Q15.7R	.780		.390	
Q15.14R	.759	.393	.147	.159
Q15.6R	.699	.187	.345	
Q15.11R	.614	.452	-.135	.136
Q15.5R	.573	.521		.355
Q15.4R	.259	.853		.101
Q15.2R	.121	.814	.285	
Q15.13R	.268		.817	
Q15.12R	.244	.252	.790	.168
Q15.1R		.168		.764
Q15.10R		-.189	.392	.642
Q15.3R	.300	.408	-.144	.608

Note. Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Appendix D

Table 12. Tests of Normality for the variables.

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Conscientiousness	.06	85	.20*	.99	85	.49
Neuroticism	.09	85	.06	.98	85	.17
Trust in government	.07	85	.20*	.97	85	.07
Attitude	.10	85	.03	.94	85	.00
Subjective norm	.14	85	.00	.94	85	.00
PBC	.14	85	.00	.90	85	.00
Intention	.21	85	.00	.81	85	.00
Adherence	.06	85	.20*	.97	85	.05

*Note. *. This is a lower bound of the true significance*.

Figure 3. Histogram of distribution and Q-Q plot of observation and expected observations of the variable conscientiousness.

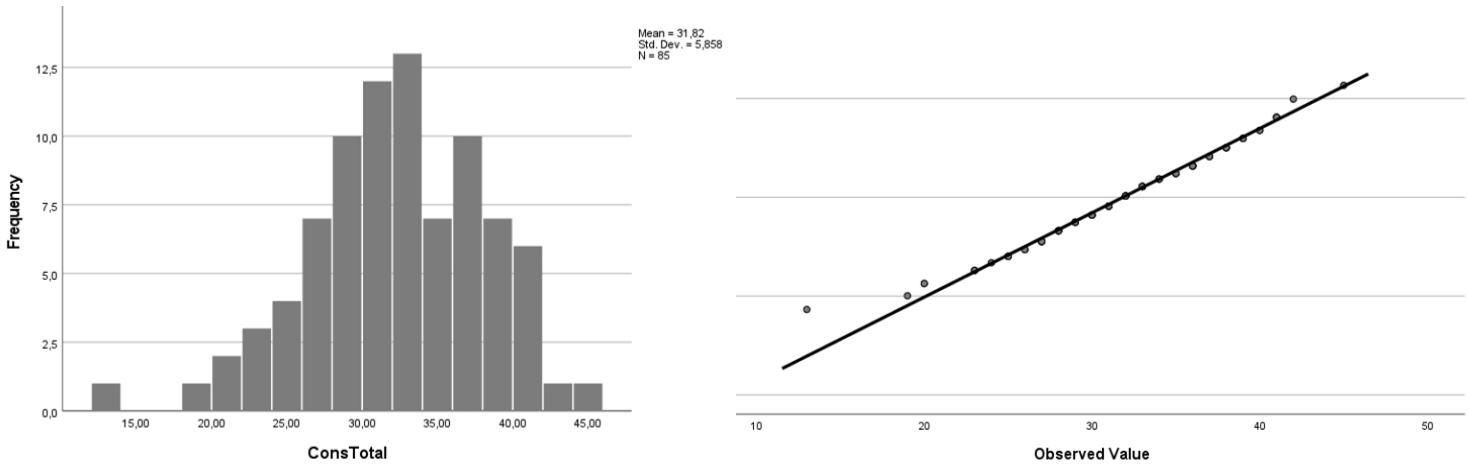

Figure 4. Histogram of distribution and Q-Q plot of observation and expected observations of the variable neuroticism.

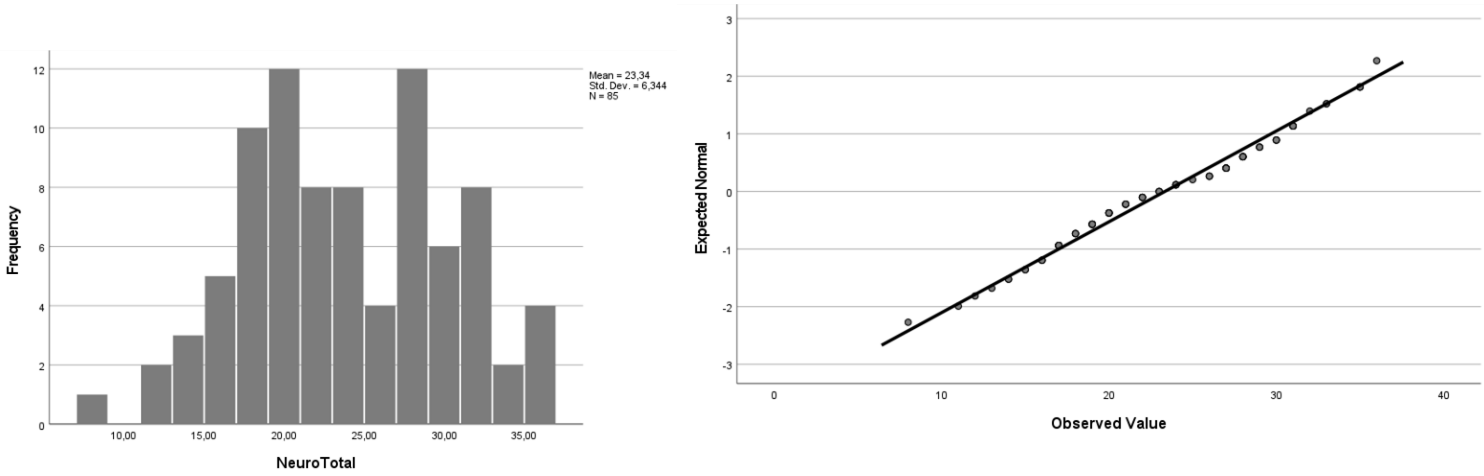

Figure 5. Histogram of distribution and Q-Q plot of observation and expected observations of the variable trust in government.

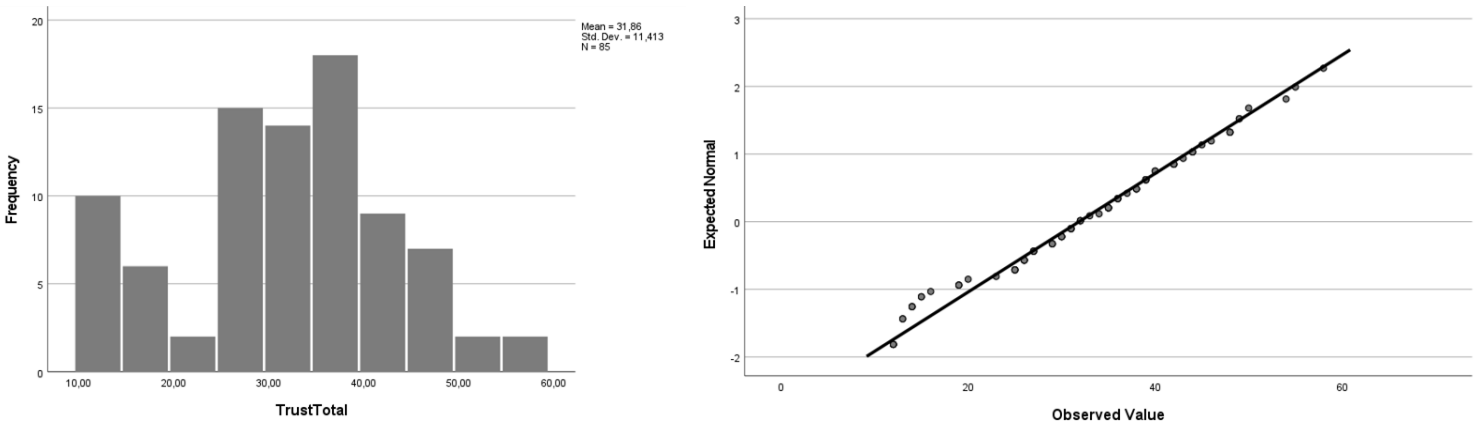

Figure 6. Histogram of distribution, and Q-Q plot of observation and expected observations of the variable attitude.

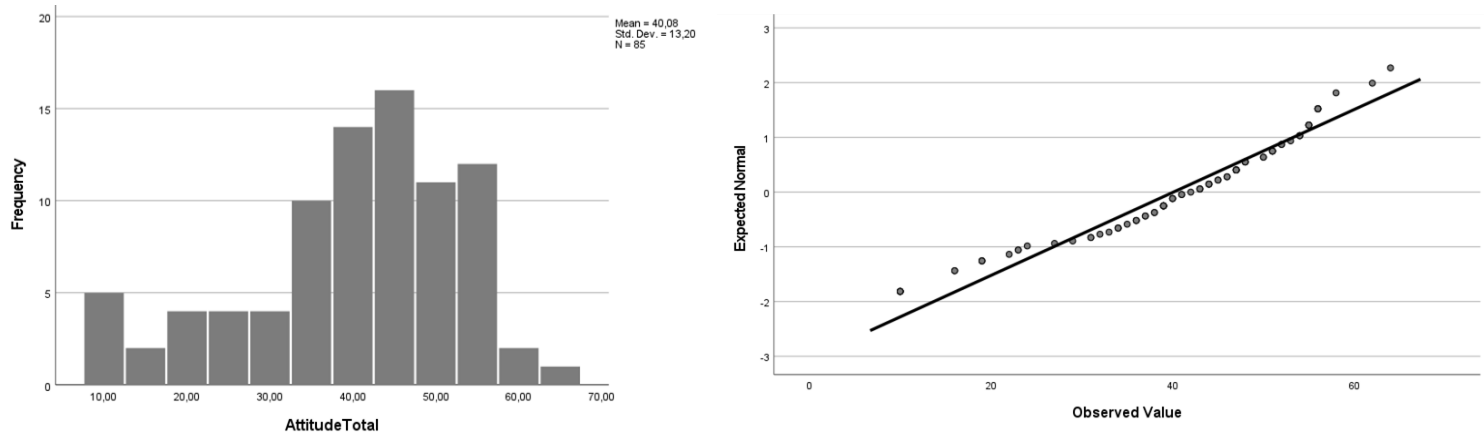

Figure 7. Histogram of distribution, and Q-Q plot of observation and expected observations of the variable subjective norm.

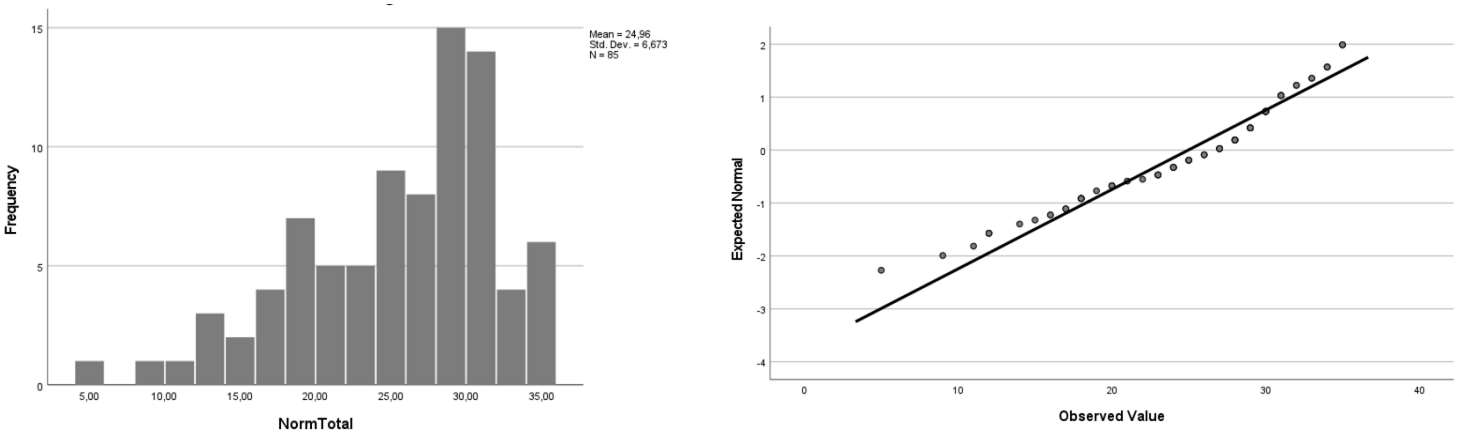

Figure 8. Histogram of distribution, and Q-Q plot of observation and expected observations of the variable perceived behavioural control.

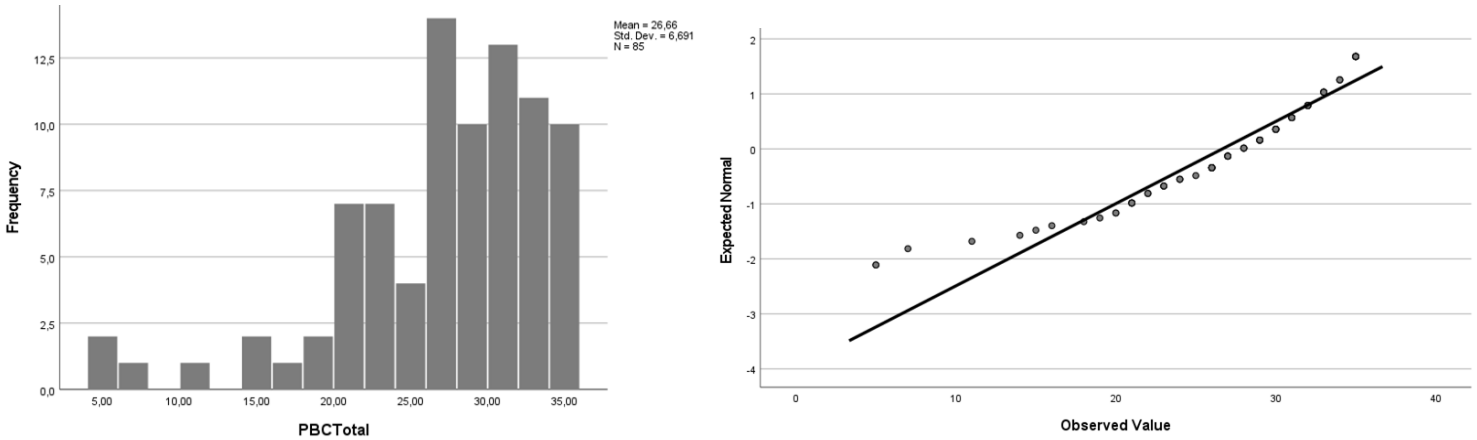

Figure 9. Histogram of distribution, and Q-Q plot of observation and expected observations of the variable intention.

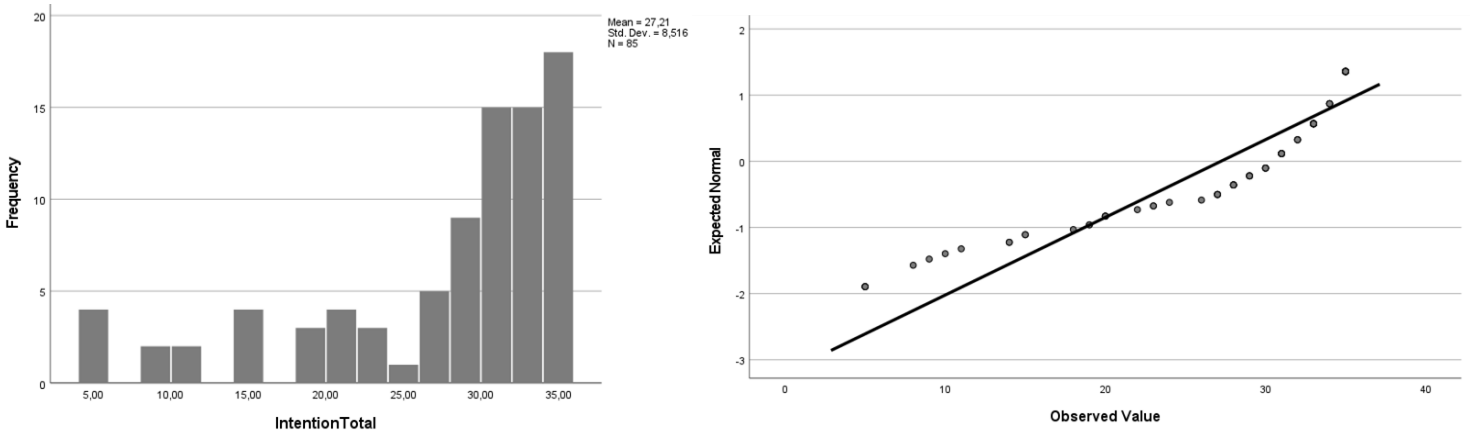

Figure 10. Histogram of distribution, and Q-Q plot of observation and expected observations of the variable adherence.

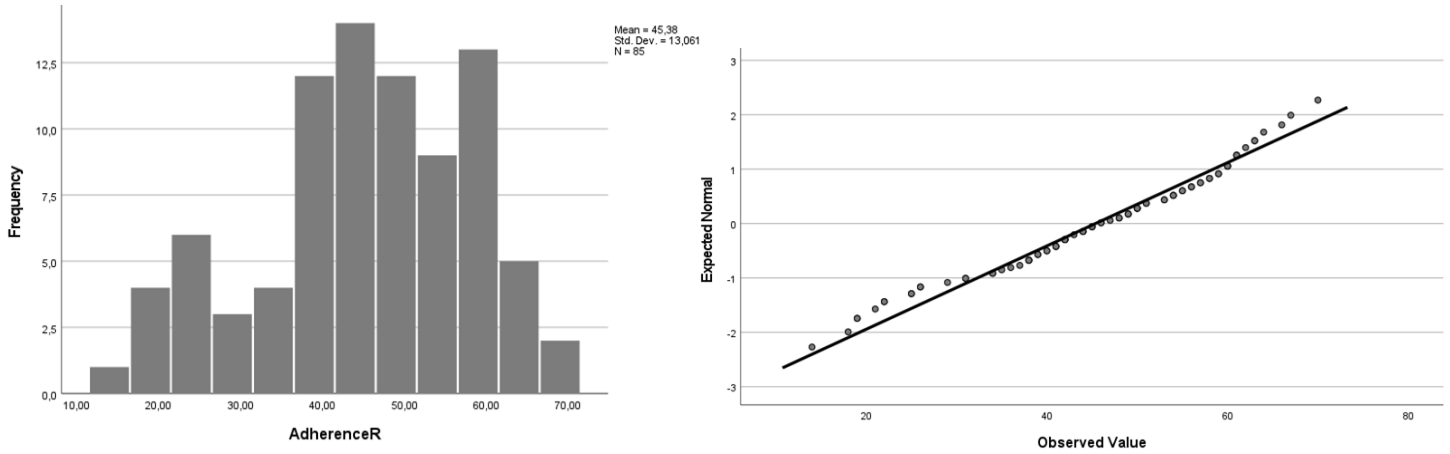

Table 13. Coefficients of determination of the predictor's conscientiousness and neuroticism with different dependent variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1[a]	.25	.06	.04	6.53
2[b]	.13	.02	-.00	13.25
3[c]	.13	.02	-.00	6.71

a. Dependent Variable: Subjective Norm
b. Dependent Variable: Attitude
c. Dependent Variable: PBC

Table 14. Analysis of Variance of the predictor's conscientiousness and neuroticism with different dependent variables

Model		Sum of Squares	df	Mean Square	F	Sig.
1[a]	Regression	241.708	2	120.854	2.832	.065[b]
	Residual	3499.186	82	42.673		
	Total	3740.894	84			
2[b]	Regression	231.33	2	115.67	.66	.52
	Residual	14405.09	82	175.67		
	Total	14636.42	84			
3[c]	Regression	62.42	2	31.21	.69	.50
	Residual	3698.68	82	45.11		
	Total	3761.11	84			

a. Dependent Variable: Subjective Norm
b. Dependent Variable: Attitude

c. Dependent Variable: PBC

Table 15. Analysis of Variance of Trust (IVM), Attitude (IV), and Behaviour Intention (DV)

	Sum of Squares	df	Mean Square	F	p
Regression	4780.48	3	1593.49	98.40	.00[b]
Residual	1311.71	81	16.19		
Total	6092.19	84			

a. Dependent Variable: Intention

b. Predictors: (Constant), Moderator Attitude*Trust, Trust, Attitude

Table 16. Analysis of variance between intention, ~~attitude~~attitude, and trust, with trust split up in tertile groups.

Trust Tertile Group		Sum of Squares	df	Mean Square	F	Sig.
No trust	Regression	2377.80	1	2377.80	107.93	.00[b]
	Residual	616.87	28	22.03		
	Total	2994.67	29			
Little trust	Regression	596.92	1	596.92	27.78	.00[b]
	Residual	537.08	25	21.48		
	Total	1134.00	26			
Highest trust	Regression	114.46	1	114.46	16.13	.00[b]
	Residual	184.50	26	7.10		
	Total	298.96	27			

a. Dependent Variable: Intention

b. Predictors: (Constant). Attitude

Table 17. Analysis of variance between adherence and intention.

	Sum of Squares	df	Mean Square	F	Sig.
Regression	7986.25	1	7986.25	104.49	.00[b]
Residual	6343.70	83	76.43		
Total	14329.95	84			

a. Dependent Variable: Adherence

b. Predictors: (Constant). Intention

Table 18. Analysis of variance between factors of the theory of planned behaviour.

	Sum of Squares	df	Mean Square	F	Sig.
Regression	5142.93	3	1714.31	146.28	.00[b]
Residual	949.26	81	11.72		
Total	6092.19	84			

a. Dependent Variable: Intention

b. Predictors: (Constant). Trust. Social Norm. PBC. Attitude

Table 19. Coefficients of the variables related to the theory of planned behaviour.

	Unstandardized Coefficients		Standardized Coefficients				
	B	Std. Error	Beta	t	Sig.	R^2	Adjusted R^2
(Constant)	-3.25	1.63		-1.99	.05	.84	.84
PBC	.44	.09	.34	4.61	.00		
Subjective Norm	.22	.07	.17	2.98	.00		
Attitude	.33	.04	.51	7.80	.00		

Note. Dependent Variable: Intention

Table 20. Coefficients of analysis testing trust as a moderator of the relation between subjective norm and intention, and PBC and intention.

	Unstandardized Coefficients		Standardized Coefficients				
	B	Std. Error	Beta	t	Sig.	R^2	Adjusted R^2
(Constant)	28.01	.43		65.69	.61	.86	.85
Attitude (Mean Centred)	.23	.05	.36	4.73	.00		
Subjective Norm (Mean Centred)	.19	.08	.15	2.59	.01		
PBC (Mean Centred)	.45	.10	.34	4.54	.00		
Trust (Mean Centred)	.10	.04	.14	2.51	.01		
Subjective Norm*Trust	-.01	.00	-.08	-1.44	.15		
PBC*Trust	.01	.01	.06	.87	.39		
Attitude*Trust	-.01	.00	-.18	-2.73	.01		

Table 21. Analysis of variance of relationship between sex and adherence.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1205.63	1	1205.63	8.04	.00*
Within Groups	12589.30	84	149.9		
Total	13794.93	85			

Note. *. Significant at 0.05 level.

Table 22. Analysis of variance of relationship between sex and adherence.

					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
Male	43	41.7	11.1	1.69	38.25	45.09	19.00	66.00
Female	43	49.2	13.3	2.02	45.08	53.25	18.00	70.00
Total	86	45.4	12.7	1.37	42.69	48.15	18.00	70.00

Table 23. Coefficients of analysis of relationship between age and adherence.

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	62.58	9.78		6.4	.00
Age	-.74	.41	-.19	-1.78	.08

a. Dependent Variable: Adherence

Table 24. Analysis of variance of relationship between educational level and adherence.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	257.16	4	64.29	.38	.82
Within Groups	13537.77	81	167.13		
Total	13794.93	85			

Table 25. Moderation effect of trust in competence

	Unstandardized Coefficients		Standardized Coefficients			R^2	Adjusted R^2
	B	Std. Error	Beta	t	Sig.		
(Constant)	26.67	1.11		24.04	.00	.76	.75
Attitude (Mean centred)	.67	.06	1.04	11.19	.00		
CompetenceTrust (Mean centred)	.09	.05	.17	1.72	.09		
Attitude*CompetenceTrust	-.01	.00	-.32	-3.91	.00		

a. Dependent Variable: Intention

Table 26. Analysis of variance of trust in competence, ~~attitude~~attitude, and intention

	Sum of Squares	df	Mean Square	F	Sig.
Regression	4780.48	3	1593.49	98.40	.00[b]
Residual	1311.71	81	16.19		
Total	6092.19	84			

a. Dependent Variable: Intention

b. Predictors: (Constant), Attitude*CompetenceTrust, CompetenceTrust, Attitude

Table 27. Moderation effect of trust in benevolence

	Unstandardized Coefficients		Standardized Coefficients			R^2	Adjusted R^2
	B	Std. Error	Beta	t	Sig.		
(Constant)	28.40	.53		53.82	.00	.77	.76
Attitude (Mean centred)	.40	.05	.63	8.24	.00		

BenevolenceTrust (Mean centred)	.16	.08	.14	2.02	.05
Attitude*Benevolence Trust	-.02	.00	-.24	-3.92	.00

a. Dependent Variable: Intention

Table 28. Analysis of variance of trust in benevolence, ~~attitude~~attitude, and intention

	Sum of Squares	df	Mean Square	F	Sig.
Regression	4811.58	3	1603.86	101.45	.00[b]
Residual	1280.61	81	15.81		
Total	6092.19	84			

a. Dependent Variable: Intention

b. Predictors: (Constant), Attitude*BenevolenceTrust, BenevolenceTrust, Attitude