

Does Narcissism Affect the Innovative Process?

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**Abstract**

The possible benefits of narcissism in the workplace have been studied by organizational scholars. The study expands on this work by looking at the relationship between narcissism and innovative behavior and the mediating roles of risk-propensity and adaptability on the relationship of narcissism and innovation. We analyse the impact of narcissism, risk-propensity, and adaptability on inventive behaviour in order to gain a better understanding of personality traits as predictors of innovation. Two studies have been conducted and results of study 1 ( $N=379$ ) and study 2 ( $N=171$ ) showed a positive effect of narcissism on innovation. In addition, a positive mediating effect from adaptability on the relationship between narcissism and innovation has been found. However, there has been no mediating effect of risk-propensity on the relationship of narcissism and innovation found.

*Keywords:* Innovation, Narcissism, Risk-Propensity, Adaptability, Personality

### **Does Narcissism Affect the Innovative Process?**

In the workplace, innovation has become an essential predictor of organizational success and long-term survival (Anderson et al., 2014; Shalley, 1995; Woodman et al., 1993). According to research, the process of idea development and execution has become a source of distinct competitive advantage (Anderson et al., 2004; West, 2002; Zhou & Shalley, 2003). Creative and innovative processes are complex, multi-layered, develop over time, and need skilled leadership to reap the benefits of new and improved methods of functioning. Researchers have been particularly interested in human traits, like personality, that distinguish inventive employees from others. While personality researchers have looked at the importance of certain qualities in predicting creative behaviour, research into trait-based antecedents of innovation (the process of putting innovative ideas into reality) is only getting started (Madrid et al., 2014; Wallace et al., 2016). This paper will address the question how *narcissism* is related to *innovative behaviour*. In order to introduce the topic accordingly, the paper begins by discussing the broad concept of *innovation*. In the following, the constructs *narcissism*, *risk-propensity* and *adaptability* and their relationships with innovative behaviour are explored. Additionally, this work is composed of two studies, which are based on the theoretical implementations of the presented work, to investigate the relationship between narcissism and innovative behaviour. It is to be emphasised that the *mediating effects* of risk propensity and adaptability on the relationship between narcissism and innovative behaviour are explored. This paper resumes by concluding the empirical findings of this study. Due to the lack of research from trait-based antecedents of innovation, this study contributes to a better understanding of innovative behaviour.

## **Innovation**

It seems that today change is frequently more rapid and inevitable due to the continuous globalization, climate change and other pressures. Especially companies must adapt to new business requirements to remain relevant. Research suggests that companies that foster innovative behaviour adapt better to continuous changes in the market and preserve their relevance in the market (Enzing et al., 2011). Employee innovation, described as the deliberate invention, promotion, and implementation of new ideas in an organization (Janssen, 2000), is critical in most modern workplaces. Organizations require employees to exert innovative behaviour and go beyond their usual job to cope with global competitiveness and environmental instability (Janssen, 2000).

According to Perry-Smith and Mannucci (2017) innovation can be described by four phases of the creative idea journey. These four phases are the idea generation, idea elaboration, idea championing and idea implementation phase. Perry-Smith and Mannucci (2017) define the idea generation phase as the process of coming up with a new, beneficial concept and the development of numerous alternative concepts (Campbell, 1960; Mednick, 1962; Simonton, 2003). This phase ends when the creator chooses a single, original concept that he or she considers to be more promising, helpful, or valuable than the alternative concepts (Amabile, 1983; Woodman et al., 1993). The second phase, the idea elaboration, is defined by the process of methodically assessing the possibilities of a novel concept, as well as further clarifying and refining it. The third phase, the idea championing, is defined by the assertive marketing of the original concept in order to receive the resources needed to put the original concept into action. Social influence is required to protect ideas from encroachment and criticism, reduce barriers of acceptability, and the persuasion of important decision makers (Anand et al. 2007; Anderson et

al., 2004; Andersson & Bateman, 2000; Chakrabarti, 1974; Chakrabarti & Hauschildt, 1989; Howell & Higgins, 1990; Schon, 1967). The last phase is defined by the idea implementation. This phase is described as the process of transforming an idea into a physical result that may then be disseminated and embraced.

Innovation seems to be driven by the desire of a company to improve the status quo or to adapt to new occurring circumstances. In order to improve the current situation a company may have to change their organisational structure, habits, values, executives, etc. Adaptability, according to Pulakos et al. (2000), is described as the ability to handle issues imaginatively and deal with events in novel ways. Individuals must observe and adjust their cognition or behaviour to enhance a regular practice or apply a unique concept, according to Anderson et al. (2014). To be more specific, in order to innovate, one must first be able to adapt. Change may lead to either improvements or deterioration of the current situation. Companies and entrepreneurs that want to pursue innovation must be willing to take risks (Kraiczy et al., 2014). The amount of risk willing to take is crucial for the firm's innovation performance since picking high risk innovative option could yield huge benefits or lead to hazardous outcomes. However, previous research on the personality-innovation relationship has primarily focused on normal range or bright personality traits (for exceptions see Goncalo et al., 2010; Schunk, 1991; Wisse et al., 2015; Zibarras). Indeed, Anderson et al. (2014) noted this issue in their recent review of the innovation literature and asked for greater research into "dark side approaches to innovation" (p. 1323). Furthermore, researcher advocate that features of narcissism, such as grandiose narcissism, appear to be associated with parts of inventive behaviour (Smith & Webster, 2018; Wisse et al., 2015). The focus of the present study lays on the impact of narcissism on innovative behaviour. Additionally,

the researchers investigate the effect of risk-propensity and adaptability on the relationship of narcissism and innovative behaviour.

### **Narcissism and its relation to innovative behaviour**

The Diagnostic and Statistical Manual of Mental Disorders-IV defines the narcissistic personality disorder as "a preoccupation with grandiose ideas of self-importance, a desire for adulation, and a lack of empathy, which develops in a variety of contexts by early adulthood" (DSM-IV; APA; p. 717, Association & Force, 2013). An inflated sense of self, delusions of power, success, and adulation, and a need to have this self-love reaffirmed by others are all part of narcissism (Kernberg, 1989; Morf & Rhodewalt, 2001). Additionally, narcissists tend to overstate their accomplishments, reject criticism, refuse to compromise, and only associate with those who like them (Campbell, 1960; Resick et al., 2009). However, narcissism is assessed in non-clinical samples in the realm of organizational psychology and is thought to appear at lower, less severe levels (Grijalva & Newman, 2015). We focus on subclinical levels of grandiose narcissism in this study, which is characterized by a strong sense of entitlement and a continual demand for attention and admiration. Furthermore, narcissists are arrogant, believe they are superior to others, and have a great desire for power, respect, and status (Nevicka et al., 2011; Raskin & Terry, 1988). Individuals with a high level of grandiose narcissism are frequently charming interaction partners who initiate a lot of superficial social engagements.

Nevertheless, narcissism is often viewed as a negative personality trait that can lead to poor job performance (Grijalva & Newman, 2015). For example, among other deviant tendencies, narcissism is a major predictor of counterproductive work behaviours (CWB) (Grijalva & Newman, 2015). Counterproductive work behaviours are voluntary actions that violate significant organizational norms and endanger the organization's or its members' well-

being (for example, theft, poor attendance, sharing confidential information, or withholding effort; Bennett & Robinson, 2000; Sackett & DeVore, 2002).

Despite the fact that the personality trait is often seen as socially undesirable, recent studies reveal narcissism may also be beneficial in organizational contexts (Wisse et al., 2015). Research has shown that narcissism is linked to increased risk-taking (Raskin & Hall, 1979; Raskin & Terry, 1988), which could be linked to innovative behaviour. Additionally, research suggest that grandiose narcissism is associated with leadership, public persuasiveness, crisis management and allied behaviours such as winning popular votes (Watts et al., 2013). Indeed, when asked to propose creative ideas, more narcissistic students are evaluated as more creative than less narcissistic students, partially because narcissists are more personable, humorous, and passionate (Goncalo et al., 2010). They pay close attention to signs about their and others' status in social situations, assessing whether they can elevate their own status or lower the status of others based on perceived social cues (Grapsas et al., 2020). Therefore, narcissism is linked to impression management. Impression management is a set of interacting activities that enable people to gain and maintain favourable pictures of themselves in the eyes of others (Liao et al., 2019). Additionally, Research suggest that the emergence of leadership is dependent on the alignment of people's perceptions of leadership qualities and the presence of these qualities in a person. Intelligence, dominance, high self-esteem, extraversion, confidence, and generalized self-efficacy are some of the key characteristics associated with leadership emergence (Judge et al., 2002; Paunonen et al., 2006; J. A. Smith & Foti, 1998). According to research narcissism is linked to high levels of dominance and power (Carroll, 1987; Emmons, 1989), confidence (Campbell et al., 2004; Robins & Beer, 2001), self-esteem (Emmons, 1989), self-efficacy (Watson et al., 1991), extraversion, and appear to others smarter than average (Paulhus, 1998).

As a result, narcissistic people exhibit the majority of the prototypical leadership characteristics, implying that they are likely to emerge as leaders in a variety of situations. Hence, Therefore, narcissism is linked to faster promotion, possibly because narcissists engage in far more self-promotion (Vries & Miller, 1986), impression management (Vohs et al., 2005), and other forms of self-promotion to acquire benefits from their superiors. One may conclude that narcissists are good in reading social situations and adapting their behavior to elicit favorable social settings for them.

As mentioned earlier one crucial factor for successful change is to persuade others of its importance. According to Perry-Smith & Mannucci (2017), during the championing phase, one must push an idea in order to gather the necessary resources. Narcissists may elicit good evaluations of their proficiency in idea promotion since they are excellent at persuading people to agree with them (also see Watts et al., 2013). Promoting creative ideas necessitates engagement with others. This gives the narcissistic individual a platform to shine, which they require in order to maintain their grandiose self-image (Nevicka et al., 2011). According to research (Gerstner et al., 2013), CEO narcissism is also positively associated with managerial attention to, and adoption of biotechnical developments. Narcissists' tremendous confidence permits them to spend aggressively in new technologies, or they expect such investments to be perceived as courageous and worthy of respect, according to some explanations (Wisse et al., 2015). This supports the notion that narcissists are inclined to take risks which is vital for innovative behaviour and may be beneficial for early stages of the innovative process.

In summary, it can be stated that narcissism and further aspects, such as risk-propensity or adaptability, could be beneficial for innovative behaviour. In order to investigate this assumption further, the construct narcissism will be empirically examined and its effects on



innovative behaviour will be noted. Furthermore, the impact of risk-propensity and adaptability on the relationship on narcissism and innovative behaviour will be examined empirically.

### **The Mediating Effect of Risk-Propensity**

Risk-propensity is described as a person's proclivity to take risks, which research has shown to affect decision-making (Bracha & Brown, 2012). According to the risk-propensity literature, risk-propensity has a positive impact on risky decisions and new endeavours, such as innovation (Das & Joshi, 2007; Weber & Milliman, 1997). Organizations must determine whether or not to implement innovation in order to remain successful (Anderson et al., 2014; Shalley, 1995; Woodman et al., 1993). The way to a firm's competitive advantage is through innovation (Lengnick-Hall, 1992), yet the process entails uncertainty and risk-taking.

Several studies have connected narcissistic personality to increased risk-taking (Raskin & Hall, 1979; Raskin & Terry, 1988). When selecting whether to engage in dangerous behaviours such as gambling Lakey et al. (2008) claim that narcissists focus on the prospective benefits while dismissing the potential hazards. In other words, narcissists' myopic fixation on reward contributes to their proclivity for risk-taking. Narcissists engage in problematic behaviours not because they are insensitive or otherwise fail to see the possible consequences of their actions. Rather, narcissists participate in these behaviours because the allure of potential rewards is too strong to resist. Simply said, narcissists engage in problematic behaviours due to an excess of enthusiasm rather than a lack of restraint. This suggests that there are individual differences in the approach to risky behaviour. However, as mentioned earlier risk taking is a crucial component of perusing new endeavours such as innovation (Das & Joshi, 2007; Weber & Milliman, 1997).

In organizations, like in other places, change entails transitioning from a known to an unknown condition (Smith, 2005). Change entails letting go of one's old methods of doing things in order to embrace new ones. Therefore, the change threatens the status quo in the workplace, as well as workers' and work groups' beliefs and perceptions of their rights. Following new endeavours may affect employees in a variety of ways. Change might be either refreshing or thrilling for some people. Others, may be more cautious, wanting to test and study changes before moving forward. This suggests an additional difference of personality traits in the approach of change. One may argue that an increased willingness to take risks is linked to an increased willingness for change, such as innovation. Nevertheless, one must adapt the amount of risk to be taken in order to select the right option for new endeavours. Selecting a too risky option for example may yield great success but may also be fatal for business.

However, narcissists seem to have a great ability to read social settings (Grapsas et al., 2020) to adapt and align their behaviour to preserve favourable images of themselves in others (Liao et al., 2019).

### **The Mediating Effect of Adaptability**

According to Pulakos et al. (2000) adaptability may be described as the ability to handle issues imaginatively and deal with events in novel ways. Adaptability has been found to be an important professional trait (Jundt et al., 2015). In order to succeed in times of continuous change employees may be able to adapt their performance to new or changed work demands. Individuals must observe and adjust their cognition or behaviour to enhance a regular practice or apply a unique concept (Anderson et al., 2014). Adaptation can be therefore seen as a critical component of innovation. To be more specific, in order to innovate, one must first be able to adapt. Adaptation necessitates motivated action, which entails not only the capacity to adapt but

also the desire to accept risks (Ployhart & Bliese, 2006). However, everyone has a different inclination to take risks. According to this, individual differences should have an impact on one's view of one's own ability to adapt.

Self-reported adaptability refers to one's self-assessed cognitive and emotional control in a variety of scenarios, including crises, social interactions, and ambiguous situations (Ployhart & Bliese, 2006; Pulakos et al., 2000). Furthermore, research suggest that adaptation is voluntary, implying that effective adaptation is not a coincidental phenomenon (Ployhart & Bliese, 2006; Pulakos et al., 2000). As mentioned earlier studies suggest that narcissist favour rewards over potential losses which inclines them to engage in risky behaviour (Lakey et al., 2008) and enables them to adapt to new situations. Since research has linked narcissism to leadership, public persuasiveness, crisis management and allied behaviours such as winning popular votes (Watts et al., 2013) one may argue that narcissistic traits relate to adaptable behaviour in social settings. The idea championing phase of the innovative process requires social influence to acquire necessary resources (Perry-Smith & Mannucci, 2017). Due to the fact that narcissism is linked to adapting and aligning behaviour to preserve favourable images of the self in others (Liao et al., 2019), one may argue that narcissistic traits may benefit the innovative process. Hence, we suggest that narcissism is linked to innovation indirectly through higher levels of self-perceived adaptability.

### **The Present Study**

The present study aims to investigate how narcissism, risk-propensity and adaptability are related to innovative process. Therefore, the researcher states the following hypothesis:

*H*<sub>1</sub>: Narcissism is positively related to innovative behaviour.

Research suggest that narcissist have an inclination towards risky behaviour (Campbell et al., 2004). Since companies and entrepreneurs that want to pursue innovation must be willing to take risks (Kraiczy et al., 2014) it seems logical that narcissism might be linked to innovative behaviour through a bigger inclination towards risk taking. Hence the researchers state the following hypothesis:

*H<sub>2</sub>*: The relationship between narcissism and innovative behaviour is mediated by risk-propensity.

Adaptation is a critical component of innovation. Individuals must observe and adjust their cognition or behaviour to enhance a regular practice or apply a unique concept (Anderson et al., 2014). Narcissist seem to have a great ability to read social settings (Grapsas et al., 2020) and adapt and align their behaviour to preserve favourable images of themselves in others (Liao et al., 2019). Consequently, the researches state the following hypothesis.

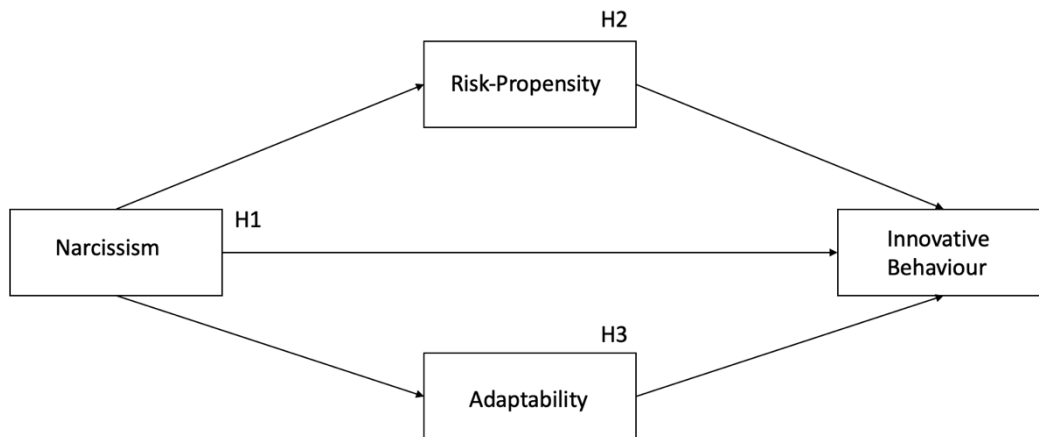
*H<sub>3</sub>*: Narcissism and innovative behaviour is mediated by self-perceived adaptability.

The above-mentioned hypotheses are summarized in a research model in figure 1. To test these hypotheses two studies are conducted in which the research focusses first on first year-psychology students and consecutively on PhD students. The researchers focus on PhD students to increase external validity because PhD students ought to be inventive to broaden the knowledge of their respective scientific field of expertise. In both studies the relationship of narcissism and innovation is investigated, as well as the mediating effects of risk-propensity and adaptability. In Study 1, undergraduate students from the University of Groningen were asked to participate in this study in exchange for study credits. The participants self-reported their narcissism (Jones & Paulhus, 2013), self-perceived risk-propensity (Wagner & Schupp, 2005), their self-perceived adaptability (Ployhart & Bliese, 2006), self-perceived innovation (Janssen,

2000). Study 2 aims to replicate study 1 by presenting the same questionnaire to PhD students from thirteen different Universities around the world.

### Figure 1

*Research model for the current study*



### Study 1

#### Method

##### *Participants and Procedure*

Approximately 449 students from the Universities of Groningen were invited to participate in the study. First year psychology students were sampled in exchange for credits. Of 449 students who started the survey. The data of 70 participants were excluded from the statistical analysis because they left the survey incomplete. The final sample consisted of  $N=379$  first year Psychology students from the University of Groningen, including 289 women (76.3%) and 89 men (23.5%). The remaining 0.3% percent identified themselves with another gender or did not want to state their gender. Most of the surveyed first year Psychology students from the University of Groningen were between 17- and 19-years-old (52.8%), and 19- and 21-years-old

(30.3%). The final sample included participants with 61 different nationalities including Dutch (59.1%), German (22.5%), Italian (1.6%), Slovakian (1.6%). With regards to future directions, the majority of participants indicated that they would like to pursue a career in the health sector (50.1%), followed by other domains (23.7%), consulting (13.7%), and lastly education (6.1%).

The present study received approval from the Research Ethics Committee of the University of Groningen Behavioural and Science department in November 2020. The data collection took place from January to February 2021. First year psychology students were recruited through the SONA system. The welcoming screen announced a study about personal characteristics linked to innovative behaviour. Information about narcissism were deceived because the researchers wanted to prevent socially desirable responses from students. At the outset of the survey, the participants were informed about the purpose of the study and their rights. If the participant agreed with the terms, they had to give their informed consent before proceeding to share demographic information about their age, gender, nationality, education, and career prospects. Participants continued and answered questions about narcissism, risk-taking, adaptability, and attitudes towards innovative work behaviour. All measures were completed on the online platform Qualtrics. Finally, respondents received credits in exchange for their participations.

## **Measures**

### ***Narcissism***

The short dark triad instrument (Jones & Paulhus, 2013) is a 27-item self-report scale that is well established and used to measure self-declared attitudes towards the dark-triads. In this study the researchers only used the items measuring narcissism which led to a nine-item self-report scale ( $\alpha = .74$ ). The researchers improved the theoretical foundation created by Kernberg

(1985) and Kohut (1978) by creating a shorter scale with improved reliability and validity. Example items included “People see me as a natural leader.” or “Those with talent and good looks should not hide them.”. The participants indicated their agreement with the statements on a 5-point Likert scale ranging from 1 = Disagree strongly to 5 = Agree strongly. All items were averaged to form a single score that indicates narcissism, with a higher score indicating higher levels of narcissism.

### ***Risk-Propensity***

Risk-propensity items which were back-translated from German into English from SOEP 2014 – “Erhebungsinstrumente 2014 (Welle 31) des Sozio-Ökonomischen Panels: Personfragenbogen, Altstichproben.” (Wagner & Schupp, 2005). Participants received three items investigating one’s risk-propensity ( $\alpha = .76$ ). The first question investigates respondents’ desire to take risks on a scale from zero to one hundred, with zero indicating risk aversion and hundred indicating risk inclination. The second item studies risk-propensity of six different scenarios in which participants had to indicate, on a continuous scale from zero to one hundred, how much they were inclined to take risks, with zero indicating risk aversion and one hundred indicating risk inclination. Scenarios presented were for example driving a car or investing money. The last item presented participants with an imaginary situation in which one had to indicate on a, six-point Likert-scale, how much money they were willed to invest and risk from a lottery win into a potential lucrative investment, ranging from the whole amount to nothing at all. All items were averaged to form a single score that indicates propensity.

### ***Adaptability***

The participants were asked to rate their adaptability using a modified 18-item measure established by Ployhart and Bliese (2006). On a 5-point Likert scale, participants evaluated how

well the offered statements represented them, ranging from 1 = Disagree strongly to 5 = Agree strongly ( $\alpha = .85$ ). Three aspects of flexibility make up this scale: adaptability to creativity (e.g., "I see connections between seemingly unrelated information."), crisis adaptability (e.g., "I am able to during emergencies."), and interpersonal adaptability (e.g., "I believe it is important to be flexible in dealing with others.") are the major dimensions. All items were averaged to form a single score that indicates adaptability tendencies, with a higher score meaning higher levels of adaptability.

### ***Innovative Behaviour***

Innovative work behaviour was investigated by the nine – item scale of individual innovative behaviour at the workplace (Janssen, 2000). The items are clustered into three subscales of the innovative process: three items for idea generation, three items for idea mobilization, and three items for idea realization ( $\alpha = .88$ ). Participants were asked to indicate on a seven-point frequency scale to what extent they agree or disagree with the presented statements, ranging from 1 = Never to 7 = Every time. Example items included “Generating original solutions for problems” or “Transforming innovative ideas into useful applications”. All items were averaged out to form a single innovation score, as well as the three separate subscales, whereby higher scores demonstrated higher levels of the characteristics.

### ***Statistical requirements***

Five assumptions were to be met for the statistical analysis of the data, which was done using correlation and a series of regression analysis using the PROCESS plugin by Hayes (Hayes, 2013). The premise of independence was first fulfilled, as the respondents' data were not linked in any manner. Second, the linearity assumption was fulfilled because straight horizontal lines could be formed across the residual forms on the scatterplots (see appendix), indicating that



the connections between the independent and dependent variables were linear. Third, the homoscedasticity requirement was fulfilled since the variance of the error components was evenly distributed among the scatterplots (see appendix).

Fourth, the assumption of normality was met, since the regression of standardized residuals show a normal distribution (see appendix). Finally, the dataset was examined for significant outliers. In this case, however, no anomalies were found since no value in the dataset surpassed the crucial thresholds for studentized residuals ( $SRE > |3|$ ) and Cook's distance ( $CD > 1$ ). The statistical analysis was confirmed by a review of the corresponding box plots, making the elimination of probable outliers unnecessary.

## Results

The bivariate correlations between the factors investigated in this study are summarized in Table 1. Cohen's (1977) guideline was used to verbally describe the strength of the correlation, suggesting that absolute values of  $r$  between .10 and .29 should be considered "small" between .30 and .49 should be considered "moderate" between .50 and 1.0 should be considered "large". The analysis of the correlation coefficients shows that the association between *narcissism* and *innovative behavior* was significantly associated with *narcissism* and showed a moderate strength  $r = .41, p = <.001$ . *Narcissism* and *risk-propensity* were significant related and described a moderate  $r = .38, p = <.001$ . The association between *narcissism* and *adaptability* was significant and described a moderate strength  $r = .46, p = <.001$ . *Risk-propensity* and *adaptability* had a significant association with a moderate strength  $r = .29, p = <.001$ . The association between *risk-propensity* and *innovative behavior* was significant with a moderate  $r = .22, p = <.001$ . Lastly, *adaptability* was significantly associated to *innovative behavior* with a moderate strength  $r = .48, p = <.001$ .

**Table 1***Descriptive, Cronbach's alpha's, and correlations for the study variables*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Narcissism	2.84	.6	(.69)	.38**	.46**	.41**
2. Risk-Propensity	43.38	15.43		(.73)	.29**	.22**
3. Adaptability	3.83	.42			(.82)	.48**
4. Innovative Behaviour	3.44	.99				(.89)

**Main Analysis**

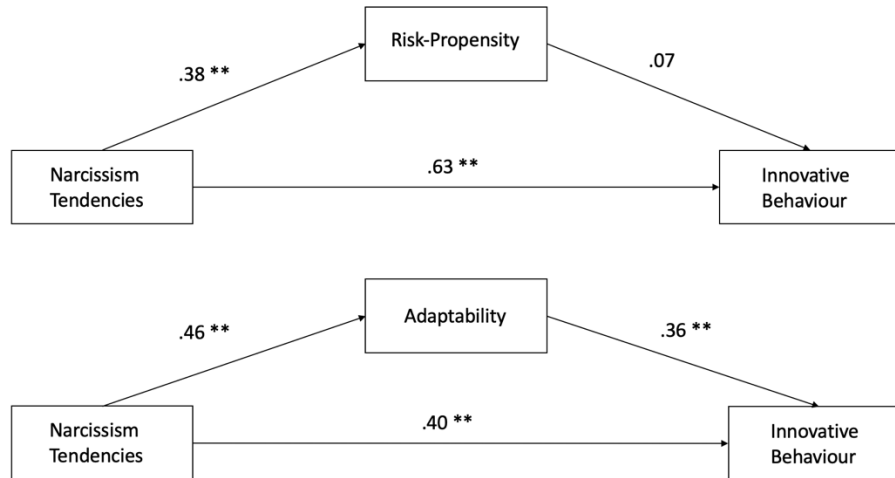
The first hypothesis, narcissism is positively related to innovative behaviour, was tested by running a correlation to predict narcissism on innovative behaviour. Narcissism explained significantly correlated to innovative behaviour,  $r = .41$ ,  $p = <.001$ . The data shows that narcissism explains 17 percent of the variance on innovation ( $R^2 = .17$ ).

The second hypothesis, the relationship between narcissism and innovative behaviour is mediated by risk-propensity, was tested by a series of regression analysis using the PROCESS plugin by Hayes (Hayes, 2013). The outcome variable for the analysis was innovative behaviour. The predictor variable for the analysis was narcissism. The mediator variable for the analysis was risk-propensity. The results show that narcissism positively predicts innovative behaviour ( $B = .68$ ,  $t = 8.79$ ,  $p <.001$ ). Analysing the indirect effect, results reveal that risk-propensity does not significantly mediate the relationship between narcissism and innovative behaviour ( $B = .05$ , 95% *CI*, -.015 to .107). Narcissism affects positively risk-propensity ( $B = 9.85$ ,  $t = 8.04$ ,  $p = <.001$ ) and risk-propensity has no real effect on innovative behaviour ( $B = .01$ ,  $t = 1.48$ ,  $p = .14$ ). Additionally, the results also suggest that after accounting for the mediating role of risk-propensity, narcissism remains a positive impact on innovative behaviour ( $B = .63$ ,  $t = 7.57$ ,  $p <.001$ ). Risk-propensity accounts for 7% of the total effect. These findings suggest that narcissistic individuals are inclined to take risks but a higher inclination to towards risks does not

result in more innovative behaviour among narcissistic individuals. However, a narcissism still contributes positively to innovative behaviour.

The third hypothesis, narcissism and innovative behaviour is mediated by self-perceived adaptability, was tested by a series of regression analysis using the PROCESS plugin by Hayes (Hayes, 2013). The outcome variable for the analysis was innovative behaviour. The predictor variable for the analysis was narcissism. The mediator variable for the analysis was adaptability. The results show that narcissism positively predicts innovative behaviour ( $B = .68, t = 8.79, p < .001$ ). Analysing the indirect effect, results reveal that adaptability significantly mediates the relationship between narcissism and innovative behaviour ( $B = .27, 95\% CI, .19 \text{ to } .36$ ). Narcissism affects positively adaptability ( $B = .32, t = 9.94, p = < .001$ ) and adaptability has a positive effect on innovative behaviour ( $B = .86, t = 7.38, p = < .001$ ). Additionally, the results also suggest that after accounting for the mediating role of adaptability, narcissism remains a positive impact on innovative behaviour ( $B = .40, t = 5.00, p < .001$ ). Adaptability accounts for 40% of the total effect. These findings suggest that narcissistic individuals are inclined to adapt and a higher inclination to towards adaptive behaviour result in more innovative behaviour among narcissistic individuals. However, a narcissism still contributes positively to innovative behaviour.

The above-mentioned hypotheses results are summarized in a research model in figure 2.

**Figure 2***Research model from study 1***Discussion**

Testing the first hypothesis, narcissism is positively related to innovative behaviour, indicated a positive relationship between narcissism and innovative behaviour. Thus, the results are consisted with the hypothesis that narcissism effects positively innovative behaviour. This supports the notion of previous research that suggest a positive link from narcissism and innovation (Kraiczy et al., 2014; M. B. Smith & Webster, 2018; Wisse et al., 2015). Since innovation encompasses to persuade important gate keepers (Perry-Smith & Mannucci, 2017) individuals have to take risks in their endeavor to persuade these gate keepers.

Reviewing the second hypothesis, the relationship between narcissism and innovative behaviour is mediated by risk-propensity, results indicate that there is no significant indirect effect of risk-propensity on the relationship of narcissism and innovative behaviour. The data shows a total effect from narcissism on innovative behaviour, which further supports the results of the first hypothesis. Looking at the effect of narcissism on risk-propensity the results indicate

a significant positive effect. Nevertheless, risk-propensity had no significant effect on innovative behaviour. In line with previous research (Raskin & Hall, 1979; Raskin & Terry, 1988) our data supports the notion that narcissistic individuals are inclined to engage in risky behaviour.

However, being inclined to take risks does not lead to more innovative behaviour. Nevertheless, research suggest that taking risk is a necessity for adaptable behaviour (Ployhart & Bliese, 2006; Pulakos et al., 2000) and that narcissistic individuals are able to adapt their behaviour well according to their personal goals (Liao et al., 2019). However, their willingness to adapt their behaviour in a collaborative manner is usually only present if group goals are aligned with their personal goals (Nevicka et al., 2011).

Lastly the third hypothesis, narcissism and innovative behaviour is mediated by self-perceived adaptability, indicated a significant indirect effect of adaptability on the relationship of narcissism and innovative behaviour. Reviewing the results of the mediating effect it supports the stated hypothesis. Aligned with previous research, this study supports the notion of a positive link between adaptability and innovation (Anderson, N., Potočnik, K., & Zhou, J.2014).

The second study is a replication of Study 1 using a different population of individuals with PhD students from various university from the Netherlands and the United States of America.

## **Study 2**

### **Method**

#### ***Participants and Procedure***

Approximately 265 PhD students from thirteen different Universities were invited to participate in the study. Five Universities were in the Netherlands and nine Universities in the United States of America. The study took PhD students from any discipline into consideration.

Of 265 PhD students started the survey. The data of 94 participants were excluded from the statistical analysis because they left the survey incomplete. The final sample consisted of  $N=171$  PhD students, including 85 women (49.7%) and 84 men (49.1%). The remaining 1.2% percent identified themselves with another gender or did not want to state their gender. Most of the surveyed PhD students were between 22- and 26-years-old (31.6%), and between 26- and 30-years-old (38.6%), and between 30- and 35-years-old (16.8%) year old. The final sample included participants with 61 different nationalities including American (25.1%), Dutch (15.2%), Chinese (9.9%), Italian (5.8%). The majority of respondents were enrolled the Delft University of Technology (31.6%), in the University of Groningen (10.4%), the Rotterdam School of Management, Erasmus University (9.9%), the Stanford University (8.8%). Furthermore, 42.7% of the students were engaged in science and engineering department of their university, 24.6% in the economics and business department, 21.6% in behavioural and social sciences department, and 4.1% in other departments of their university.

Furthermore, students were categorized according to the ranking of their universities. Students who attended universities ranked among the 50 best universities in the world were categorized as Tier 1 students. Students who attended universities ranked between 51 and 250 were categorizes as Tier 2 students. With regard to the QS World University Ranking (2021), students from Massachusetts Institute of Technology (ranked 1<sup>st</sup> in the world), University of Stanford (ranked 2<sup>nd</sup>), University of Harvard (ranked 3<sup>rd</sup>), University of Chicago (ranked 9<sup>th</sup>), University of Princeton (ranked 12<sup>th</sup>), University of Pennsylvania (ranked 16<sup>th</sup>), University of Yale (ranked 17<sup>th</sup>), Cornell University (ranked 18<sup>th</sup>), fell into the first category. Students from the University of Delft (ranked 52<sup>th</sup>), University of Amsterdam (ranked 61<sup>st</sup>), University of Utrecht (ranked 121<sup>st</sup>) University of Groningen (ranked 128<sup>th</sup>), and University of Rotterdam (ranked

197<sup>th</sup>) fell into the second category. With regards to future directions, the majority of participants indicated that they would like to pursue a career in the health sector (50%), followed by other domains (23.7%), consulting (13.7%), and lastly education (6.1%).

The present study received approval from the Research Ethics Committee of the University of Groningen Behavioural and Science department in November 2020. The data collection took place from January to March 2021. About 2431 PhD students were contacted via e-mail. Contact details were found on the universities department websites. In order to increase the conversion rate (i.e., percentage of the visitors of an e-mail who take the survey), the e-mails were personalised and recipients were addressed with their first names (Sahni, Wheeler, & Chintagunta, 2018). The invitation e-mail announced a study about personal characteristics linked to innovative behaviour. The remainder of the study was replicated from study one. All measures were completed on the online platform Qualtrics. Respondents did not receive compensation for their participation.

## **Measures**

### ***Narcissism***

The same short dark triad instrument (Jones & Paulhus, 2013) is a 27-item self-report scale from study 1 was used in this study ( $\alpha = .74$ ). All items were averaged to form a single narcissism score, signifying a higher score with a more positive attitude towards narcissistic behaviour.

### ***Risk-Propensity***

The same risk-propensity items from study 1 were used (Wagner & Schupp, 2005). All items were averaged to form a single score that indicates risk tendencies, with a higher score signifying more positive attitudes towards risky behaviour ( $\alpha = .76$ ).

### ***Adaptability***

The participants were asked the same 18 adaptability item established by Ployhart and Bliese (2006). All items were averaged to form a single score that indicates adaptability tendencies, with a higher score signifying more positive attitudes towards adaptability ( $\alpha = .85$ ).

### ***Innovative Behaviour***

Innovative work behaviour was investigated by the same nine – item scale of individual innovative behaviour at the workplace from study 1 (Janssen, 2000). All items were averaged out to form a single innovative score, as well as the three separate subscales, whereby higher scores demonstrated higher levels of the innovative behaviour ( $\alpha = .88$ ).

### ***Statistical requirements***

Five assumptions were to be met for the statistical analysis of the data, which was done using correlation and a series of regression analysis using the PROCESS plugin by Hayes (Hayes, 2013). The premise of independence was first fulfilled, as the respondents' data were not linked in any manner. Second, the linearity assumption was fulfilled because straight horizontal lines could be formed across the residual forms on the scatterplots (see appendix), indicating that the connections between the independent and dependent variables were linear. Third, the homoscedasticity requirement was fulfilled since the variance of the error components was evenly distributed among the scatterplots (see appendix).

Fourth, the assumption of normality was met, since the regression of standardized residuals show a normal distribution (see appendix). Finally, the dataset was examined for significant outliers. In this case, however, no anomalies were found since no value in the dataset surpassed the crucial thresholds for studentized residuals ( $SRE > |3|$ ) and Cook's distance ( $CD >$



1). The statistical analysis was confirmed by a review of the corresponding box plots, making the elimination of probable outliers unnecessary.

## Results

The bivariate correlations between the factors investigated in this study are summarized in Table 2. The same guidelines from study 1 were used to verbally describe the strength of the correlation (Evans, 1996).

The analysis of the correlation coefficients shows that the association between *narcissism* and *innovative behavior* was significantly associated and showed a moderate strength  $r = .37, p = <.001$ . *Narcissism* and *risk-propensity* were significant related and described a moderate strength  $r = .28, p = <.001$ . The association between *narcissism* and *adaptability* were significant and described a moderate strength  $r = .32, p = <.001$ . *Risk-propensity* and *adaptability* had a significant association with a moderate strength  $r = .22, p = <.001$ . The association between *risk-propensity* and *innovative behavior* was significant with a moderate strength  $r = .23, p = <.001$ . Lastly, *adaptability* was significantly associated to *innovative behavior* with a moderate strength  $r = .29, p = <.001$ .

**Table 2**

*Descriptive, Cronbach's alpha's, and correlations for the study variables*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Narcissism	2.88	.57	(.65)	.28**	.32**	.37**
2. Risk-Propensity	41.32	16.52		(.78)	.22**	.23**
3. Adaptability	3.91	.41			(.78)	.29**
4. Innovative Behaviour	3.96	.85				(.86)

### *Main Analysis*

The first hypothesis, narcissism is positively related to innovative behaviour, was tested by running a correlation to predict narcissism on innovative behaviour. Narcissism explained significantly correlated to innovative behaviour,  $r = .37, p = <.001$ . The data shows that narcissism explains 14 percent of the variance on innovation ( $R^2 = .14$ ).

The second hypothesis, the relationship between narcissism and innovative behaviour is mediated by risk-propensity, was tested by a series of regression analysis using the PROCESS plugin by Hayes (Hayes, 2013). The outcome variable for the analysis was innovative behaviour. The predictor variable for the analysis was narcissism. The mediator variable for the analysis was risk-propensity. The results show that narcissism positively predicts innovative behaviour ( $B = .55, t = 5.14, p <.001$ ). Analysing the indirect effect, results reveal that risk-propensity does not significantly mediate the relationship between narcissism and innovative behaviour ( $B = .05, 95\% CI, -.001$  to  $.141$ ). Narcissism affects positively risk-propensity ( $B = 8.25, t = 3.85, p = .002$ ) and risk-propensity has no real effect on innovative behaviour ( $B = .01, t = 1.80, p = .07$ ). Additionally, the results also suggest that after accounting for the mediating role of risk-propensity, narcissism remains a positive impact on innovative behaviour ( $B = .49, t = 4.45, p <.001$ ). Risk-propensity accounts for 10% of the total effect. These findings suggest that narcissistic individuals are inclined to take risks but a higher inclination to towards risks does not result in more innovative behaviour among narcissistic individuals. However, a narcissism still contributes positively to innovative behaviour.

The third hypothesis, narcissism and innovative behaviour is mediated by self-perceived adaptability, was tested by a series of regression analysis using the PROCESS plugin by Hayes (Hayes, 2013). The outcome variable for the analysis was innovative behaviour. The predictor

variable for the analysis was narcissism. The mediator variable for the analysis was adaptability.

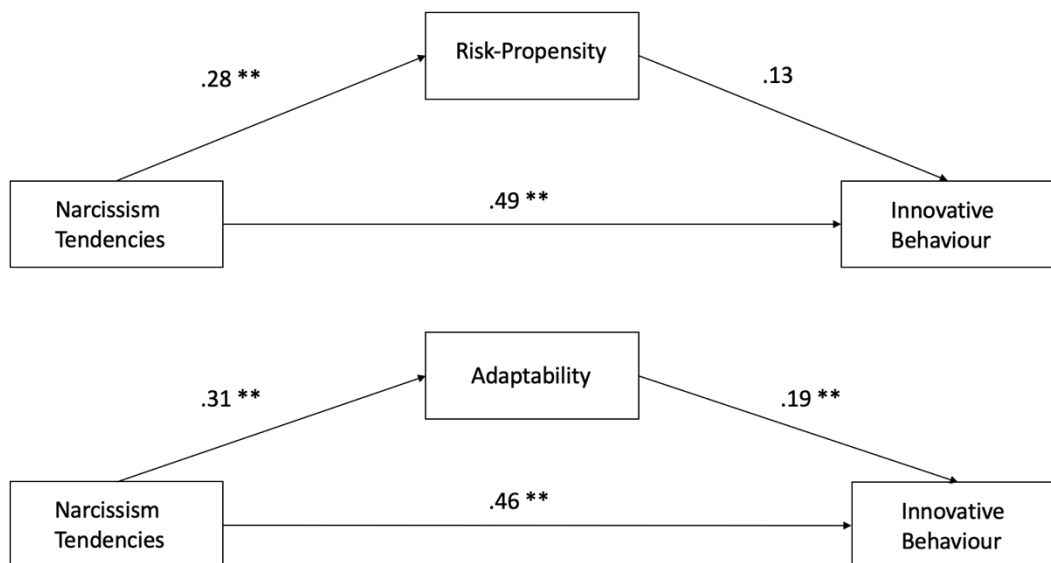
The results show that narcissism positively predicts innovative behaviour ( $B = .55, t = 5.14, p < .001$ ). Analysing the indirect effect, results reveal that adaptability significantly mediates the relationship between narcissism and innovative behaviour ( $B = .09, 95\% CI, .01$  to  $.23$ ).

Narcissism affects positively adaptability ( $B = .24, t = 4.39, p = < .001$ ) and adaptability has a positive effect on innovative behaviour ( $B = .39, t = 2.59, p = .01$ ). Additionally, the results also suggest that after accounting for the mediating role of adaptability, narcissism remains a positive impact on innovative behaviour ( $B = .46, t = 4.13, p < .001$ ). Adaptability accounts for 17% of the total effect. These findings suggest that narcissistic individuals are inclined to adapt and a higher inclination to towards adaptive behaviour result in more innovative behaviour among narcissistic individuals. However, a narcissism still contributes positively to innovative behaviour.

The above-mentioned hypotheses results are summarized in a research model in figure 2.

**Figure 2**

*Research model for study 2*



## **Discussion**

Testing the first hypothesis, narcissism is positively related to innovative behaviour, the results indicated a positive relationship between narcissism and innovative behaviour. Thus, the results are consistent with the hypothesis that narcissism impacts positively innovative behaviour and replicate the findings from study 1.

Reviewing the second hypothesis, the relationship between narcissism and innovative behaviour is mediated by risk-propensity, results indicate that there is no significant indirect effect of risk-propensity on innovative behaviour and replicate the findings from study 1.

Therefore, the notion of a mediating effect of risk-propensity on the relationship of narcissism and innovative behaviour is not supported.

The third hypothesis, narcissism and innovative behaviour is mediated by self-perceived adaptability, results indicate that there is a significant indirect effect of adaptability on innovative behaviour and replicate the findings from study 1. Therefore, the notion of a mediating effect of adaptability on the relationship of narcissism and innovative behaviour is supported.

## **Conclusion**

In this paper, the construct of narcissism was highlighted. Other constructs that were assumed to be impactful from previous research were also theoretically presented in this thesis, i.e. risk-propensity and adaptability. During this paper the theoretical foundation was laid, which serves as the basis for the formulated hypotheses. These were examined during the empirical chapter. Thus, the two presented studies ought to investigate the relationship between narcissism and innovative behavior. Additionally, the researchers investigated empirically the mediating effect of risk-propensity and adaptability on the relationship of narcissism and innovative behavior.

Both studies reveal that narcissism is linked to innovative behaviour, implying that narcissism and innovative behaviour have a positive relationship. As a result, the findings support the hypothesis that narcissism has a beneficial impact on innovative behaviour. This confirms earlier research that suggests a beneficial relationship between narcissism and innovation (Kraiczy et al., 2014; M. B. Smith & Webster, 2018; Wisse et al., 2015). Innovation requires change. Since change may also lead to resistance (Folger & Konovsky, 1989) it is important to persuade important gatekeepers of the importance of change (Perry-Smith & Mannucci, 2017). Previous research suggest that narcissist appear persuasive (Watts et al., 2013) and seek situations that enables them to display their competencies (Wallace & Baumeister, 2002). Our research deepens the knowledge for personality traits that predict innovative behavior. Since innovation encompasses to persuade important gate keepers (Perry-Smith & Mannucci, 2017) individuals have to take risks in their endeavor to persuade these gate keepers.

The findings of both research show that risk-propensity has no significant indirect effect on the relationship between narcissism and innovative behaviour. Both studies reveal that narcissism has a total effect on innovative behaviour, which confirms the positive effect of narcissism on innovation. When it comes to the impact of narcissism on risk-propensity, the findings show that it has a significant positive effect. Risk-propensity, on the other hand, had no effect on innovative behaviour. Our findings reflect the findings from prior studies (Raskin & Hall, 1979; Raskin & Terry, 1988) indicating narcissists are more likely to participate in risky behaviour. Taking risks, on the other hand, does not necessarily lead to more inventive behaviour. According to research, narcissists engage in problematic behaviours not because they are insensitive or fail to recognize the implications of their behaviour (Lahey et al., 2008). Instead, narcissists engage in risky behaviours because the appeal of possible benefits is too

powerful to ignore. Being inclined to engage in risky behaviour narcissists may fail to assess objectively a certain innovative idea for its actual utility. Narcissists may vouch for innovative ideas that benefit their personal standing in the organization rather than yielding an organisational benefit. The willingness to engage in risky behaviour may therefore increase the dark sides of narcissistic individuals and harm collaborative efforts. This might be especially harmful for later stages of the innovative process in which collaborative efforts are vital for successful implementations of innovative ideas. Nevertheless, research suggest that narcissistic individuals are able to adapt their behaviour well according to their personal goals (Liao et al., 2019). However, their willingness to adapt their behaviour in a collaborative manner is usually only present if group goals are aligned with their personal goals (Nevicka et al., 2011).

Finally, both studies show that adaptability has a significant indirect effect on the relationship between narcissism and innovative behaviour. In line with prior research, this study backs up the idea that adaptation and invention go hand in hand (Anderson, N., Potonik, K., & Zhou, J.2014). Our research expands these findings and adds narcissistic personality traits as an additional predictive factor for innovative behaviour through a heightened willingness to adapt. As mentioned earlier, narcissist attend closely to social cues that enable them to improve their social status (Grapsas et al., 2020). Since important gatekeepers have to be persuaded to implement innovative ideas (Perry-Smith, Mannucci, 2017) the adaptable behaviour from narcissists seem to benefit early stages of the innovatice process. Additionally, later stages of the innovative porocess require collaborative efforts. Research suggest that collaborative efforts with narcissistic indivisuals can be burdensome (Grijalva, Newman, 2015). Nevertheless, in case group goals are in congruence with the goals for narcissitic individual, narcissitic individuals adapt their behaviour towards benefical group efforts (Nevicka et al., 2011).

The findings of this study add to the literature in a variety of ways. First, our research contributes to the growing body of knowledge about personality, especially dark personality, as a predictor of innovation. Secondly, the research is one of the few to show positive outcomes associated with a traditionally unfavorable personality traits like narcissism. Furthermore, we contribute to the innovation literature by incorporating adaptability to better understand how individuals may foster the innovate process. Both academic and business audiences are interested in predicting and explaining innovative behavior. However, much of the previous research in this area (Anderson et al., 2004; Shalley, Zhou, & Oldham, 2010) has focused on creativity rather than innovation. Furthermore, personality as a predictor has just lately begun to be included in the existing literature on innovation (e.g., Wallace et al., 2016). Supervisor ratings of employee inventiveness were strongly connected with narcissism (Wisse, Barelds, & Rietzschel, 2015). This discovery adds to the intricacy of dark side traits and their impact on desired workplace practices. Likewise, O'Boyle, Forysth, Banks, & McDanaiel (2012) pointed out the relatively weak links between dark features and positive outcomes like job success. Following that, new research has examined particular aspects of job performance to provide a more nuanced view on dark personality characteristics (e.g., M. B. Smith, Wallace, & Jordan, 2016; M. B. Smith & Webster, 2018). Furthermore, our use of narcissism as a dark personality-based predictor of employee innovation responds to Anderson et al (2014) demand for dark-side methods to understand innovation.

### **Theoretical implications**

Innovation has become an important indicator of organizational success and long-term survival in the workplace (Enzing, Batterink, Janszen, & Omta, 2011). Both studies indicate a positive relationship between narcissism and innovative behaviour. Narcissistic individuals are

linked to being persuasive (Watts et al., 2013) and actively seeking out situations that allow to portray ones competences (Wallace & Baumeister, 2002). Additionally, the data of our showed a significant indirect effect of adaptability on the relationship of narcissism and innovation. This supports the notion that narcissistic individuals may excel in situations where one must read social situations and adapt one's behaviour accordingly. One may conclude that narcissists seem to be beneficial during the idea championing phase, where ideas are presented to important gatekeepers. These findings support previous research findings that suggest narcissism have a beneficial impact on the perception of others (Goncalo et al., 2010). Therefore, individuals with narcissism should be especially assigned to task related to selling certain ideas or concepts that shall be promoted. Individuals with narcissism due not shy away from these situations but rather seek them to gain prestige and reinforce their self-image.

Both studies indicate that narcissist are inclined to take risk. However, narcissists being more inclined to take risks does not lead to more innovative behaviour. Since rewards are especially appealing to individuals with narcissism it seems logical that they engage more often in risky behaviour. In combination with high self-confidence and the conviction of their skills, are these supporting factors for risky behaviour. Nevertheless, a greater inclination towards risk might rather backfire and intensify the dark side of a narcissist. Organisations may provide coaching and training sessions for narcissistic individuals and the task force they are in to ensure a more collaborative taskforce. One approach could be to assess how a narcissist may align their personal goals towards group goals. Additionally, through the transparency of interpersonal dependency in the completion of tasks, a narcissist may understand better, that one's individual success is dependent on the success of the team. Yielding a better fit between the team goals and the goals of the narcissist may benefit the task. Through a better fit the narcissist may perceive



the collaborate effort of the group important to satisfy ones need for acknowledgement by others. Additionally, group efforts would reinforce the fragile positive self-image a narcissist and reduce counterproductive work behaviour.

### **Limitations**

Multiple first-year students in study 1 remarked that it was hard for them to answer the items about innovative behaviour correctly since they asked for imaginary workplace settings. Since first-year students do not have extensive experiences in the workplace it was hard for them to answer these items correctly. It would have been great to tailor these items more towards a university setting to suggest a better fit.

Risk-propensity was not operationalized in the best possible manner. Risk-propensity was operationalized with a continuous scale from zero to one hundred. By default, the slider was placed at zero for each risk-propensity item. However, this might have primed participants starting point and might have impacted confounded the actual willingness to take risks. To overcome this issue in future research, researchers might set the default position of the slider to 50 to indicate a neutral starting point. This might lead to a better representation of actual risk inclination from participants. Additionally, it is hard to operationalize risk in general, since one's perception of what is deemed as risky might deviate significantly from the perception of others. According to Wagner and Schupp (2005) items that investigate individuals' risk-propensity in a certain context yields more predictive value for that specific context then asking for risk inclinations in general. Therefore, it is hard to tell whether individuals with narcissism engage in actual risky behaviour in the workplace.

Since the data is based correlation nature it is not possible to infer any causalities from the studied variables. To examine causal links between the studies variables and innovative

behaviour one would have to set up an experimental design that allows to manipulate the desired variables.

### **Future research**

Thus, it remains to be stated that the present work was able to provide an approximation to the existing research gap through initial considerations. Future research might explore more contextual factors on individuals with narcissism. This study supports the notion that narcissistic individuals are especially helpful during the championing phase of the innovative process. However, the more an idea is proceeded to the implantation phase, collaborative efforts are ought to take place to ensure successful implementations. Research suggest that collaborative work with narcissists can be difficult (Bennett & Robinson, 2000; Sackett & DeVore, 2002). Therefore, it would be interesting to investigate further which factors facilitate the collaborative work with individuals with narcissism. Furthermore, it would be interesting to examine how the context that a narcissistic individual is nested in effects their behaviour. One might study how working climates impacts the counterproductive working behaviours. According to Ames (1995) individuals are nested in either Performance vs mastery climates. Performance climates are characterized by environments where social status and organizational reward is subject to normative comparison. Mastery structures are defined by to organizational climate in which individuals perceive an emphasis on self-development and building competence. Individuals do not believe that their achievements are evaluated according to normative norms in such an environment. Performance vs mastery climates might impact to what extend individuals engage in collaborative work when entering the last phases of the innovative process.

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## Appendix

### The Short Dark Triad Narcissism Items from Jones, D., & Paulhus, D. (2013)

Please indicate the extent to which you agree or disagree with the statements by marking what best expresses your opinion.

Please read the statements carefully, as some may appear similar

People see me as a natural leader.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I hate being the center of attention.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Many group activities tend to be dull without me.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I know that I am special because everyone keeps telling me so.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like to get acquainted with important people.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I feel embarrassed if someone compliments me.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I have been compared to famous people.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I am an average person.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I insist on getting the respect I deserve.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Risk-Propensity Items translated from German into English “Erhebungsinstrumente 2014  
(Welle 31) des Sozio-Ökonomischen Panels: Personfragenbogen, Altstichproben.”**

Please indicate to what extent you agree or disagree with the statements by marking the number that best expresses your opinion.

Please read the statements carefully, as some may appear similar.

Would you describe yourself as someone who tries to avoid risks (risk-averse = 0)  
or as someone who is willing to take risks (risk-prone = 100)?

0 10 20 30 40 50 60 70 80 90 100

risk-averse = 0 / risk-prone = 100



How ready to take risks are you in the following domains?

risk-averse = 0 & risk-prone = 100

0 10 20 30 40 50 60 70 80 90 100

Driving the Car?



Invest Money?



Leisure time and Sports?



Job Carrier?



Health?



Trust in strangers?



What would you do in the following situation?

Imagine that you had won 100,000 Euros in a lottery. Almost immediately after you collect the winnings, a reputable bank offers you the following investment opportunity, the conditions of which are as follows:

You can invest money. There is the chance to double the invested money within two years. However, it is equally possible that you could lose half of the amount invested. You have the opportunity to invest the full amount, part of the amount or reject the offer.

What share of your lottery winnings would you be prepared to invest in this financially risky, yet potentially lucrative investment?

- The whole amount of 100,000 euros
- The amount of 80,000 euros
- The amount of 60,000 euros
- The amount of 40,000 euros
- The amount of 20,000 euros
- Nothing at all would decline the offer



**Adaptability Items from Ployhart, R. E., & Bliese, P. D. (2006)**

Please indicate the extent to which you agree or disagree with the statements by marking what best expresses your opinion.

Please read the statements carefully, as some may appear similar.

---

I am able to maintain focus during emergencies.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I believe it is important to be flexible in dealing with others.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I tend to be able to read others and understand how they are feeling at any particular moment.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

In an emergency situation, I can put aside emotional feelings to handle important tasks.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I see connections between seemingly unrelated information.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I think clearly in times of urgency.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I am good at developing unique analyses for complex problems.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I am able to be objective during emergencies.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

My insight helps me to work effectively with others.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I usually step up and take action during a crisis.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I am an innovative person.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I make excellent decisions in times of crisis.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I am an open-minded person in dealing with others.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I am perceptive of others and use that knowledge in interactions.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

When resources are insufficient, I thrive on developing innovative solutions.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I am able to look at problems from a multitude of angles.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I try to be flexible when dealing with others.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

I adapt my behaviour to get along with others.

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Innovation Items from Scott, S. G., & Bruce, R. A. (1994)**

Please indicate the extent to which you agree or disagree with the statements by marking what best expresses your opinion.

Please read the statements carefully, as some may appear similar.

---

How often do you create new ideas for difficult issues?

- Never
- Rarely
- Occasionally
- Sometimes
- Frequently
- Usually
- Every Time

---

How often do you search new working methods, techniques, or instruments?

- Never
- Rarely
- Occasionally
- Sometimes
- Frequently
- Usually
- Every Time

---

How often do you generate original solutions for problems?

- Never
- Rarely
- Occasionally
- Sometimes
- Frequently
- Usually
- Every Time

---

How often do you mobilise support for innovative ideas?

- Never
  - Rarely
  - Occasionally
  - Sometimes
  - Frequently
  - Usually
  - Every Time
-

How often do you acquire approval for innovative ideas?

- Never
  - Rarely
  - Occasionally
  - Sometimes
  - Frequently
  - Usually
  - Every Time
- 

How often do you make important organisational members enthusiastic for innovative ideas?

- Never
  - Rarely
  - Occasionally
  - Sometimes
  - Frequently
  - Usually
  - Every Time
- 

How often do you transform innovative ideas into useful applications?

- Never
  - Rarely
  - Occasionally
  - Sometimes
  - Frequently
  - Usually
  - Every Time
- 

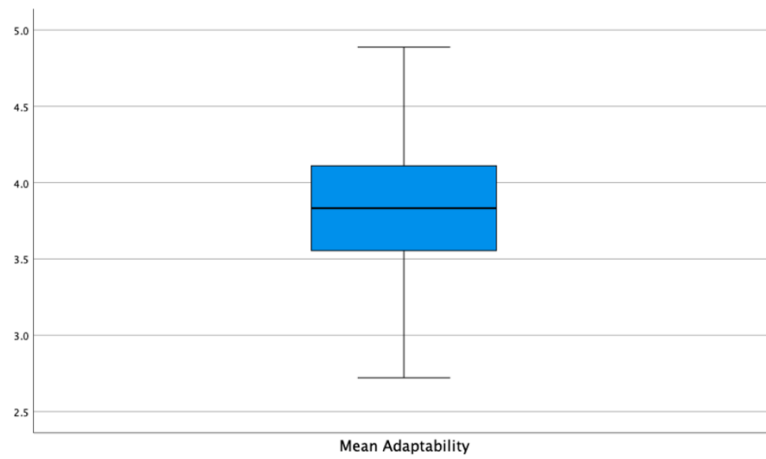
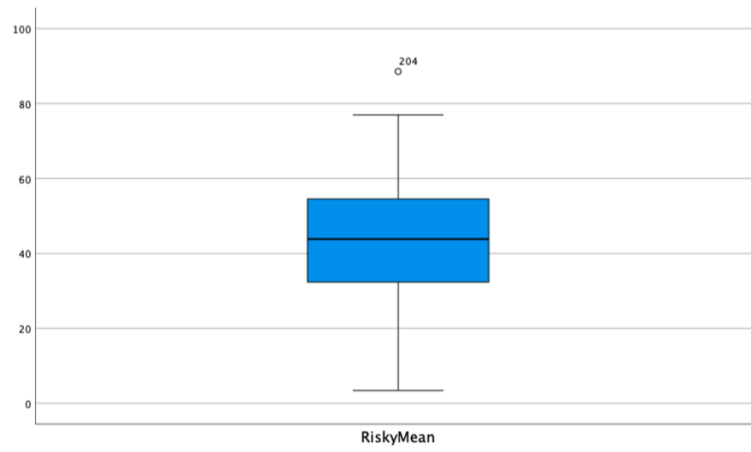
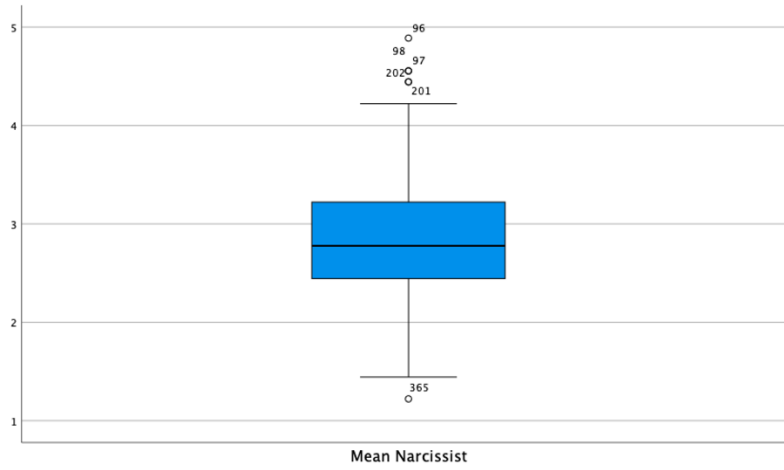
How often do you introduce innovative ideas into the work environment in a systematic way?

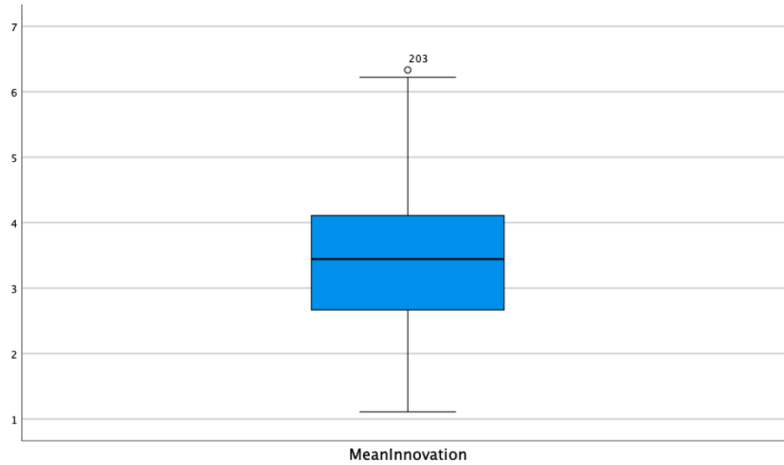
- Never
  - Rarely
  - Occasionally
  - Sometimes
  - Frequently
  - Usually
  - Every Time
- 

How often do you evaluate the utility of innovative ideas?

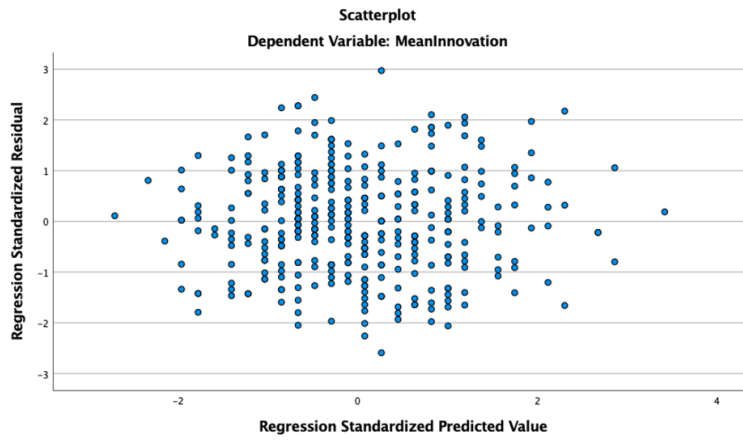
- Never
- Rarely
- Occasionally
- Sometimes
- Frequently
- Usually
- Every Time

**Boxplots first-year psychology students, Study 1**

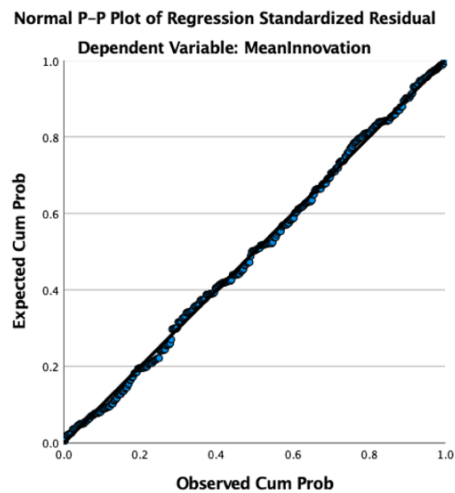




### Scatterplot first-year psychology students, Study 1



### P-P Plot of first-year psychology students, Study 1



**Correlation Analysis (Narcissism, Innovation) for first-year psychology students, Study 1**

**Correlations**

		MeanInnovation	Mean Narcissist
MeanInnovation	Pearson Correlation	1	.412**
	Sig. (2-tailed)		<.001
	N	379	379
Mean Narcissist	Pearson Correlation	.412**	1
	Sig. (2-tailed)	<.001	
	N	379	379

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

**Series of Regression Analysis (Narcissism, Risk-Propensity, Innovation) for first-year psychology students, Study 1**

OUTCOME VARIABLE:  
MeanRisk

Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	.3825	.1463	203.9764	64.5943	1.0000	377.0000	.0000

Model							
	coeff	se	t	p	LLCI	ULCI	
constant	15.3749	3.5606	4.3180	.0000	8.3738	22.3761	
MeanNarc	9.8533	1.2260	8.0371	.0000	7.4427	12.2639	

Standardized coefficients

	coeff
MeanNarc	.3825

OUTCOME VARIABLE:  
MeanInno

Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	.4181	.1748	.8053	39.8293	2.0000	376.0000	.0000

Model							
	coeff	se	t	p	LLCI	ULCI	
constant	1.4424	.2292	6.2934	.0000	.9918	1.8931	
MeanNarc	.6308	.0834	7.5657	.0000	.4668	.7947	
MeanRisk	.0048	.0032	1.4812	.1394	-.0016	.0112	

Standardized coefficients

	coeff
MeanNarc	.3836
MeanRisk	.0751

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_cs
.6780	.0772	8.7875	.0000	.5263	.8297	.4123
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_cs
.6308	.0834	7.5657	.0000	.4668	.7947	.3836
Indirect effect(s) of X on Y:						
MeanRisk	Effect	BootSE	BootLLCI	BootULCI		
	.0472	.0310	-.0152	.1067		
Completely standardized indirect effect(s) of X on Y:						
MeanRisk	Effect	BootSE	BootLLCI	BootULCI		
	.0287	.0188	-.0092	.0651		

**Series of Regression Analysis (Narcissism, Adaptability, Innovation) for first-year psychology students, Study 1**

OUTCOME VARIABLE:  
MeanAdap

Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	.4558	.2077	.1376	98.8498	1.0000	377.0000	.0000

Model							
	coeff	se	t	p	LLCI	ULCI	
constant	2.9317	.0925	31.7013	.0000	2.7499	3.1136	
MeanNarc	.3166	.0318	9.9423	.0000	.2540	.3792	

Standardized coefficients	
MeanNarc	.4558

OUTCOME VARIABLE:  
MeanInno

Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	.5244	.2750	.7076	71.2957	2.0000	376.0000	.0000

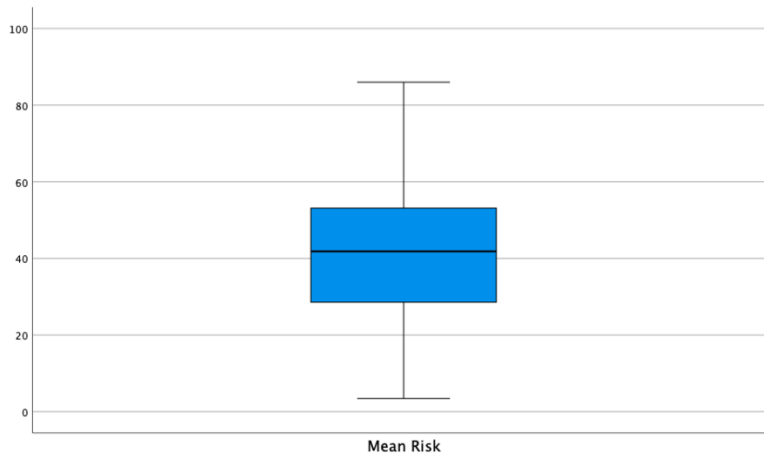
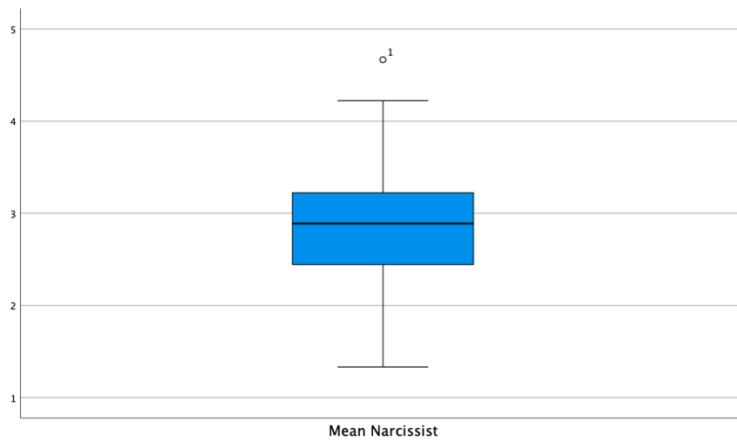
Model							
	coeff	se	t	p	LLCI	ULCI	
constant	-1.0099	.4015	-2.5153	.0123	-1.7994	-.2204	
MeanNarc	.4052	.0811	4.9951	.0000	.2457	.5647	
MeanAdap	.8616	.1168	7.3775	.0000	.6320	1.0913	

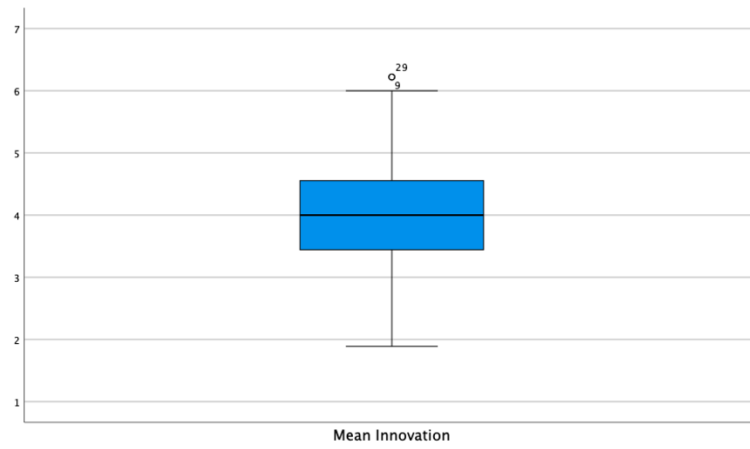
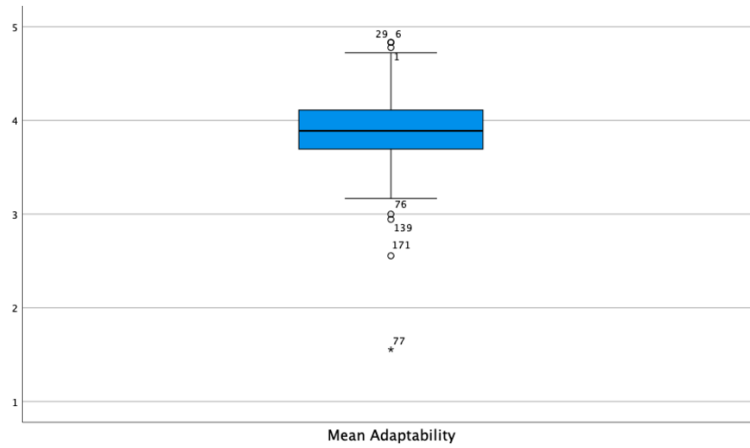
Standardized coefficients	
MeanNarc	.2464
MeanAdap	.3640



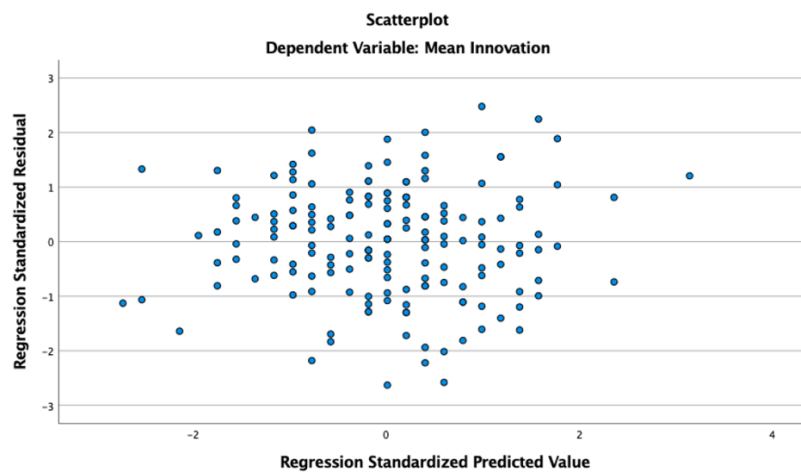
Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_cs
.6780	.0772	8.7875	.0000	.5263	.8297	.4123
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	c'_cs
.4052	.0811	4.9951	.0000	.2457	.5647	.2464
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
MeanAdap	.2728	.0442	.1896	.3616		
Completely standardized indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
MeanAdap	.1659	.0253	.1172	.2161		

**Boxplots for PhD Students, Study 2**

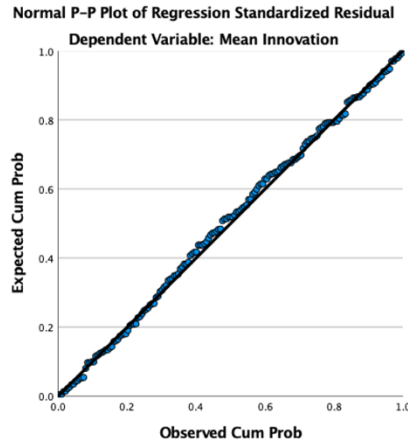




### Scatterplot for PhD Students, Study 2



**P-P Plot for PhD Students, Study 2**



**Correlation Analysis (Narcissism, Innovation) for PhD students, Study 2**

**Correlations**

		Mean Narcissist	Mean Innovation
Mean Narcissist	Pearson Correlation	1	.368**
	Sig. (2-tailed)		<.001
	N	171	171
Mean Innovation	Pearson Correlation	.368**	1
	Sig. (2-tailed)	<.001	
	N	171	171

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

**Series of Regression Analysis (Narcissism, Risk-Propensity, Innovation) for first-year psychology students, Study 2**

.....  
 OUTCOME VARIABLE:  
 MeanRisk

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2837	.0805	252.5024	14.7974	1.0000	169.0000	.0002

Model

	coeff	se	t	p	LLCI	ULCI
constant	17.5406	6.2989	2.7847	.0060	5.1059	29.9754
MeanNarc	8.2503	2.1447	3.8467	.0002	4.0163	12.4842

Standardized coefficients

	coeff
MeanNarc	.2837

OUTCOME VARIABLE:  
MeanInno

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3895	.1517	.6136	15.0223	2.0000	168.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.2619	.3176	7.1225	.0000	1.6349	2.8888
MeanNarc	.4911	.1103	4.4540	.0000	.2734	.7088
MeanRisk	.0068	.0038	1.7998	.0737	-.0007	.0143

Standardized coefficients

	coeff
MeanNarc	.3301
MeanRisk	.1334

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
.5474	.1064	5.1434	.0000	.3373	.7575	.3679

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_cs
.4911	.1103	4.4540	.0000	.2734	.7088	.3301

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
MeanRisk	.0563	.0376	-.0054	.1414

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
MeanRisk	.0378	.0248	-.0038	.0938

**Series of Regression Analysis (Narcissism, Adaptability, Innovation) for first-year psychology students, Study 2**

OUTCOME VARIABLE:  
MeanAdap

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3198	.1022	.1545	19.2478	1.0000	169.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	3.2428	.1558	20.8114	.0000	2.9352	3.5504
MeanNarc	.2328	.0531	4.3872	.0000	.1280	.3375

Standardized coefficients

	coeff
MeanNarc	.3198

OUTCOME VARIABLE:

MeanInno

Model Summary

R	R-sq	MSE	F	df1	df2	p
.4106	.1686	.6014	17.0337	2.0000	168.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.1061	.5803	1.9062	.0583	-.0395	2.2516
MeanNarc	.4559	.1105	4.1264	.0001	.2378	.6740
MeanAdap	.3933	.1518	2.5918	.0104	.0937	.6929

Standardized coefficients

	coeff
MeanNarc	.3064
MeanAdap	.1924

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
.5474	.1064	5.1434	.0000	.3373	.7575	.3679

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_cs
.4559	.1105	4.1264	.0001	.2378	.6740	.3064

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
MeanAdap	.0916	.0568	.0109	.2304

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
MeanAdap	.0615	.0379	.0074	.1528