

Power motivations and risk sensitivity and tolerance.

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## Abstract

In the present research, we sought to examine through two experiments the interaction between power motives (dominance, prestige, and leadership) and risk taking behaviors. In study 1 we discovered that individuals high in dominance power motive were more likely to engage in financial, ethical and health and safety based risk situations.

*Keywords:* keywords

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## 1 Introduction

Throughout political history, tyrants, and despots have influenced great power over large swaths of land and communities. One common thread amongst these individuals is how they wield their great power, often through dominant tactics such as threats and political subversion. Recent history has shown with individuals like Donald Trump, Kim Jong-Un, and Rodrigo Duterte who display authoritarian traits often wield their power through fear and threats of violence (Bernstein, 2020; Bynion, 2018; Kirby, 2021). How the powerful use and wield power can differ drastically from person to person. Some individuals such as Duterte and Bolsonaro wielded their power more dramatically than the likes of Trump. Individuals wielding power need not be tyrants such as the former (Riley, 1997). Individuals like Angela Merkel used her position and leadership skills to be a world leader in most negotiations. While individuals more well known

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for their status demonstrated their power through prestige motives. To better understand how individuals such as world leaders or opinion makers gain and wield their power over others. Research in this field is often difficult to research yet strides have been made to understand power, namely through research in moral judgment and decision-making such as power orientation.

## 1.1 Dominance, Prestige, and Leadership orientation

Research in power desire motives has focused on three subdomains: dominance, leadership, and prestige (Suessenbach et al., 2019). Each of these three different power motives is explained as to different ways or methods that individuals in power sought power or were bestowed upon them. Often these dominant individuals will wield their power with force and potentially cause risk to themselves to hold onto that power.

### 1.1.1 Dominance

The dominance motive is one of the more researched methods and well-depicted power motives. Individuals with a dominant orientation display the more primal human behavior. These individuals will seek power through direct methods such as asserting dominance, control over resources, or physically assaulting someone (M. W. Johnson & Bruner, 2012; Winter, 1993). Early research in dominance motives has shown that acts of dominance ranging from asserting physical dominance over another to physical displays of violence have been shown in many mammalian species, including humans (Petersen et al., 2018; Rosenthal et al., 2012).

Individuals high in dominance are often high in Machiavellianism, and narcissism, and often are prone to risky behavior (discussion further in the next section). Continued research has hinted at a possible tendency for males to display these dominant-seeking traits more than females (Bareket & Shnabel, 2020; Sidanius et al., 2000). When highly dominant individuals assert themselves they are doing so to increase their sense of power (Anderson et al., 2012; Bierstedt, 1950). Asserting one's sense of dominance over another can be a dangerous task. In the animal kingdom, it can often lead to injury. While, humans asserting dominance can take a multitude of actions such as leering behaviors, physical distance, or other non-verbal methods to display dominance (Petersen et al., 2018; Witkower et al., 2020). Power from a dominant perspective is not always bestowed upon someone. The results of these expressions of dominance are not often given by the other or conceded from the less powerful or dominant person but are taken by those with more dominance. Dominant actions or dominantly

57 taking power can often lead to physical, emotional, and psychological violence  
58 (Malamuth et al., 1996; Williams et al., 2017).

### 59 **1.1.2 Prestige**

60 Contrary to the dominant motivation of using intimidation and aggression  
61 to gain more power, a prestige motivation or prestige, in general, is bestowed  
62 upon an individual from others in the community (Maner & Case, 2016; Suessen-  
63 bach et al., 2019). Different from dominance motivation, prestige motivation  
64 is generally unique to the human species (Maner & Case, 2016). Due in part  
65 to ancestral human groups being smaller hunter-gatherer societies, individuals  
66 that displayed and used important behaviors beneficial to the larger group were  
67 often valued and admired by the group. Therein, the social group bestows the  
68 authority onto the individual. Generally, this type of behavior can be passively  
69 achieved by the prestigious individual. However, this does not remove the intent  
70 of the actor in that they too can see prestige from the group, but the method  
71 of achieving that social status greatly differs from that of dominance-seeking  
72 individuals.

73  
74 Apart from dominance-motivated individuals that continually have to fight  
75 for their right to have power over others, individuals that seek or were given  
76 power through a prestige motivation are not generally challenged in the same  
77 sense as dominant individuals. Displaying behaviors that the community would  
78 see as beneficial would endear them to the community making the survival of the  
79 community as a whole better (Maner & Case, 2016). Evolutionarily this would  
80 increase the viability of the prestigious individual and their genes. Similar to  
81 the dominance perspective, the prestige perspective overall increases the power  
82 and future survivability of the individual. However, due to the natural difference  
83 between prestige and dominance, dominance-seeking individuals are challenged  
84 more often resulting in more danger to their position (M. W. Johnson & Bruner,  
85 2012).

### 86 **1.1.3 Leadership**

87 With a shared goal a leader is someone that takes initiative and attracts  
88 followers for that shared goal (Van Vugt, 2006). Leadership is an interesting as-  
89 pect of behavior in that it is almost exclusive to human interaction. Discussions by  
90 evolutionary psychologists point to the formation of early human hunter-gatherer  
91 groups where the close interconnectedness created a breeding ground for leader-  
92 ship roles. As early humans began to evolve it would become advantageous for

93 individuals to work together for a common goal (King et al., 2009). Often, indi-  
94 viduals with more knowledge of a given problem would demonstrate leadership  
95 and take charge or be given power. Multiple explanations of the evolution of  
96 leadership exist such as coordination strategies, and safety, along with evidence  
97 for growth in social intelligence in humans (King et al., 2009; Van Vugt, 2006).

98       An interesting aspect of leadership motivation is the verification of the  
99 qualities of the leader by the communities. Individuals that are often put into  
100 leadership roles or take a leadership role often display the necessary goals, qual-  
101 ities, and knowledge to accomplish the shared/stated goal. However, this is not  
102 always the case, especially for those charismatic leaders who could stay on as a  
103 leader longer than the stated goal requires (Vugt & Ronay, 2014). Traditionally,  
104 leadership was thought to be fluid in that those with the necessary knowledge at  
105 the time would be judged and appointed as the leader. However, these charis-  
106 matic leaders use their charisma, uniqueness, nerve, and talent to hold onto their  
107 status. ## Risk

108       Every time people leave the relative safety of their home, every decision  
109 they make they are taking some form of risk. Financial risk is often discussed  
110 in the media usually concerning the stock market. However, the risk is not just  
111 present in finances but also in social interactions such as social risk, sexual risk,  
112 health and safety risk, recreational, and ethical risks (Breakwell, 2007; Kühberger  
113 & Tanner, 2009; Shearer et al., 2005; Weber et al., 2002). Each individual is  
114 different in their likelihood and perception of participating in those risks. Some  
115 will be more inclined to be more financially risky while others would risk their  
116 health and safety.

117       Whether to engage in a risky situation is very complex depending on a  
118 cost-benefit analysis (P. S. Johnson et al., 2015). Do the positives outweigh  
119 the negatives? In practice, not all individuals will do a cost-benefit analysis of  
120 a risky situation. Often, the timing of an event makes such an analysis dis-  
121 advantageous. The benefits are often relative to the individual decision-maker.  
122 Differences emerge in the general likelihood to engage in risky behavior such that  
123 males tend to be more likely to engage in risky behaviors than their female coun-  
124 terparts (Chen & John, 2021; Desiderato & Crawford, 1995). Women tended to  
125 avoid risky situations except for social risks. Age is also a factor in the likelihood  
126 of engaging in a risky situation. Often as people age, we become less likely to  
127 engage in certain behaviors such as financial risks but more likely to engage in  
128 social and some recreational risks (Rolison et al., 2014). With certain behav-  
129 ioral domains, risk decisions do not appear to have any differences based on age.  
130 As of yet, there is currently no longitudinal analysis of risk over the years (see  
131 meta-analysis of risk-taking Mamerow et al., 2016).

## 132 1.2 The present study

133 The present study sought to further our understanding of dominance, pres-  
134 tige, and leadership motivations in human decision-making. Furthering this, we  
135 seek to bridge the connection between risk-taking behaviors, from diverse do-  
136 mains, and the dominance, prestige, and leadership orientations. Following the  
137 literature, we predicted that participants that were high in dominance orientation  
138 would be more likely to not only engage in risky behaviors but praise the ben-  
139 efits of participating in those behaviors. Individuals with prestige or leadership  
140 orientation.

## 141 1.3 Experiment 1

## 142 1.4 Methods

143 Participants were a convenience sample of 111 individuals from Prolific  
144 Academic’s crowdsourcing platform ([www.prolific.io](http://www.prolific.io)). Prolific Academic is an  
145 online crowdsourcing service that provides participants access to studies hosted  
146 on third-party websites. Participants were required to be 18 years of age or  
147 older and be able to read and understand English. Participants received £4.00,  
148 which is above the current minimum wage pro-rata in the United Kingdom, as  
149 compensation for completing the survey. The Psychology Research Ethics Com-  
150 mittee at the University of Edinburgh approved all study procedures [ref: 212-  
151 2021/1]. The present study was pre-registered along with a copy of anonymized  
152 data along with a copy of the R code and supplemental materials are available  
153 at (<https://osf.io/s4j7y>).

## 154 1.5 Materials

**Table 1***Experiment 1: Participant Demographics*

Characteristic	N=109
Age	
Mean (SD)	27 (9.25)
Median [Range]	24 [18.00, 61]
Gender	
Female	54 (50%)
Male	55 (50%)
Ethnicity	
African	8 (7.3%)
Asian	6 (5.5%)
English	10 (9.2%)
European	76 (70%)
Latin American	2 (1.8%)
Other	5 (4.6%)
Scottish	2 (1.8%)
Education	
A-levels or equivalent	32 (29%)
Doctoral Degree	1 (0.9%)
GCSEs or equivalent	8 (7.3%)
Prefer not to respond	1 (0.9%)
Primary School	4 (3.7%)
University Postgraduate Program	21 (19%)
University Undergraduate Program	42 (39%)

### 155 **1.5.1 Demographic Questionnaire**

156 In a demographic questionnaire administered prior to the main survey,  
 157 participants were invited to respond to a series of questions about their self-  
 158 identified demographic characteristics such as age, gender, ethnicity, and ethnic  
 159 origin.

### 160 **1.5.2 Dominance, Prestige, and Leadership Orientation**

161 The 18-item Dominance, Prestige, and Leadership scale, DoPL (Suessen-  
 162 bach et al., 2019), is used to measure dominance, prestige, and leadership ori-  
 163 entation. Each question corresponds to one of the three domains. Each domain  
 164 is scored across six unique items related to those domains (e.g., “I relish oppor-  
 165 tunities in which I can lead others” for leadership) and rated on a scale from 0  
 166 (Strongly disagree) to 5 (Strongly agree). Included in this scale are 15 masking  
 167 questions obtained from the unified motives scale (Schönbrodt & Gerstenberg,

2012) consistency reliability for the current sample is  $\alpha = 0.86$ .

### 1.5.3 Domain Specific Risk-taking Scale

The 40-item Domain-Specific Risk-taking Scale, DOSPERT (Weber et al., 2002) is a scale assessing individuals' likelihood of engaging in risky behaviors within 5 domain-specific risky situations: financial ("Gambling a week's income at a casino."), social ("Admitting that your tastes are different from those of your friends"), recreational ("Trying out bungee jumping at least once"), health and safety ("Engaging in unprotected sex"), and ethical ("Cheating on an exam") situations. Each risky situation is then rated on a five-point Likert scale (1 being very unlikely and 5 being very likely). Two additional five-point Likert scales assess risk perception and expected benefits (1 being not at all risky and 5 being extremely risky; 1 being no benefits at all and 5 being great benefits) respectively. Example risky situations are "Admitting that your tastes are different from those of a friend" and "Drinking heavily at a social function." Internal consistency reliability for the current samples for the 3 sub-domains are  $\alpha = 0.85$ ,  $\alpha = 0.90$ ,  $\alpha = 0.92$  respectively.

## 1.6 Procedure

Participants were recruited via a study landing page on Prolific's website or via a direct e-mail to eligible participants (Prolific Academic, 2018). The study landing page included a brief description of the study including any risks and benefits along with expected compensation for successful completion. Participants accepted participation in the experiment and were directed to the main survey (Qualtrics, Inc; Provo, UT) where they were shown a brief message on study consent.

Once participants consented to participate in the experiment they answered a series of demographic questions. Once completed, participants completed the Dominance, Prestige, and Leadership Scale and the Domain Specific Risk-taking scale. The two scales were counterbalanced to account for order effects. After completion of the main survey, participants were shown a debriefing statement that briefly mentions the purpose of the experiment along with the contact information of the main researcher (AI). Participants were compensated £4.00 via Prolific Academic.

## 1.7 Data analysis

Demographic characteristics were analyzed using multiple regression for continuous variables (age) and Chi-square tests for categorical variables (gender,

203 race, ethnicity, ethnic origin, and education). Means and standard deviations  
 204 were calculated for the relevant scales (i.e., DoPL and DOSPERT). All analyses  
 205 were done using (R Core Team, 2021) along with the (Bürkner, 2017) package.

206 The use of bayesian statistics has a multitude of benefits to statistical anal-  
 207 ysis and research design. One important benefit is the use of prior data in future  
 208 analyses. Termed as priors, is the use of prior distributions for future analysis.  
 209 This allows for the separation of how the data might have been collected or what  
 210 the intention was. In essence, the data is the data without the interpretation of  
 211 the scientist.

212 All relevant analyses were conducted in a Bayesian framework using the  
 213 brms package (Bürkner, 2018) along with the cmdstanr packages notes (Gabry &  
 214 Cesnovar, 2021). In addition to the aforementioned packages, we used bayestestR,  
 215 rstan, and papaja (Aust & Barth, 2020; Makowski et al., 2019; Stan Development  
 216 Team, 2020).

## 217 1.8 Results

218 One hundred and eleven individuals completed the main survey. Of these  
 219 individuals, 111 completed all sections without incomplete data and were there-  
 220 fore retained in most data analyses. In later analyses to account for outliers, two  
 221 participants had to be excluded from the dataset. Table 1 shows the demographic  
 222 information for the participants. The average completion time for participants  
 223 was 20M 58s ( $SD = 10M 43s$ ).

### 224 1.8.1 Preregistered Analyses

225 We first investigated DoPL orientation on general risk preference (Figure  
 226 1). General risk preference was anecdotally explained by dominance orientation,  
 227 participant gender, and participant age (see table 1). General distributions of  
 228 dominance, prestige, and leadership then warranted further analysis. To investi-  
 229 gate the interaction of power orientation and DOSPERT we followed the methods  
 230 described in the DOSPERT scoring manual found on the official DOSPERT Scale  
 231 website (DOSPERT Scoring Instructions). This involves calculating the alpha  
 232 and beta coefficients and then from there calculating the overall preferences for  
 233 each of the subdomains and the overall domains for general risk preference along  
 234 with the perception and benefit preferences for risk.

235 **1.8.1.1 Demographic and DoPL.** All participants completed the  
 236 dominance, leadership, and prestige scale (Suessenbach et al., 2019). Empirically,  
 237 men have generally been more dominance-oriented in their behavior (Rosenthal  
 238 et al., 2012). Following the literature as well, dominant men tended to prefer risk



more so than women (95% CI  $b = -3.02, [-4.97, -1.06]$ ). The marginal posterior distribution of each parameter is summarized in Table 1. Interestingly, older individuals tended to be more dominance-oriented than younger individuals.

**1.8.1.2 General Risk and DoPL.** Further investigations, as previously mentioned investigated DoPL's interactions with general risk preference. As stated, dominance appears to be the strongest predictor of general risk preference (95% CI  $b = 3, [1.07, 4.9]$ ). Overall, younger individuals tended to have a stronger preference for risk (95% CI  $b = -2.85, [-4.76, -0.95]$ ). Those that tended to be lower in leadership orientation had a tendency to be generally more risk averse than their counterparts (95% CI  $b = -1.91, [-3.82, -0.02]$ ).

### 1.8.2 Domain-Specific Risk-Taking

As predicted individuals that identified as male were more likely to endorse risk-taking behaviors, namely ethical, social, financial, and recreational domains (see 1).

### 1.8.3 Interactions

When investigating dominance, prestige, and leadership motivations with domain-specific risk-taking findings supported the common expectations in the literature. Table 5 shows the interactions with like CI values. Dominance overall explained the relationship between DoPL orientation and preference, specifically (95% CI  $b = 1.15, [0.61, 1.71]$ , financial,  $b = 0.87, [0.13, 1.58]$ , social,  $b = 1.81, [0.64, 2.94]$ , health and safety,  $b = 1.09, [0.41, 1.77]$ , and recreational,  $b = 1.22, [0.67, 1.76]$ ) respectively. Full interactions can be found in table 4. Participant age and gender also appeared to affect recreational preference (95% CI  $b = -1.14, [-1.83, -0.47]$ ,  $b = 0.46, [0.05, 0.86]$ ) respectively.

Following these findings, we investigated the effect of DoPL on general risk preference and found that dominance overall predicted risk preference along with gender and age of the participant (Table 4).

### 1.8.4 DOSPERT Sub-categorizations

Risk preferences is generally made up of benefits and perceptions of risk. Outside of perceptions and benefits, dominance and males who are dominance oriented were the strongest predictors of likelihood in engaging in a risky situation (95% CI  $b = 0.65, [0.36, 0.95]$  and  $b = -0.48, [-0.85, -0.11]$ ). Dominance also appeared to be a strong predictor of perceiving more benefits of engaging in a risky situation (95% CI  $b = 0.38, [0.07, 0.71]$ ) along with gender where males are more likely to perceive benefits (95% CI  $b = -0.6, [-0.98, -0.22]$ ).

274           Alternatiively, prestige appeared to be a stronger predictor of perceiving  
275 risks than others along with female participants and female participants that are  
276 higher in leadership orientation (95% CI  $b = 0.31$ ,  $[0.01, 0.61]$ ,  $b = 0.43$ ,  $[0.05,$   
277  $0.8]$ , and  $b = 0.43$ ,  $[0.03, 0.82]$ ). Full predictors can be seen in table 6.

278 **1.8.5   *Discussion and limitations***

## 2 Experiment 2

### 2.1 The present experiment

Experiment 1 was ran to understand how risk and decision-making interplay using the aforementioned materials. Following this we found, as predicted, individuals that are higher in dominance orientation are more likely to engage in risky behaviors. Namely financial, social, and health and safety risks (see the above for more precise findings). From here we wanted to further investigate risk behaviors and power motives to see if dominance orientation is a stronger predictor of risk-taking behaviors than say for example pathological narcissism, which is often part of the discussion of risk behaviors (Buelow & Brunell, 2014; Foster et al., 2009; Leder et al., 2021). In doing so we intend to see, along with a mediation analysis approach, if dominance again will not just be the strongest predictor of risk-taking behaviors, but also the strongest mediator as well compared to pathological narcissism. Through this we hope to better understand how individuals make decisions in risky situations along with creating theories surrounding risky situations before the decisions have been made.

### 2.2 Methods

Materials remain the same in terms of the (1) Demographic Questionnaire, (2) Dominance, Prestige, and Leadership Questionnaire, and (3) DOSPERT Questionnaire. However, we added the Brief-Pathological Narcissism Inventory to assess possible interactions of dominance and narcissism in risky decision-making.

### 2.3 Participants

Following experiment 1, participants were a convenience sample of 289 individuals from Prolific Academic’s crowdsourcing platform ([www.prolific.io](http://www.prolific.io)). Prolific Academic is an online crowdsourcing service that provides participants access to studies hosted on third-party websites. Participants were required to be 18 years of age or older and be able to read and understand English. In addition, similar to participant demographics in experiment 1, participants were majority white along with having a university undergraduate degree. Participants received £3.00, which is above the current minimum wage pro-rata in the United Kingdom, as compensation for completing the survey. The Psychology Research Ethics Committee at the University of Edinburgh approved all study procedures [ref: 212-2021/2]. The present study was pre-registered along with a copy of anonymized data and a copy of the R code is available at (<https://osf.io/s4j7y>).

**Table 2***Experiment 2: Participant Demographics*

Characteristic	N=279
Age	
Mean (SD)	29 (9.84)
Median [Range]	26 [18.00, 78]
Gender	
Female	124 (43%)
Gender Non-Binary	8 (2.8%)
Male	155 (54%)
Prefer not to respond	2 (0.7%)
Ethnicity	
African	51 (18%)
Asian or Asian Scottish or Asian British	5 (1.7%)
Mixed or Multi-ethnic	7 (2.4%)
Other ethnicity	3 (1.0%)
Prefer not to respond	1 (0.3%)
White	222 (77%)
Education	
A-Levels or Equivalent	65 (22%)
Doctoral Degree	4 (1.4%)
GCSEs or Equivalent	18 (6.2%)
Prefer not to respond	5 (1.7%)
Primary School	5 (1.7%)
University Post-Graduate Program	62 (21%)
University Undergraduate Program	130 (45%)
Ethnic Origin	
African	50 (17%)
Asian	7 (2.4%)
English	16 (5.5%)
European	200 (69%)
Latin American	6 (2.1%)
Other	10 (3.5%)

## 313 2.4 Materials

### 314 2.4.1 Brief-Pathological Narcissism Inventory

315 The 28-item Brief Pathological Narcissism Inventory (B-PNI; Schoenleber  
 316 et al. (2015)) is a modified scale of the original 52-item Pathological Narcissism  
 317 Inventory (PNI; Pincus et al. (2009)). Like the PNI, the B-PNI is a scale mea-  
 318 suring individuals' pathological narcissism. Items in the B-PNI retained all 7  
 319 pathological narcissism facets from the original PNI (e.g., exploitativeness, self-  
 320 sacrificing self-enhancement, grandiose fantasy, contingent self-esteem, hiding the  
 321 self, devaluing, and entitlement rage). Each item is rated on a 5-point Likert scale  
 322 ranging from 1 (not at all like me) to 5 (very much like me). Example items in-  
 323 clude "I find it easy to manipulate people" and "I can read people like a book."  
 324 B-PNI was well correlated within itself 0.90 along with strong internal consistency  
 325 within the sub-domains of pathological narcissism, i.e.,  $\alpha$ 's for Grandiosity  
 326 (0.79) and Vulnerability (0.89).

## 327 2.5 Procedure

328 Participants were recruited via a study landing page on Prolific's website  
 329 or via a direct e-mail to eligible participants (Prolific Academic, 2018). The study  
 330 landing page included a brief description of the study including any risks and ben-  
 331 efits along with expected compensation for successful completion. Participants  
 332 accepted participation in the experiment and were directed to the main survey  
 333 on pavlovia.org (an online JavaScript hosting website similar to Qualtrics) where  
 334 they were shown a brief message on study consent.

335 Once participants consented to participate in the experiment they an-  
 336 swered a series of demographic questions. Once completed, participants com-  
 337 pleted the Dominance, Prestige, and Leadership Scale and the Domain Specific  
 338 Risk-taking scale. An additional survey was added (the novel aspect of experi-  
 339 ment 2) where participants, in addition to the two previous surveys, were asked to  
 340 complete the brief-pathological narcissism inventory. The three scales were coun-  
 341 terbalanced to account for order effects. After completion of the main survey,  
 342 participants were shown a debriefing statement that briefly mentions the purpose  
 343 of the experiment along with the contact information of the main researcher (AI).  
 344 Participants were compensated £3.00 via Prolific Academic.

## 345 2.6 Data analysis

346 Demographic characteristics were analyzed using multiple regression for  
 347 continuous variables (age) and Chi-square tests for categorical variables (gender,

348 race, ethnicity, ethnic origin, and education). Means and standard deviations  
 349 were calculated for the relevant scales (i.e., DoPL and DOSPERT). All analyses  
 350 were done using (R Core Team, 2021) along with the (Bürkner, 2017) package.

351 The use of bayesian statistics has a multitude of benefits to statistical anal-  
 352 ysis and research design. One important benefit is the use of prior data in future  
 353 analyses. Termed as priors, is the use of prior distributions for future analysis.  
 354 This allows for the separation of how the data might have been collected or what  
 355 the intention was. In essence, the data is the data without the interpretation of  
 356 the scientist.

357 All relevant analyses were conducted in a Bayesian framework using the  
 358 brms package (Bürkner, 2018) along with the cmdstanr packages notes (Gabry &  
 359 Cesnovar, 2021). In addition to the aforementioned packages, we used bayestestR,  
 360 rstan, and papaja for analysis along with the creation of this manuscript (Aust  
 361 & Barth, 2020; Makowski et al., 2019; Stan Development Team, 2020).

## 362 2.7 Results and Discussion

363 Two hundred and eighty-nine individuals participated in the present ex-  
 364 periment. Of those 54% identified as male ( $n = 155$ ). Table 3 shows the demo-  
 365 graphic information for Experiment 2. Furthering, table 4 illustrates a Bayesian  
 366 correlational matrix of all the measures wherein content-based similar measures  
 367 illustrated positive and negative correlations consistent with expectations. The  
 368 average completion time for participants was 21M 10.61S ( $SD = 9M 51.56S$ )

369 In general, male participants were more likely to endorse dominance-  
 370 oriented statements, (95% CI  $b = 0.27$ , [0.03, 0.51]). Along with younger in-  
 371 dividuals tending to also endorse dominant-oriented statements, (95% CI  $b =$   
 372  $-0.02$ , [-0.03, 0]).

### 373 2.7.1 Preregistered Analyses

374 **2.7.1.1 Dominance.** Following the previous basic results, we be-  
 375 gan our pre-regisetered analysis found in the pre-registration found on OSF.io.  
 376 Dominance-oriented individual was a strong predictor of multiple domains of  
 377 risk-taking. Namely, participants that have a preference for both financial and  
 378 social risk-taking, (95% CI  $b = 0.28$ , [0.07, 0.49]) and (95% CI  $b = 0.06$ , [-0.13,  
 379 0.27]) respectively. Investigating gender differences and found that males with a  
 380 preference for financial risk-taking were more likely to endorse dominant-oriented  
 381 statements, (95% CI  $b = -0.18$ , [-0.45, 0.08]).

382 **2.7.1.2 Prestige.** Differentiating between DoPL domains, males  
 383 with a preference for social risk-taking were more likely to endorse prestige-  
 384 oriented statements along with individuals with a general preference for social

385 risk-taking, (95% CI  $b = -0.05$ ,  $[-0.31, 0.2]$ ) and (95% CI  $b = 0.03$ ,  $[-0.16, 0.22]$ )  
 386 respectively.

387 **2.7.1.3 Leadership.** Finally, leadership orientation follows a similar  
 388 trend seen with dominance and prestige orientations. Males with a preference for  
 389 social risk-taking were more likely to endorse leadership-oriented statements along  
 390 with individuals with a less of a preference for recreational risk-taking endorsing  
 391 leadership-oriented statements, (95% CI  $b = 0.04$ ,  $[-0.2, 0.28]$ ) and (95% CI  $b =$   
 392  $0.17$ ,  $[-0.01, 0.35]$ ) respectively.

### 393 **2.7.2 Brief-Pathological Narcissism Inventory**

394 We furthered our analyses, as seen in the pre-registration found on OSF.io  
 395 by investigating pathological narcissism and its components through the Brief-  
 396 Pathological Narcissism Inventory (B-PNI). Preliminary investigations of patho-  
 397 logical narcissism in our sample show that younger individuals on average tended  
 398 to present more narcissistic opinions (95% CI  $b = -0.02$ ,  $[-0.03, -0.01]$ ). The  
 399 B-PNI further differentiates between grandiose and vulnerability. Interestingly,  
 400 women tended to present more vulnerable narcissism traits than men (95% CI  
 401  $b = -0.24$ ,  $[-0.45, -0.03]$ ). Younger individuals tended to present more grandiose  
 402 narcissism traits (95% CI  $b = -0.01$ ,  $[-0.02, 0]$ ). This same tendency for younger  
 403 individuals was seen with vulnerable narcissism traits (95% CI  $b = -0.02$ ,  $[-0.03,$   
 404  $-0.01]$ ).

405 Grandiose narcissism is then separated further into grandiose fantasy, ex-  
 406 ploitativeness, and self-sacrificing and self-enhancement. Selected findings are  
 407 males tend to demonstrate more exploitativeness and younger individuals tended  
 408 to present more exploitative and grandiose narcissism (95% CI  $b = -0.01$ ,  $[-0.03,$   
 409  $0]$ ) and (95% CI  $b = -0.02$ ,  $[-0.03, -0.01]$ ) respectively. Further analysis is shown  
 410 in table 11.

411 Vulnerable narcissism, like grandiose narcissism, is separated further into  
 412 contingent self-esteem, devaluing, entitlement rage, and hiding the self. Finan-  
 413 cial preference appears to be overall the best DOSPERT predictor of vulnerable  
 414 narcissism sub-domains specifically for contingent self-esteem (95% CI  $b = -0.34$ ,  
 415  $[-0.55, -0.14]$ ), devaluing Men (95% CI  $b = 0.05$ ,  $[-0.21, 0.31]$ ), and hiding the self  
 416 (95% CI  $b = -0.34$ ,  $[-0.55, -0.13]$ ).

### 417 **2.7.3 Risk and interactions**

418 Overall, anecdotally dominance appears to explain the overall individual  
 419 perceptions, benefits, and likelihood of risk judgments (95% CI  $b = -0.25$ ,  $[-0.38,$   
 420  $-0.11]$ ), (95% CI  $b = 0.22$ ,  $[0.09, 0.35]$ ), and (95% CI  $b = 0.27$ ,  $[0.13, 0.4]$ ) re-  
 421 spectively. Similarly, when looking at further sub-categorizations of general risk

**Table 3**

*Experiment 2 / Mediation model  
comparison*

	Model	log_BF
mediation_model_1		4.97
mediation_model_2		5.87
mediation_model_3		3.08
mediation_model_4		0.00

*Note.* Bayesian Comparison between 4 models investigating the differences of 4 different variables as mediators.

422 preferences there does appear to be mainly a bias with regards to age, where  
423 younger individuals overall have a higher risk preference than their older coun-  
424 terparts.

#### 425 **2.7.4 Domain-Specific Risk-Taking**

426 Looking at Domain Specific Risk-taking, we analyzed DOSPRT similarly  
427 to previous analyses. Overall, domain-specific risk-taking was explained by dom-  
428 inance orientation along with prestige and leadership. Interesting interactions  
429 were present with individual domains for narcissism as well.

430 Overall, age was an effective predictor for both grandiose and vulnerable  
431 narcissism with younger individuals tending towards being more narcissitic for  
432 both grandiose and vulnerable traits (95% CI  $b = -0.02, [-0.03, 0]$ ), and (95% CI  
433  $b = -0.03, [-0.04, -0.02]$ ) respectively. Preferences for financial and males with a  
434 recreational risk preference tended to express more vulnerable narcissism traits  
435 (95% CI  $b = -0.27, [-0.47, -0.06]$ ) and (95% CI  $b = -0.04, [-0.28, 0.21]$ ) respectively.

#### 436 **2.7.5 Interactions**

437 Following traditional Bayesian models, we analyzed relationships through  
438 a Bayesian mediation model using the brms Bayesian structural equation model-  
439 ing software along with it's software to create a multilevel model (Bürkner, 2017,  
440 2018). Centralized in the model is risk preference. In this exploratory model we  
441 were investigating to see what is the best predictor variable is the best mediator  
442 in our analysis. Figure 10 represents our hypothetical model of dominance being  
443 the strongest mediator.

444 In this model, we constructed multilevel equations where we focused on  
445 different variables being the strongest mediator. Then using the brms Bayesian



446 r package, we then compared the models to see which mediator was indeed the  
447 strongest mediator. How hypothesis where dominance would be the strongest  
448 mediator was accepted, model 2 as shown in table 3.

### 449 **3 General Discussion and Implications**

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585

5   Figures and Tables

586   5.1   Figures

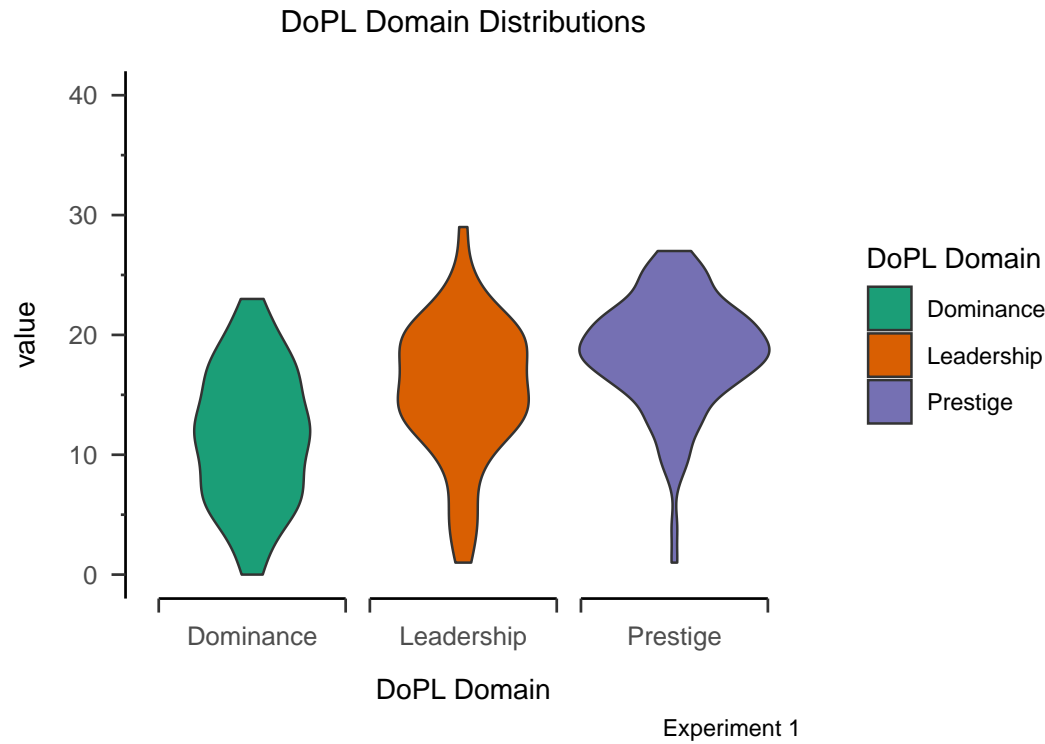


Figure 1



Figure 2 Experiment 1

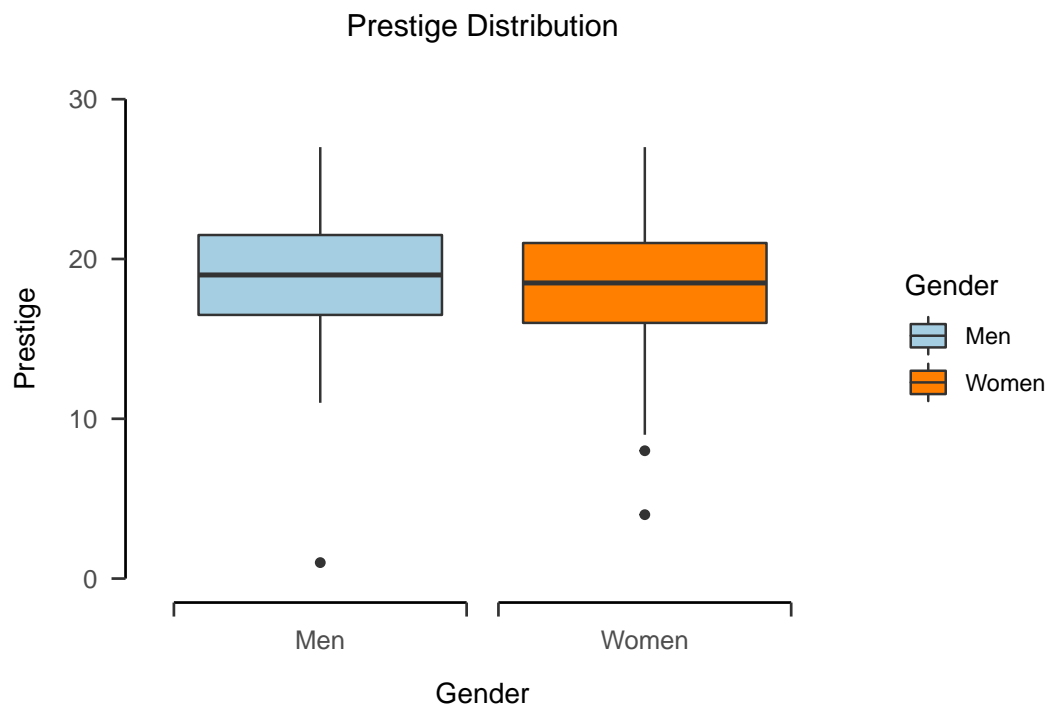
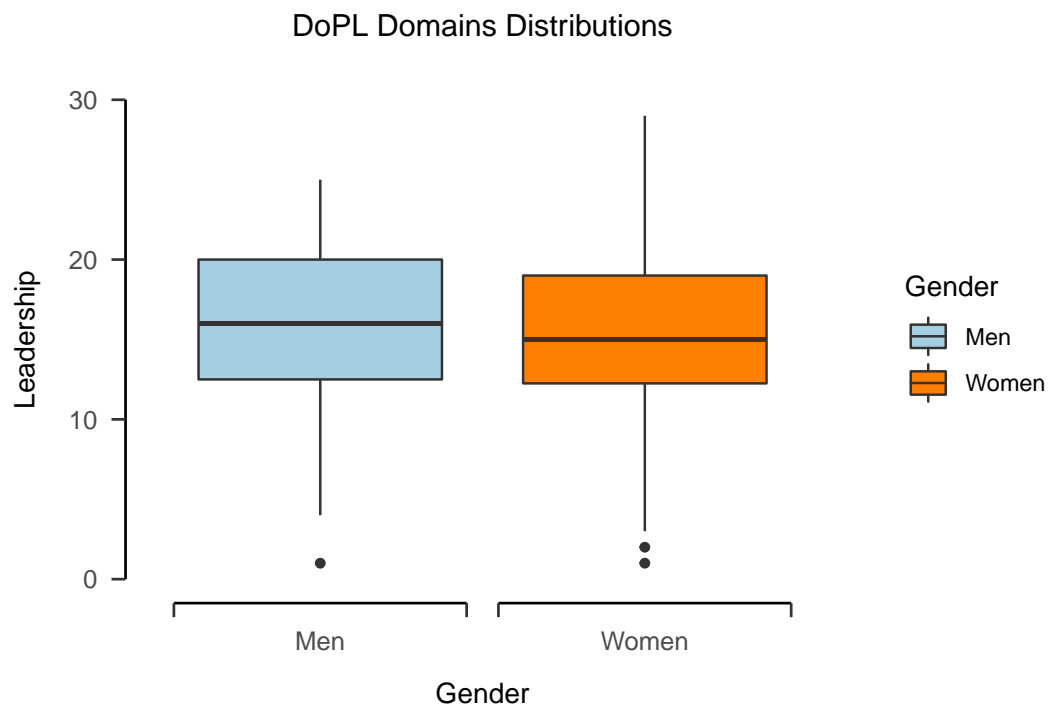
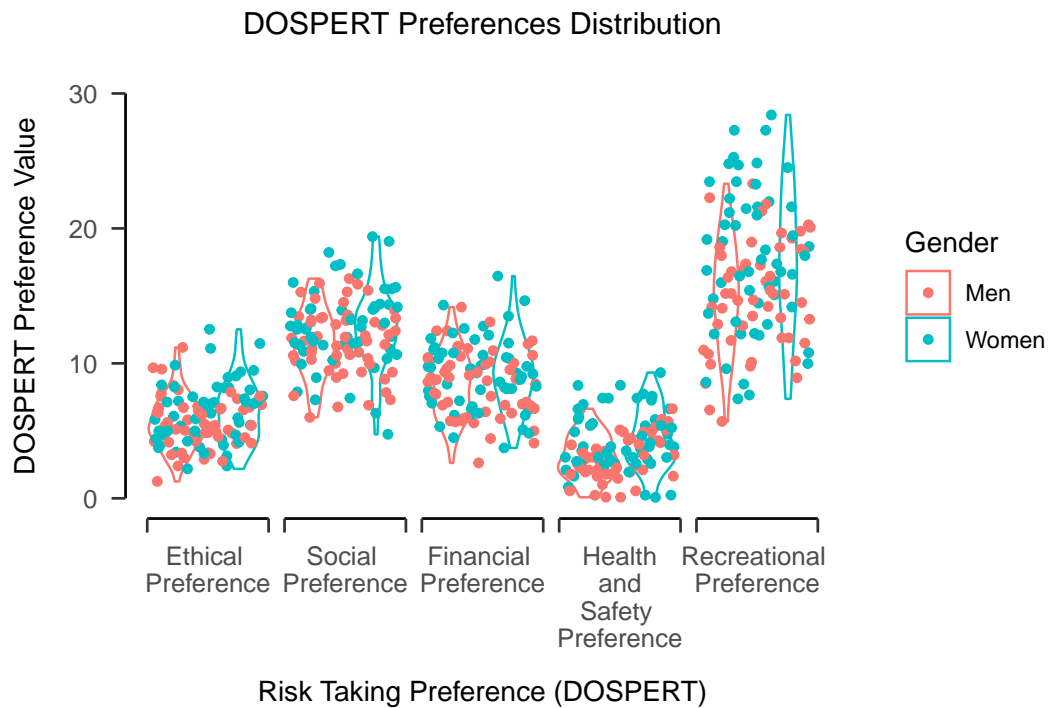


Figure 3 Experiment 1



Experiment 1

Figure 4



Experiment 1

Figure 5



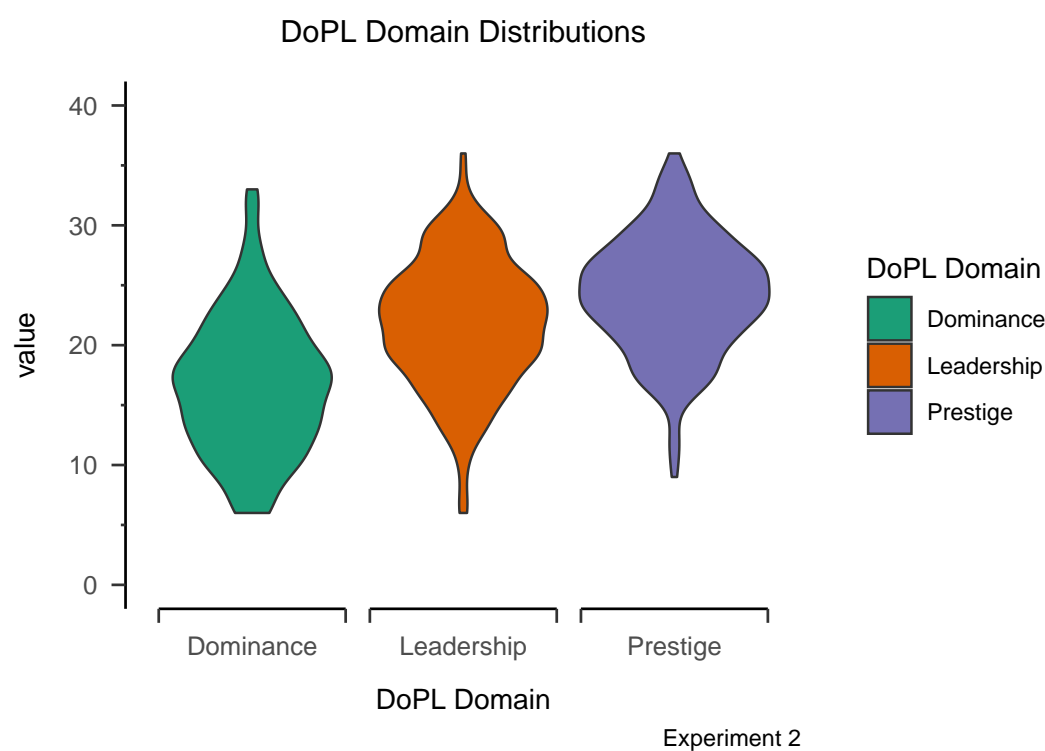


Figure 6

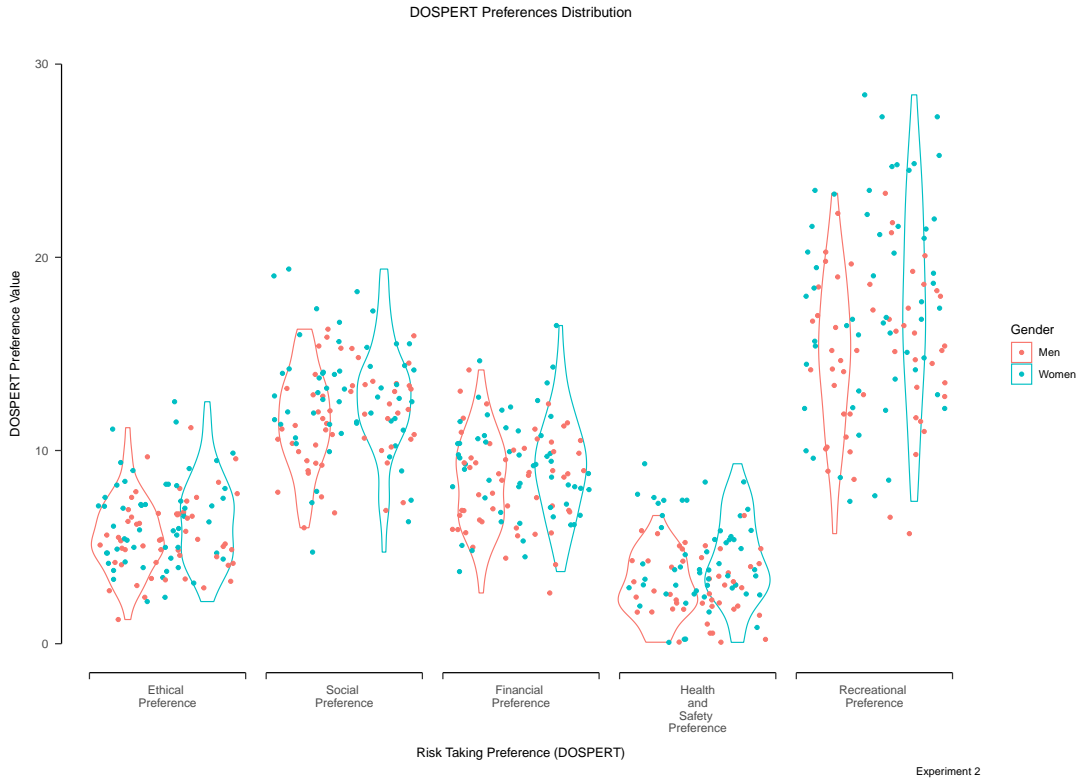
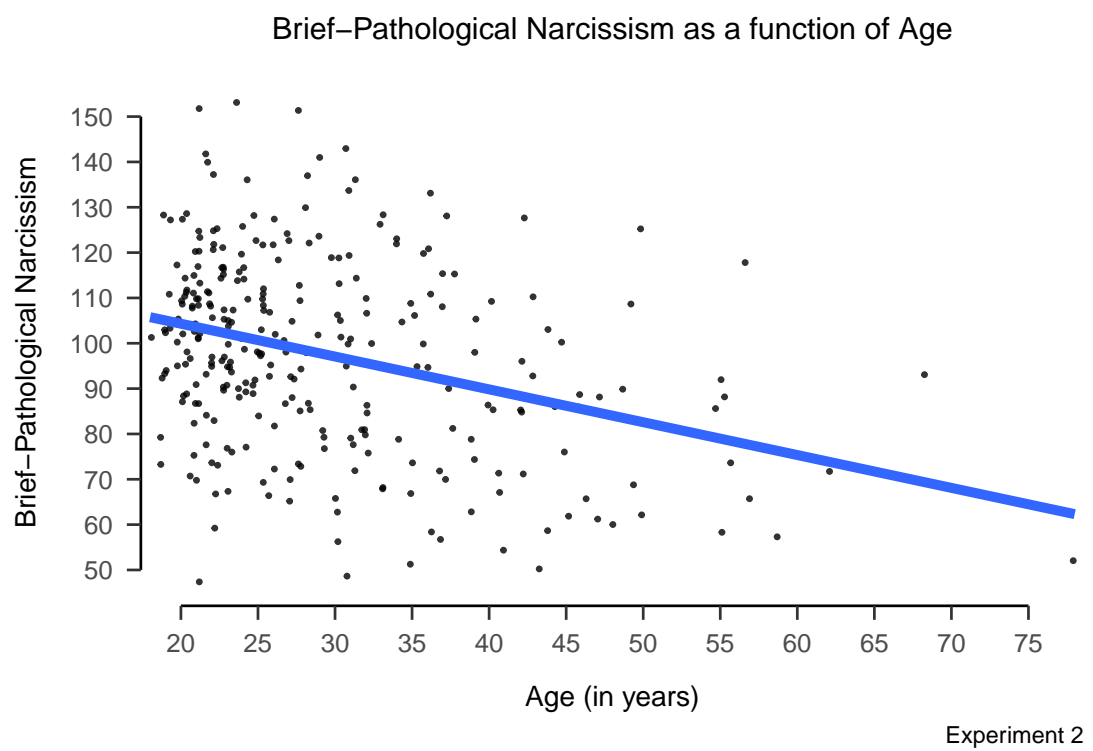


Figure 7

**Figure 8**

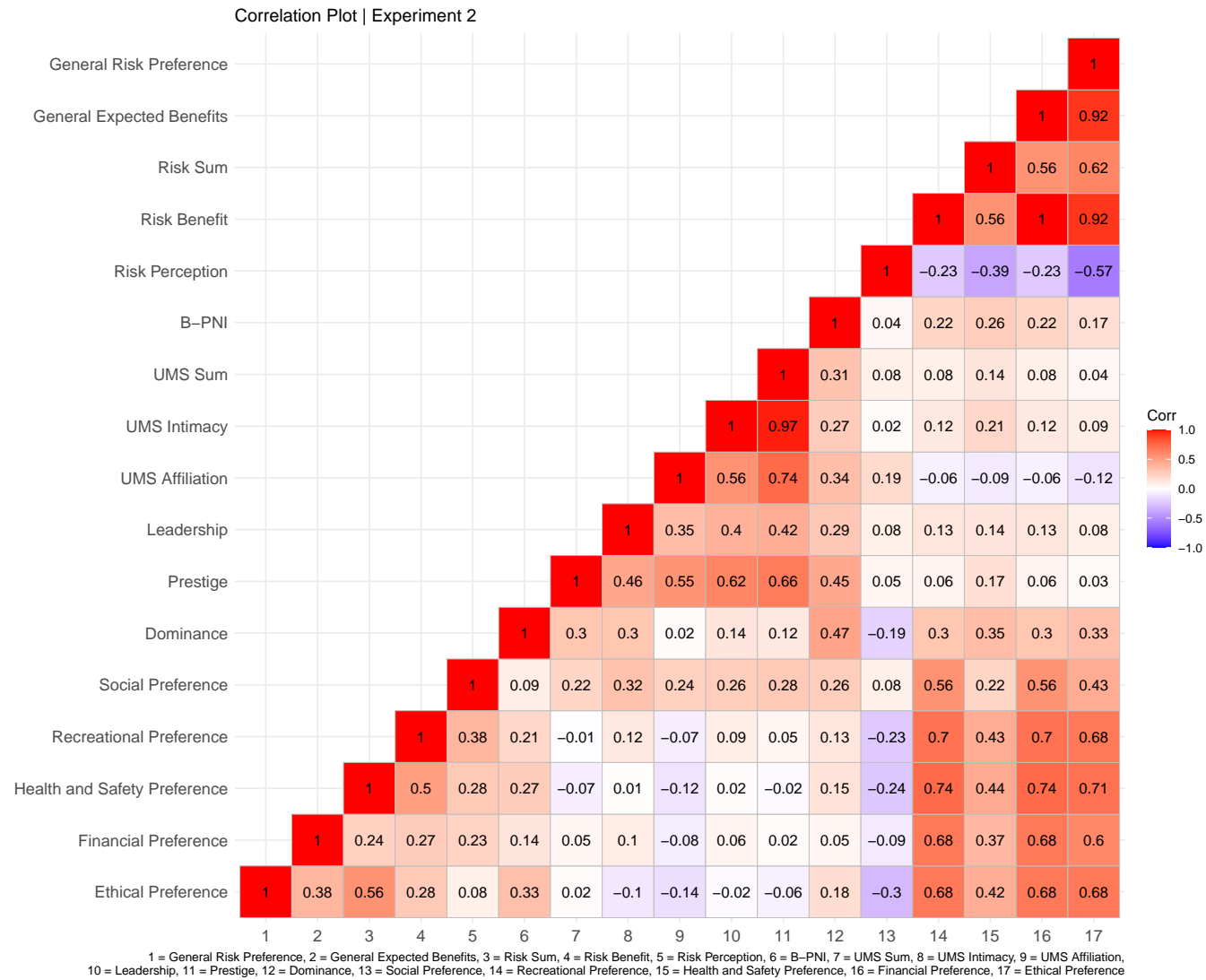


Figure 9

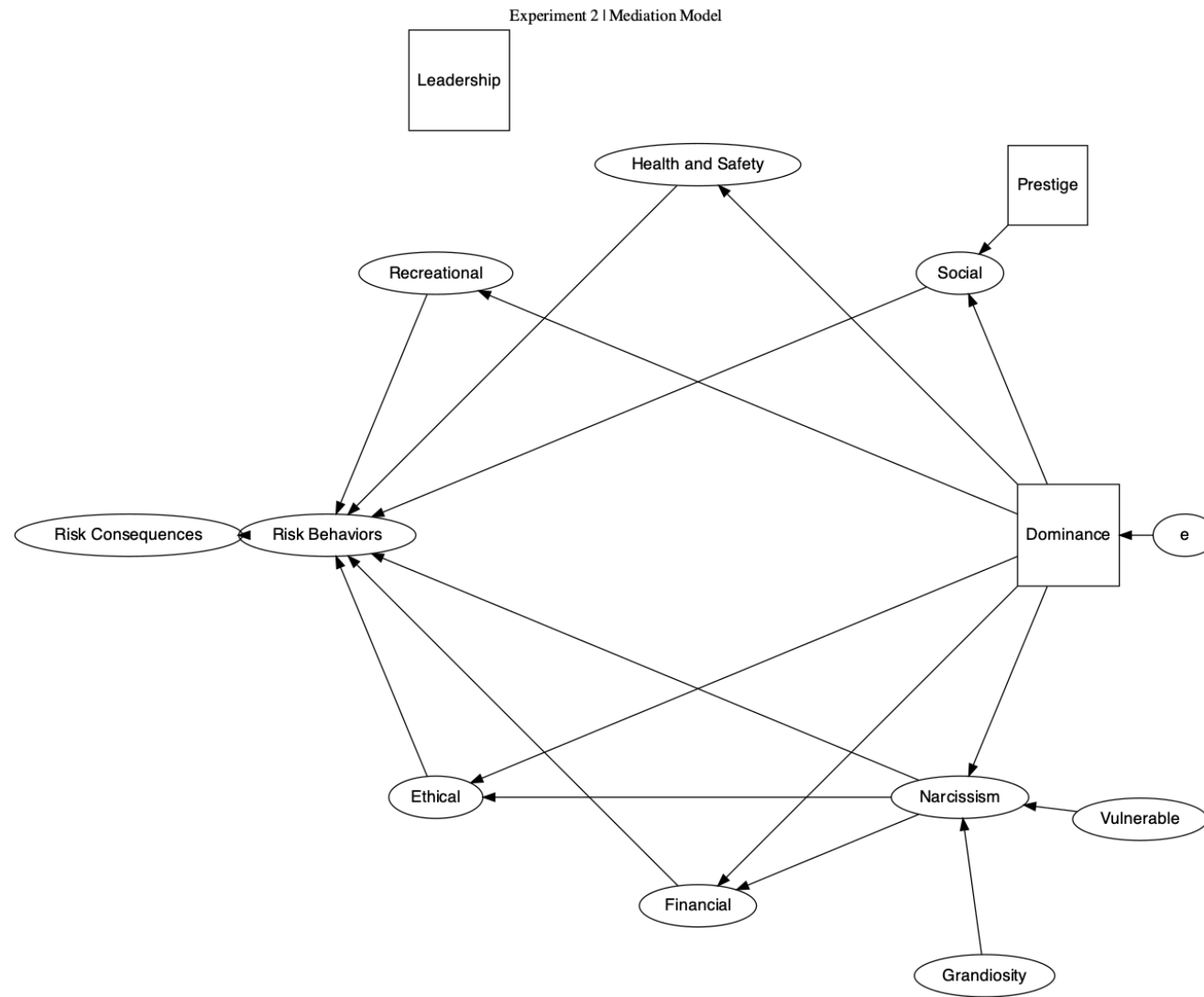


Figure 10

587 **5.2 Tables****Table 4***Fixed Effects: DoPL \* General Risk*

Parameter	Estimate	CI	CI Low	CI High
Intercept	3.62	0.95	1.41	5.86
Dominance	3	0.95	1.08	4.93
Gender	-3.02	0.95	-4.95	-1.08
Age	-2.86	0.95	-4.78	-0.93

*Note.* Table 2 represents fixed effects, confidence intervals low and high for a basic bayesian model of Dominance, Prestige, and Leadership predicting general risk preference. Matching signs for confidence intervals is displayed in the table.

**Table 5***DOSPERT and DoPL Interaction: Experiment 1*

Parameter	Estimate	CI	CI Low	CI High
Ethical Preference * Intercept	3.61	0.95	2.79	4.37
Financial Preference * Intercept	8.6	0.95	7.47	9.66
Social Preference * Intercept	9.98	0.95	8.27	11.64
Health and Safety Preference * Intercept	5.6	0.95	4.6	6.54
Recreational Preference * Intercept	1.68	0.95	0.86	2.43
Ethical Preference * Dominance	1.15	0.95	0.61	1.71
Financial Preference * Dominance	0.87	0.95	0.13	1.58
Social Preference * Dominance	1.81	0.95	0.64	2.94
Health and Safety Preference * Dominance	1.09	0.95	0.41	1.77
Recreational Preference * Dominance	1.22	0.95	0.67	1.76
Recreational Preference * Gender	-1.14	0.95	-1.83	-0.47
Recreational Preference * Age	0.46	0.95	0.05	0.86

*Note.* Fixed effect results of Dominance, Prestige, and Leadership with gender interactions predicting each of the individual Domain Specific Risk Taking (DOSPERT) domains.

**Table 6***DOSPERT Benefit and Perception: Experiment 1*

Parameter	Estimate	CI	CI Low	CI High
Risk * Dominance	0.65	0.95	0.36	0.95
Risk * Gender	-0.5	0.95	-0.85	-0.14
Risk * Dominance : Gender	-0.48	0.95	-0.85	-0.11
Risk Perception * Gender	0.43	0.95	0.05	0.8
Risk Perception * Prestige	0.31	0.95	0.01	0.61
Risk Perception * Leadership : Gender	0.43	0.95	0.03	0.82
Risk Benefit * Dominance	0.38	0.95	0.07	0.71
Risk Benefit * Gender	-0.6	0.95	-0.98	-0.22

*Note.* Fixed effect results of Dominance, Prestige, and Leadership with gender interactions predicting the perceptions and benefits of risk.

**Table 7***DOSPERT Benefit and Perception: Experiment 1*

Parameter	Estimate	CI	CI Low	CI High
Ethical Perception * Prestige	0.39	0.95	0.12	0.66
Recreational Perception * Prestige	0.33	0.95	0.06	0.6
Recreational Perception * Age	-0.22	0.95	-0.4	-0.04
Recreational Perception * Dominance : Gender	-0.4	0.95	-0.77	-0.04
Health and Safety Perception * Leadership : Gender	0.44	0.95	0.07	0.8

*Note.* Fixed effect results of Dominance, Prestige, and Leadership with gender interactions predicting the perceptions and benefits of risk.



**Table 8***General Risk \* DoPL: Experiment 2*

Parameter	Estimate	CI	CI Low	CI High
Intercept	0.55	0.95	0.17	0.93
Dominance	0.22	0.95	0.02	0.42
Gender	0.24	0.95	0.02	0.46
Age	-0.02	0.95	-0.04	-0.01

*Note.* Fixed effect results of Dominance, Prestige, and Leadership with gender interactions predicting general risk preference.

**Table 9***Vulnerable and Grandiose \* DoPL: Experiment 2*

Parameter	Estimate	CI	CI Low	CI High
Vulnerability * Intercept	1.01	0.95	0.57	1.45
Vulnerability * Dominance	0.44	0.95	0.08	0.8
Vulnerability * Gender	-0.23	0.95	-0.44	-0.02
Vulnerability * Prestige	0.4	0.95	0.02	0.77
Vulnerability * Age	-0.02	0.95	-0.03	-0.01
Grandiosity * Dominance	0.45	0.95	0.12	0.78

*Note.* Fixed effect results of Dominance, Prestige, and Leadership with gender interactions predicting two domains of narcissism, i.e., grandiose and vulnerable.

**Table 10***Vulnerable Narcissism Sub-domains \* DoPL: Experiment 2*

Parameter	Estimate	CI	CI Low	CI High
Dominance * Gender	0.3	0.95	0.11	0.49
Dominance * Entitlement Rage	0.28	0.95	0.08	0.47
Dominance * Exploitativeness	0.37	0.95	0.22	0.52
Dominance * Entitlement Rage : Gender	0.28	0.95	0.01	0.55
Prestige * Grandiose Fantasy	0.27	0.95	0.09	0.44
Prestige * Contingent Self-Esteem	0.2	0.95	0.02	0.38
Prestige * Hiding the Self	-0.23	0.95	-0.43	-0.03
Prestige * Self-Sacrificing Self-Enhancement	0.24	0.95	0.05	0.44
Prestige * Entitlement Rage	0.22	0.95	0.02	0.43
Prestige * Exploitativeness	0.2	0.95	0.05	0.36
Leadership * Grandiose Fantasy	0.22	0.95	0.05	0.39
Leadership * Gender	-0.32	0.95	-0.52	-0.12
Leadership * Exploitativeness	0.54	0.95	0.38	0.69
Leadership * Contingent Self-Esteem : Gender	-0.44	0.95	-0.71	-0.17
Leadership * Entitlement Rage : Gender	0.29	0.95	0.01	0.57

*Note.* Fixed effect results of sub-domains of vulnerable narcissism with gender interactions predicting dominance, prestige, and leadership.

**Table 11***B-PNI \* DOSPERT : Gender: Experiment 2*

Parameter	Estimate	CI	CI Low	CI High
Vulnerability * Intercept	0.82	0.95	0.44	1.21
Vulnerability * Financial Preference	-0.27	0.95	-0.47	-0.06
Vulnerability * Age	-0.03	0.95	-0.04	-0.02
Vulnerability * Recreational Preference : Gender	-0.34	0.95	-0.62	-0.07
Grandiosity * Gender	0.27	0.95	0.03	0.51
Grandiosity * Social Preference	0.3	0.95	0.11	0.49
Grandiosity * Recreational Preference : Gender	-0.41	0.95	-0.69	-0.13

*Note.* Fixed effect results of individual DOSPERT domains with gender interactions predicting vulnerable and grandiose narcissism respectively.

**Table 12***General Risk \* DoPL: Experiment 2*

Parameter	Estimate	CI	CI Low	CI High
Contingent Self-Esteem * Intercept	0.74	0.95	0.35	1.13
Devaluing * Intercept	0.79	0.95	0.39	1.18
Entitlement Rage * Intercept	0.7	0.95	0.3	1.09
Hiding the Self * Intercept	0.53	0.95	0.13	0.92
Contingent Self-Esteem * Financial Preference	-0.34	0.95	-0.55	-0.14
Contingent Self-Esteem * Age	-0.03	0.95	-0.04	-0.01
Contingent Self-Esteem * Financial Preference : Gender	0.27	0.95	0.01	0.52
Devaluing * Health and Safety Preference	0.28	0.95	0.05	0.52
Devaluing * Age	-0.02	0.95	-0.04	-0.01
Devaluing * Ethical Preference : Gender	0.38	0.95	0.07	0.67
Entitlement Rage * Age	-0.02	0.95	-0.04	-0.01
Hiding the Self * Financial Preference	-0.34	0.95	-0.55	-0.13
Hiding the Self * Recreational Preference	0.26	0.95	0.03	0.49
Hiding the Self * Financial Preference : Gender	0.29	0.95	0.03	0.55
Hiding the Self * Recreational Preference : Gender	-0.38	0.95	-0.66	-0.1

*Note.* Fixed effect results of Dominance, Prestige, and Leadership with gender interactions predicting general risk preference.

**Table 13***General Correlation Matrix / Experiment 2*

Parameter	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Ethical Preference	0.68***	0.67***	0.42***	0.68***	-0.30***	0.18**	-0.05	-0.02	-0.14*	-0.1	0.02	0.33***	0.08	0.28***	0.56***	0.38***	1
Financial Preference	0.60***	0.68***	0.37***	0.68***	-0.09	0.05	0.02	0.06	-0.08	0.1	0.06	0.14*	0.23***	0.27***	0.25***	1	
Health and Safety Preference	0.71***	0.74***	0.44***	0.74***	-0.24***	0.15**	-0.02	0.02	-0.12*	0.01	-0.07	0.27***	0.28***	0.50***	1		
Recreational Preference	0.68***	0.70***	0.43***	0.70***	-0.23***	0.13*	0.05	0.09	-0.07	0.12*	-0.01	0.21***	0.38***	1			
Social Preference	0.43***	0.56***	0.22***	0.56***	0.08	0.27***	0.28***	0.27***	0.24***	0.32***	0.22***	0.09	1				
Dominance	0.33***	0.30***	0.35***	0.30***	-0.19***	0.47***	0.11*	0.13*	0.01	0.29***	0.30***	1					
Prestige	0.03	0.06	0.17**	0.06	0.05	0.45***	0.66***	0.62***	0.55***	0.46***	1						
Leadership	0.08	0.13*	0.14*	0.13*	0.07	0.29***	0.42***	0.40***	0.35***	1							
UMS Affiliation	-0.12*	-0.06	-0.09	-0.06	0.19***	0.34***	0.74***	0.56***	1								
UMS Intimacy	0.09	0.12*	0.21***	0.12*	0.03	0.27***	0.97***	1									
UMS Sum	0.04	0.08	0.14**	0.08	0.07	0.31***	1										
B-PNI	0.17**	0.22***	0.26***	0.22***	0.04	1											
Risk Perception	-0.58	-0.23***	-0.39***	-0.23***	1												
Risk Benefit	0.92***	1.00***	0.56***	1													
Risk Sum	0.62***	0.56***	1														
General Expected Benefits	0.92***	1															
General Risk Preference	1																

*Note:*

\* denotes significance level

### Figure captions

588

589 *Figure 1.* Violin plot visually showing the distribution of dominance,  
 590 prestige, and leadership of participants in experiment 1. As  
 591 seen in the figure, of participants within each power orienta-  
 592 tion dominance oriented people are more evenly distributed  
 593 while those that were more prestige and leadership oriented  
 594 were tended to be more prestigious oriented than others.

595 *Figure 2.* Depicted is the gender distribution of Men and Women with  
 596 regard to level of dominance. As can be seen, men are  
 597 slightly higher in dominance then women.

598 *Figure 3.* Depicted is the gender distribution of Men and Women with  
 599 regard to level of prestige. As can be seen, men are slightly  
 600 higher in prestige then women.

601 *Figure 4.* Depicted is the gender distribution of Men and Women with  
 602 regard to level of leadership. As can be seen, men are slightly  
 603 higher in dominance then women.

604 *Figure 5.* Depicted is the gender distribution of Men and Women with  
 605 regard to each sub-domain of the domain specific risk-taking  
 606 scale.

607 *Figure 6.* Violin plot visually showing the distribution of dominance,  
 608 prestige, and leadership of participants in experiment 1. As  
 609 seen in the figure, of participants within each power orienta-  
 610 tion dominance oriented people are more evenly distributed  
 611 while those that were more prestige and leadership oriented  
 612 were tended to be more prestigious oriented than others.

613 *Figure 7.* Depicted is the gender distribution of Men and Women with  
 614 regard to each sub-domain of the domain specific risk-taking  
 615 scale.

616 *Figure 8.* Scatterplot depicting pathological narcissism, using the B-  
 617 PNI, as a function of age.

618 *Figure 9.* Depicted here is a correlation plot of the indices of exper-  
 619 iment 2. The legend denotes stronger positive correlation  
 620 (closer to 1 and darker red) or stronger negative correlation  
 621 (closer to -1 and darker blue).

622 *Figure 10.* Figure represents a mediation model with Dominance as the  
 623 central mediator in the model. The outcome variables being  
 624 risk behaviors along with hypothetical consequences like STI  
 625 and the like.