# Personality and Bargaining Power*

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**Abstract**

We designed a bargaining experiment to test the hypothesis that an individual's economic choices and outcomes are significantly affected by personality traits of other people, measured in terms of the "Big Five." Output was produced by a worker; a manager determined how this output was divided between the worker and herself, and the two parties regularly interacted face-to-face. Our results attribute a significant effect of the worker's personality on her bargaining power: An increase in agreeableness of the worker led the manager to allocate less money to the worker. This effect was initially not significant but increased gradually as managers learned their workers' personality traits. We also found that in spite of getting paid less, agreeable workers expressed more favorable judgments of their managers' personalities in questionnaires.

*JEL Classification*: C70, D03, C92.

*Keywords*: personality, bargaining, experiments.

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"When we consider the character of any individual, we naturally view it under two different aspects; first, as it may affect his own happiness; and secondly, as it may affect that of other people." (Smith, 1759, *The Theory of Moral Sentiments*)

"How many times do you need to multiply Juncker's weight because of his personal and human attributes? Juncker probably weighs more than countries with twelve to fourteen million inhabitants."[1] (A head of government as quoted in Tallberg, 2008)

# 1 Introduction

In a perfectly competitive economy, imputations of value to factors of production are completely determined (Clark, 1902). Without perfect competition, however, market forces alone fail to determine these imputations (Edgeworth, 1881). In the context of organizations, Knight (1921, II.IV.4) reconciles this indeterminacy as follows:

> "There are many productive organizations consisting of small numbers of rather unique agents which very effectively supplement each other and are not so effectively demanded elsewhere. In such a case competition does not afford means of distributing the entire yield of the group among its members; an appreciable part of it resists automatic division and remains a joint product, dependent on the peculiar effectiveness of the particular organization. Many partnerships illustrate this point. Imputation goes as far as the group, giving that its proper income, but fails to distribute accurately within it. In case of a partnership this division between the members is usually made on ethical grounds or on the basis of 'bargaining power,' sheer personal force. In industry at large the special product of the organization above that competitively assigned to its components is likely to go, largely at least, to the entrepreneur, though bargaining power or the strategic situation always plays a large part in the proceedings."

Knight's argument involves two steps. First, in many organizations, market forces fail to determine its members' individual imputations. Secondly, this indeterminacy is often resolved by *personal force*. The first step epitomizes an extensive literature on team production, from Alchian and Demsetz (1972) and Holmstrom (1982) to Prendergast (1999), Levin (2003) and beyond. In this paper, we take as given this first step

[1] Jean-Claude Juncker was prime minister (1995–2013) of Luxembourg (population: 465,000).

and focus on the second step of Knight's argument. We offer a formal, quantifiable interpretation of personal force in terms of psychological factors—specifically, individual personality traits—and experimentally test Knight's hypothesis. Our results show that personal force plays a significant role in the imputation of value.

Individual personality traits can be thought of as enduring behavioral patterns and responses to environmental cues (Almlund et al., 2011). The classic "Big Five" framework (Costa and McCrae, 1992), based on respondents' answers to questionnaires, measures personality along several dimensions: openness to new experience, conscientiousness, extraversion, agreeableness and neuroticism. This measurement framework is widely accepted by psychologists for many reasons, amongst them robustness (Goldberg, 1993), its strong relationship with relevant configurations in the brain (DeYoung et al., 2010), and its ability to predict individual outcomes and choices. Thus, personality is related to long-term individual characteristics such as income, education, health and relationship status (Borghans et al., 2008, and references therein). Recently, interdependencies between personality traits and economic preferences have also been documented (Rustichini et al., 2016; Becker et al., 2012). Overall, there is general consensus in the literature that individuals' economic choices and outcomes are significantly affected by their own personality.

We, on the other hand, designed an experiment to test a different hypothesis—that individuals' economic choices and outcomes are significantly influenced by personality traits of *others*. The experiment proceeded roughly as follows.[2] First, each subject completed a Big Five personality questionnaire. The participants were then randomly matched into hierarchical two-person teams, consisting of a worker and a manager, whose members interacted over several periods. Workers performed the same repetitive task every period, which we used to measure and control for productivity, and which translated stochastically into monetary earnings that accrued to the manager. The worker's remuneration was solely the manager's decision, and it came at the manager's own expense. At the end of each interaction, team members completed a personality questionnaire on behalf of their partners, which gave us a measure of perceived personality traits. Subjects were then randomly re-matched.

Our experimental design differs from most in the bargaining literature in three respects. One is that we allowed subjects to regularly interact face-to-face and engage in free-form communication, giving them the opportunity to gradually absorb each

[2]See Section 3 for further discussion and justification of our design decisions.

others' personality traits. Second, we introduced a reasonable amount of uncertainty in the experiment. This obscured behavioral prescriptions based on ethical grounds and opened the door for greater variation, including personality-driven variation, in behavioral patterns. Third, subjects' reported perceptions of each other's traits provided instruments for identifying a causal effect of personality.

Our results are as follows. Although managers on average allocated about 50% of output to workers, the experiment was successful in producing substantial variation in earnings differentials between the worker and the manager. Crucially, a substantial portion of these differentials could be explained by the worker's personality. We used an IV approach to assess the causal impact of the worker's agreeableness on earnings and found a sizeable and significant negative effect: More agreeable workers were paid less relative to their managers. Recognizing that teams interacted over several rounds, we also studied the dynamic effects of personality. We found that early in the interaction, agreeableness had no significant effect on earnings, but its effect increased progressively over time to achieve overall significance. This result is consistent with the hypothesis that subjects gradually learned each others' personality traits as the experiment proceeded.

A priori, it seems plausible that managers might pay agreeable workers less because they would tend to be more accepting of harsher terms. On the other hand, managers may also be inclined to reward workers with a higher opinion of them (as in the psychological games of Geanakoplos et al., 1989). We found that agreeable workers had significantly more favorable opinions of their managers, which suggests that the main channel through which agreeableness translates into earnings is the former one: Managers found agreeable workers more docile and decided to pay them less.

Our results are important for understanding the psychological sources of bargaining power and, more generally, influence. First, bargaining is a basic facet of economic activity, yet the sources of comparative bargaining advantage do not seem to be well articulated in economic theory. Cooperative solutions, such as Nash bargaining (Nash Jr, 1950) and related variants, take it as given, and noncooperative solutions have so far been unable to usefully incorporate psychological factors. Rubinstein (1982) offers impatience and institutional details (temporal monopoly) to explain bargaining power,[3] yet neither of these issues is practically relevant in our

[3]A related extension due to Binmore et al. (1986) adds risk aversion as a possible explanation,

experiment or many real-world situations. Similarly, the model of Abreu and Gul (2000), based on reputation, provides a language with which to express differences in bargaining outcomes, but no guidance whatsoever for the determinants of such reputation.

Secondly, even if there was an accepted theoretical relationship between psychological traits and bargaining power, it could only deliver qualitative predictions. In order to *measure* this effect quantitatively, it is necessary to explore the issue empirically. The econometric studies of Seibert and Kraimer (2001), Heckman et al. (2006) and others have the drawback that they study long-run incomes without being able to distinguish between influence or bargaining power and productivity in any specific situation, let alone disentangle the relative values of interpersonal traits and performance. This problem motivates an experimental approach to improve our understanding of just how people's psychology contributes to their income.

Although there is a vast experimental literature on bargaining, as well as some relating bargaining and personality, it is unable to address our main hypothesis. Most of this literature attempts to explain an individuals' propensity to share as a function only of their own personality (Brandstätter and Königstein, 2001; Ben-Ner and Kramer, 2011; Rustichini et al., 2016). In fact, in these experiments there was no possibility for subjects to learn the personality of counter parties, as interactions were either hypothetical or anonymous. We, however, are interested in measuring the effect of one party's personality on another's decision. To accommodate this possibility, our design allowed subjects to learn each others' personality traits by giving them the opportunity to regularly interact face-to-face and communicate freely.[4]

An exception to this literature is the work of Morris et al. (1999), who analyzed an experiment where MBA students bargained face-to-face over mock salaries. There are important differences between their work and ours in terms of both method and focus—we discuss them at length in Section 2 below. In summary, they framed their experiment in a way that reduced the relevance of actual personality, and they focused on understanding how bargaining outcomes and behavior biased perception of personality, rather than the effect of personality on bargaining outcomes.

provided certain institutional assumptions are met (e.g., a random deadline).

[4]Free-form face-to-face interaction is standard practice in psychology and organizational behavior (Thompson et al., 2010, and references therein). Face-to-face communication is less common in economics, but accepted (e.g., Mobius and Rosenblat, 2006). See Section 3 for further discussion.

## 2 Literature on Income and Personality

This paper is motivated partly by a well-documented relationship between income and personality. Heckman et al. (2006) estimate a wage equation that significantly relates earnings with cognitive skills (such as IQ) and noncognitive skills (such as personality), suggesting that (p. 1) "[...] personality traits, persistence, motivation and charm matter for success in life." A number of studies looking at effects of individual personality traits identified a negative relationship between agreeableness and income for both men and women (Mueller and Plug, 2006; Nyhus and Pons, 2005; Ng et al., 2005; Rode et al., 2008). However, these analyses leave out important details about how a worker's personality affects his or her income, as well as the role of others in wage determination. In other words, they fall short of being able to explain just how "charm" (for instance) matters for success in life. Thus, it cannot be inferred from Heckman et al.'s wage equation whether personality increases wages because it motivates individuals towards more productive behavior or more rent-seeking behavior, such as bargaining skills, which may be unproductive, as Knight (1921) suggests. One goal of our study is to disentangle quantitatively these different motivations in a richer model of wage determination, thus beginning to open the "black box" behind the relationship between personality and earnings.

Personality also has a well-documented effect on economic preferences (e.g., Borghans et al., 2008; Becker et al., 2012). More relevant to our paper's main results is perhaps the observation that agreeable people are more altruistic in dictator (Ben-Ner et al., 2008) and trust (Rustichini et al., 2016) games. We should emphasize that our experiment differs from others in the personality and bargaining literature by virtue of focusing on the link between one's decisions and personality traits of *other people*. Hence, our paper is closer in spirit to the work of Ben-Ner and Kramer (2011), who studied the effect of kinship on the amount received in a dictator game, and Judge et al. (2012), who found that one's personality—particularly agreeableness—affected another's estimate of job growth potential. Both of these studies, however, used *hypothetical* descriptions of people as explanatory variables. For our purposes, real, direct interaction was important to allow personality traits to both express themselves endogenously and translate into bargaining power, rather than be communicated exogenously. Incentives were hypothetical in these studies, too. This is important, as according to Camerer and Hogarth (1999), excluding financial incentives may increase certain behavioral traits associated with personality, such as generosity and

risk-seeking. This motivates our use of monetary transactions to clarify the relation between surplus division and personality.

Arguably, the study closest to ours in method is Morris et al. (1999), which also used face-to-face interaction in a bargaining environment. This study, however, focused on how bargaining outcomes and behavior biased perceptions of personality. In particular, the authors did not measure how personality traits of other people affect bargaining decisions. They also argued that the behavior of participants in their experiment was mostly driven by "situational" rather than personality factors.[5] This is, perhaps, not surprising, in light of Morris et al.'s experimental design. As the authors state in their paper (p. 56), "[p]articipants were familiar from negotiation class with the concepts of the value and risk of an alternative option and had been taught guidelines for estimating these from an opponent's negotiation behavior." As Thompson (1990) and Monson et al. (1982) argue, personality is more likely to matter when strong behavioral prescriptions, such as those taught to the MBA students in Morris et al.'s study, are absent. We designed our experiment with this in mind.

# 3 Experimental Design

Our motivation for the experiment was to create an environment that resembled the spirit of Knight's argument and allowed us to test his hypothesis. We matched subjects into teams of two, motivated by the observation that individuals often interact in small groups (Burke, 2003). By design, the teams did not interact with one another, so there was no competition for team members. This feature of the experiment kept it aligned with Knight's (1921, II.IV.4) observation that "[t]here are many productive organizations consisting of small numbers of rather unique agents which very effectively supplement each other and are not so effectively demanded elsewhere." As a result, the division of surplus amongst team members became indeterminate and open to bargaining, and, hence, possibly personal force.

[5]Specifically (p. 53), "[...] important components of bargaining behavior [...] are greatly determined by the economic incentives and constraints a player faces and little determined by personality traits (Thompson, 1990)." However, Thompson (1990) is much more cautious, admitting that (p. 520) "[...] this conclusion is incomplete and overly simplistic." Amongst several reasons for this view, she reports that (pp. 520-521) "Monson et al. (1982) suggested that personality is more predictive of behavior in ambiguous situations than in settings in which there are strong prescriptions for behavior."

We framed the experiment around a hierarchical organization whose members performed different tasks,[6] to avoid a situation that might easily lead subjects to agree on equal surplus division. This issue is well-documented in experiments, especially ones without anonymity. Thus, Bohnet and Frey (1999) show that removing anonymity in dictator games eliminates most variation in offers around equal division. On the other hand, we viewed face-to-face interaction as an important aspect of our experimental design, since it allowed subjects to learn each other's personality traits. By itself, this element of our design might substantially reduce the variation in offers. For our purposes, however, variation was important to be able to trace the relationship between personality and offers, since without variation there could be none due to personality. Therefore, to compensate for the loss of variation in offers due to lack of anonymity, we subjected team members' interaction to a reasonable amount of ambiguity and complexity, on the grounds that more ambiguity would give subjects moral "wiggle room" for their decisions. This intuition was substantiated experimentally by Dana et al. (2007), who showed that (see their abstract) "[...] fairness decreases substantially when the connection between choices and outcomes is obfuscated."

Some economists have expressed concern regarding face-to-face interaction in experiments. One reason may be that (Crawford, 1998, p. 293) "[n]onpecuniary influences on preferences are usually suppressed by avoiding face-to-face or nonanonymous interactions [...]." However, these are precisely the influences we are trying to capture. A particularly appealing reason for choosing face-to-face interaction rather than chat messages, phone-based or other types of controlled communication is perhaps best articulated by Nadler and Shestowsky (2006, p. 165): "[...] when the structure of the negotiation is a complex, potentially integrative negotiation that requires reciprocal information sharing, the inability to see or hear the other person in conjunction with lack of co-temporality can exacerbate initial distrust, leading to reluctance to engage in the kind of reciprocal exchange of information required to reach a high-quality agreement, or any agreement at all, for that matter." Our environment, described below, is complex enough that this was a potential concern.

Each experimental session was divided into two halves. Subjects were randomly rematched from one half to the next, with subject roles unchanged, so workers remained workers. Perceived personality traits were recorded at the end of each half.

[6]Notice, however, that—as seen from the experiment's instructions (Appendix B)—no explicit hierarchical descriptions of player roles, such as "worker" or "manager," were imposed on subjects.

Designing our experiment to have these two halves was particularly useful for two reasons. First, it gave us some variation in outcomes for each subject, improving the statistical properties of our sample. Second, it delivered a useful instrument to identify a causal relationship between earnings and endogenous variables. In principle, a worker's personality may be correlated with other factors unobservable to us that contributed to the manager's determination of the worker's income. We found that a worker's personality was correlated with her perception of her manager. Since each worker was matched with two different managers, to identify the effect of a worker's personality on a manager's remuneration decision, we used the worker's perception of the other manager's personality as an instrument. See Section 4.2 for details.

## 3.1 Details of the Experimental Design

The experiment was programmed and conducted with the software z-Tree (Fischbacher, 2007) in the Anderson Hall Social and Behavioral Sciences Laboratory at the University of Minnesota in the Spring and Fall semesters of 2012. After completing the Big Five personality questionnaire of DeYoung et al. (2007), subjects familiarized themselves with the provided instructions.[7] They were then randomly matched into teams of two, and each team member was randomly allocated the role of worker or manager. Worker and manager sat next to one another in separate carrels and interacted for 15 rounds. Everyone was told that they were sitting next to their teammate after being matched.[8]

In each round, the worker's job was to complete a repetitive task, borrowed from Gill and Prowse (2012): to move as many sliders as possible, from a total of 24, within an allotted time of 40 seconds. A monetary prize of \$4 was contained behind one and only one of the sliders. Moving a slider meant physically dragging it to position 50 (out of 100) with a mouse. For every slider not moved to position 50, a penny was added to worker's "penny" account, which was kept separate from the account the manager used to pay the worker.[9] There was therefore a real as well as a monetary cost of effort. We hoped that emphasizing the monetary cost would make it clearer to

[7] See Appendix B for the instructions and Appendix C for the questionnaire.

[8] It is therefore possible that personality had an effect through first impressions even before the subjects were told to talk to each other. E.g., it was shown by Willis and Todorov (2006) that people are able to form first impressions within 100 milliseconds of exposure to a face. The analysis of Section 4.2 explores the possibility that the effect of personality changed over time.

[9] This penny was added even if a slider was moved to position 49.

the managers that workers need to be incentivized. The worker was never informed of whether or not she discovered a prize.

The manager started out with \$5, and had to pay 40 cents in every period, in order to continue the experiment. If and only if the worker discovered a prize, \$4 were added to the manager's personal account. There was therefore a possibility of the team going bankrupt after 12 periods, in case that no prizes at all were discovered. After observing how many "Top" sliders (i.e., sliders 1 through 12) and "Bottom" sliders (i.e., sliders 13 through 24) the worker moved to position 50, as well as whether or not the prize was found, the manager decided how much to pay the worker.[10] This payment could be any number of cents up to the amount of money the manager accumulated so far. Thus, all of the manager's start-up funds could be allocated to the worker in the first period, terminating the experiment (because no money is left to continue). On the other extreme, the manager could refrain from paying the worker anything until the very last period. Crucially, decisions of the manager were reversible: any money allocated to the worker by the manager (hence, excluding the worker's earnings from unadjusted sliders) could be taken back in a subsequent period. Thus, the interaction mirrored a dictator game in that the manager could appropriate the total surplus (minus one dollar, since the manager started out with \$5 and had to pay 40 cents in every period, including the first one) in the very last period. After paying the worker, the manager decided what subset of sliders (Top or Bottom) to recommend to the worker.

The location of the prize-winning slider changed pseudo-randomly according to a Markov process with 75% transition probability for the state (whether the prize was behind a Top slider or Bottom slider) being the same, although the subjects were not informed of this.[11] Conditional on the prize-winning slider a Top slider or a Bottom slider, its location amongst the Top or Bottom sliders was otherwise determined with equal probability of 1/12. Whether the prize was behind a Top slider or Bottom slider was a common event for every team, but the location of the prize within the Top or Bottom sliders was identically and independently distributed across teams.

[10] The manager had unlimited time to make all of her decisions.

[11] The instructions provided subjects with the following information ("Person A" corresponds to the worker and "Person B" to the manager): "Whether the prize is behind a TOP/BOTTOM slider in the next round only depends on where the prize was in this round. Person A will never know where the prize is. At the end of every round, Person B will see whether or not the prize was discovered. He/she will use this information to make recommendations to Person A."

Every five rounds, the teammates were allowed to talk, face-to-face, for three minutes. Their instructions encouraged discussing the experimental task, but interactions were otherwise unstructured. At the end of the match, subjects were asked to complete a personality questionnaire on behalf of their partner. This concluded the first half of the experiment. For the second half of the experiment, subjects were randomly re-matched with player roles unchanged, so workers remained workers, and the interaction described above was repeated.[12]

# 4 Results

172 subjects participated in eight experimental sessions, with session sizes ranging from 10 to 26 subjects. Because each subject took part in two teams, each having two members, this produced data for 172 matches. Recall that a team could go bankrupt if no prize was discovered for 12 periods, or if the manager did not leave herself enough money to continue to the next period because too much had been allocated to the worker (e.g., the manager may not have understood the instructions). Nine out of the 172 matches were confronted with the former situation, and seven failed to find a prize and become bankrupt as a result. All bankrupt matches were excluded from our subsequent analysis.

## 4.1 End-of-match Outcomes

We first analyze end-of-match outcomes. Our dependent variable of interest is $Difference_{it}$: the difference between the earnings of worker $i$ and the earnings of her manager in match $t$, measured in dollars. Note that this variable is unobserved by the worker, who only observes her own earnings. The median value of the variable is close to zero, suggesting that managers did keep fairness in mind when deciding how much the worker should be rewarded. On the other hand, its standard deviation is 5.975, suggesting that the experiment produced substantial variation in earnings differentials (SD=5.975). The distribution of the $Difference_{it}$ variable for the 156

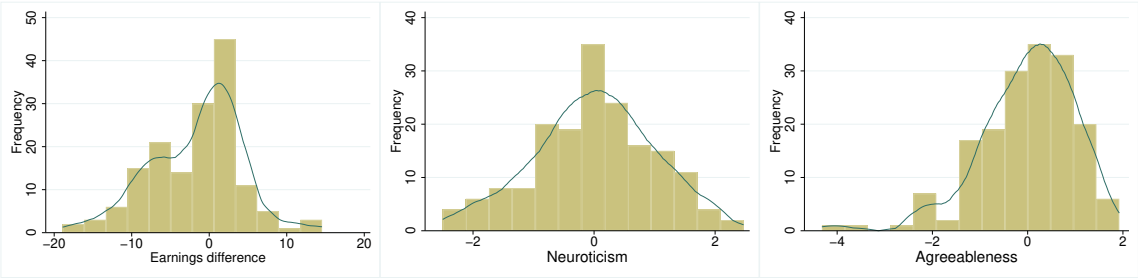
[12]The locations of the prize-winning slider were {Top, Top, Top, Bottom, Top, Bottom, Bottom, Bottom, Bottom, Bottom, Bottom, Bottom, Top, Bottom, Top} in the first half of the experiment and {Bottom, Bottom, Bottom, Top, Top, Bottom, Top, Top, Top, Top, Bottom, Bottom, Bottom, Bottom, Bottom} in the second half. The two halves were otherwise identical in design.

worker/manager pairs that did not face bankruptcy is shown in Figure 1 (a).

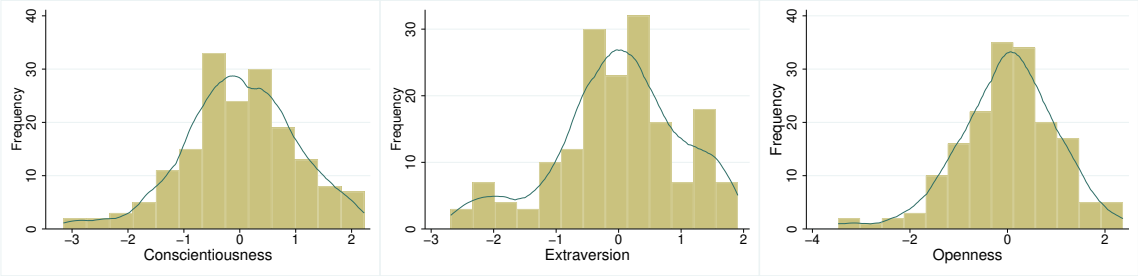
We assessed the relationship between personality and payments using the following model:

$$Difference_{it} = \alpha + \boldsymbol{\beta\Psi_{it}} + \boldsymbol{\gamma\Phi_{it}} + \epsilon_i \tag{4.1}$$

$\boldsymbol{\Psi_{it}}$ is a vector of $i$'s personality characteristics, as well as the personality characteristics of her manager in match $t$, and $\boldsymbol{\Phi_{it}}$ a vector of additional covariates, such as output and effort. Output is measured as the number of prizes discovered. Effort is measured as the number of sliders correctly moved. Personality characteristics were $z-$scored in our analysis; i.e., each trait had the sample average subtracted, and the difference was divided by the standard deviation. The distributions of personality traits in the data across the 172 subjects that participated in the experiment are shown in Figure 1 (b-f).




(a) Earnings difference (N=156) (b) Neuroticism (N=172) (c) Agreeableness (N=172)




(d) Conscientiousness (N=172) (e) Extraversion (N=172) (f) Openness (N=172)

Figure 1: **Histograms of key variables.**

The first column of Table 1 reports the results of a specification with $\boldsymbol{\gamma} = 0$, i.e., where the only controls are personality traits of the worker and manager.[13] The R-squared is 0.101, suggesting that personality explains about 10% of the variation in

[13]The standard errors are clustered by worker.

| | OLS | OLS | IV | IV |
|---|---|---|---|---|
| Neuroticism of worker | -0.364 | -0.348 | -0.161 | -0.143 |
| | (0.459) | (0.460) | (0.549) | (0.570) |
| Agreeableness of worker | -1.411*** | -1.166*** | -3.521*** | -3.760** |
| | (0.432) | (0.437) | (1.315) | (1.512) |
| Conscientiousness of worker | 0.690 | 0.737 | 1.097* | 1.131* |
| | (0.610) | (0.556) | (0.593) | (0.613) |
| Extraversion of worker | 1.053 | 1.056* | 1.001* | 0.995* |
| | (0.643) | (0.601) | (0.565) | (0.568) |
| Openness of worker | -0.467 | -0.582 | -0.183 | -0.135 |
| | (0.476) | (0.473) | (0.553) | (0.606) |
| Neuroticism of manager | 0.322 | 0.0524 | 0.0764 | 0.0762 |
| | (0.507) | (0.546) | (0.546) | (0.552) |
| Agreeableness of manager | 0.0292 | 0.327 | 0.246 | 0.238 |
| | (0.582) | (0.649) | (0.624) | (0.627) |
| Conscientiousness of manager | -0.302 | -0.612 | -0.589 | -0.591 |
| | (0.664) | (0.655) | (0.661) | (0.664) |
| Extraversion of manager | -0.535 | -0.784 | -0.870 | -0.889 |
| | (0.648) | (0.629) | (0.638) | (0.633) |
| Openness of manager | 0.682 | 0.735 | 0.717 | 0.720 |
| | (0.608) | (0.607) | (0.610) | (0.613) |
| Output | | -0.998*** | -0.824** | -0.804** |
| | | (0.318) | (0.354) | (0.363) |
| Effort | | 0.0154 | 0.00909 | 0.00785 |
| | | (0.0259) | (0.0294) | (0.0288) |
| Constant | -1.311*** | 1.342 | 1.546 | 1.618 |
| | (0.459) | (2.198) | (2.604) | (2.588) |
| R-squared | 0.101 | 0.163 | | |
| F-statistic (second stage) | 2.156 | 2.435 | 2.523 | 2.335 |
| Underidentification test (P-value) | | | 0.0159 | 0.00228 |
| Weak identification test (F-statistic) | | | 4.293 | 14.44 |
| Overidentification test (P-value) | | | 0.206 | |
| Observations | 156 | 156 | 154 | 154 |

Worker-clustered standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Table 1: **The effect of personality on earnings differentials.** OLS regression results in the first two columns, 2SLS results in the second two columns. The difference between the worker's and the manager's earnings is the dependent variable in every regression. Only of match outcomes are used in the analysis. Agreeableness of the worker decreased the worker's earnings relative to those of the manager in every specification.

earnings differentials. While we reject the null hypothesis that the worker's personality traits all had an effect size of zero ($P < 0.01$), we cannot reject the analogous null hypothesis for the manager ($P = 0.7232$). Of the worker's personality traits, the only one that had an individual effect is agreeableness, with $P < 0.01$. Thus, more agreeable workers earned less relative to their managers. As can be seen from the second column of Table 1, this result is robust to controlling for effort and output.

That the manager's personality had no significant effect on earnings differentials is consistent with Morris et al. (1999), who argue that bargaining outcomes are often determined by "situational" factors rather than one's own personality characteristics. Morris et al. (1999), however, did not measure the effect of other people's personality traits on bargaining decisions. To our knowledge, the result that the manager's decisions is significantly affected by the worker's agreeableness has not previously been reported in the literature.

## 4.2 IV analysis

Recall that workers evaluated the personalities of their managers through questionnaires at the end of each interaction (half of the experiment). To study the relationship between the worker's perception of the manager and personality, we estimated regressions of the following sort:

$$Perception_{itk} = \alpha + \boldsymbol{\beta}\boldsymbol{\Psi}_{\boldsymbol{it}} + \epsilon_{it}. \tag{4.2}$$

$Perception_{itk}$ stands for $i$'s perception of the $k^{th}$ trait of manager $t$. The results are reported in Table 2.[14] We find that agreeable workers saw their teammates as being more open ($P < 0.05$), more conscientious ($P < 0.05$), more extraverted ($P < 0.05$), less neurotic ($P < 0.001$), and more agreeable ($P < 0.01$). As stated in DeYoung et al. (2007) (p. 883), "All of the positive poles of the Big Five are socially desirable, whereas all of the negative poles are socially undesirable (Neuroticism is reversed [...] and labeled *Emotional Stability*)." Thus, agreeable workers in our experiment perceived their managers as being more socially desirable.

The results in Table 2 suggest that worker $i$'s evaluation of her *other* manager $t'$ can be used as an instrument for the worker's agreeableness in Equation 4.1. This

[14]Three workers entered the same answer ("Neither Agree Nor Disagree") for every item in the survey they filled out on their teammate's behalf; these subjects were excluded from this analysis.

| | (1) Perc. N. | (2) Perc. A. | (3) Perc. C. | (4) Perc. E. | (5) Perc. O. | (6) Perc. of des. |
|---|---|---|---|---|---|---|
| Income | 0.00222 | 0.0388*** | -0.00218 | 0.0165 | 0.00574 | 0.0567 |
| | (0.00949) | (0.0146) | (0.0124) | (0.0133) | (0.0115) | (0.0456) |
| Neuroticism of worker | 0.0879* | 0.00867 | -0.105*** | -0.0587 | -0.0562 | -0.299* |
| | (0.0457) | (0.0706) | (0.0356) | (0.0586) | (0.0427) | (0.178) |
| Agreeableness of worker | -0.188**** | 0.256*** | 0.141** | 0.130** | 0.146** | 0.861**** |
| | (0.0541) | (0.0755) | (0.0550) | (0.0602) | (0.0553) | (0.214) |
| Conscientiousness of worker | 0.0285 | 0.00618 | -0.00989 | 0.000772 | -0.0177 | -0.0491 |
| | (0.0501) | (0.0764) | (0.0527) | (0.0573) | (0.0553) | (0.209) |
| Extraversion of worker | -0.0333 | -0.0111 | 0.0645 | 0.0354 | 0.0948* | 0.217 |
| | (0.0650) | (0.0785) | (0.0645) | (0.0707) | (0.0495) | (0.273) |
| Openness of worker | 0.0644 | 0.0684 | 0.0312 | -0.0178 | 0.0970** | 0.114 |
| | (0.0495) | (0.0632) | (0.0556) | (0.0645) | (0.0428) | (0.180) |
| Neuroticism of manager | 0.0430 | 0.0173 | 0.0369 | -0.0401 | 0.0420 | 0.0131 |
| | (0.0458) | (0.0578) | (0.0557) | (0.0586) | (0.0428) | (0.190) |
| Agreeableness of manager | 0.00203 | 0.0152 | -0.0666 | 0.0386 | -0.0132 | -0.0280 |
| | (0.0326) | (0.0574) | (0.0438) | (0.0459) | (0.0442) | (0.174) |
| Conscientiousness of manager | 0.0309 | 0.0615 | 0.0303 | -0.0468 | -0.0203 | -0.00620 |
| | (0.0381) | (0.0593) | (0.0503) | (0.0535) | (0.0456) | (0.169) |
| Extraversion of manager | -0.0793 | 0.0353 | -0.00359 | 0.132*** | 0.0531 | 0.296 |
| | (0.0487) | (0.0650) | (0.0563) | (0.0475) | (0.0536) | (0.199) |
| Openness of manager | 0.0530 | -0.130* | 0.0136 | -0.0945* | 0.0191 | -0.245 |
| | (0.0383) | (0.0678) | (0.0420) | (0.0514) | (0.0496) | (0.186) |
| Constant | 2.537**** | 3.170**** | 3.587**** | 3.116**** | 3.370**** | 10.71**** |
| | (0.102) | (0.151) | (0.122) | (0.130) | (0.115) | (0.473) |
| R-squared | 0.146 | 0.157 | 0.148 | 0.0941 | 0.176 | 0.171 |
| F-statistic | 1.932 | 2.789 | 3.221 | 1.778 | 2.861 | 2.803 |
| Observations | 154 | 154 | 154 | 154 | 154 | 154 |

Worker-clustered standard errors in parentheses)
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Table 2: **The worker's perceptions, earnings, and the personality traits of both teammates.** The worker's agreeableness had a significant effect on how every trait fo the manager was evaluated. Overall, more agreeable workers provided more favoreable perceptions of their managers.

instrument is valid for two reasons. First, the worker's evaluations are highly correlated with the worker's agreeableness. Second, since workers and managers were randomly matched, it is reasonable to assume that the earnings differential induced by one manager is independent of how the other manager was rated. Note that the worker never observed either the manager's earnings or the value of the $Difference_{it}$ variable. Thus, the earnings differential experienced by the worker in first half of the experiment in principle cannot affect the worker's behavior in the second half. We test for this assumption explicitly in Table 3 in the appendix, where we re-estimate the regressions in the first five columns of Table 2 using observations in the second half of the experiment, and controlling for the earnings differential experienced by the worker in the first half. We find that the effect of the earnings differential variable is not significant for any of the manager's personality traits, with the smallest P-value being equal to $P = 0.236$.

The third column of Table 1 augments the analysis in the second column by using the worker's evaluations of the manager's personality traits as an instrument for the worker's agreeableness. We estimated the model with two stage least squares and worker-clustered standard errors. The effect of agreeableness is sizeable and significant, with $P < 0.01$. The model survives all standard tests of instrument validity, which are reported at the bottom of the table. Thus, the Kleibergen and Paap (2006) underidentification test rejects the null hypothesis that the model is underidentified, i.e. that the excluded instruments are uncorrelated with agreeableness ($P < 0.05$). The Kleibergen-Papp first stage F-statistic is equal to 4.293, suggesting that the instruments are not weak. Using Hansen's overidentification test, we cannot reject the null hypothesis that the instruments are uncorrelated with the error term ($P = 0.2061$).

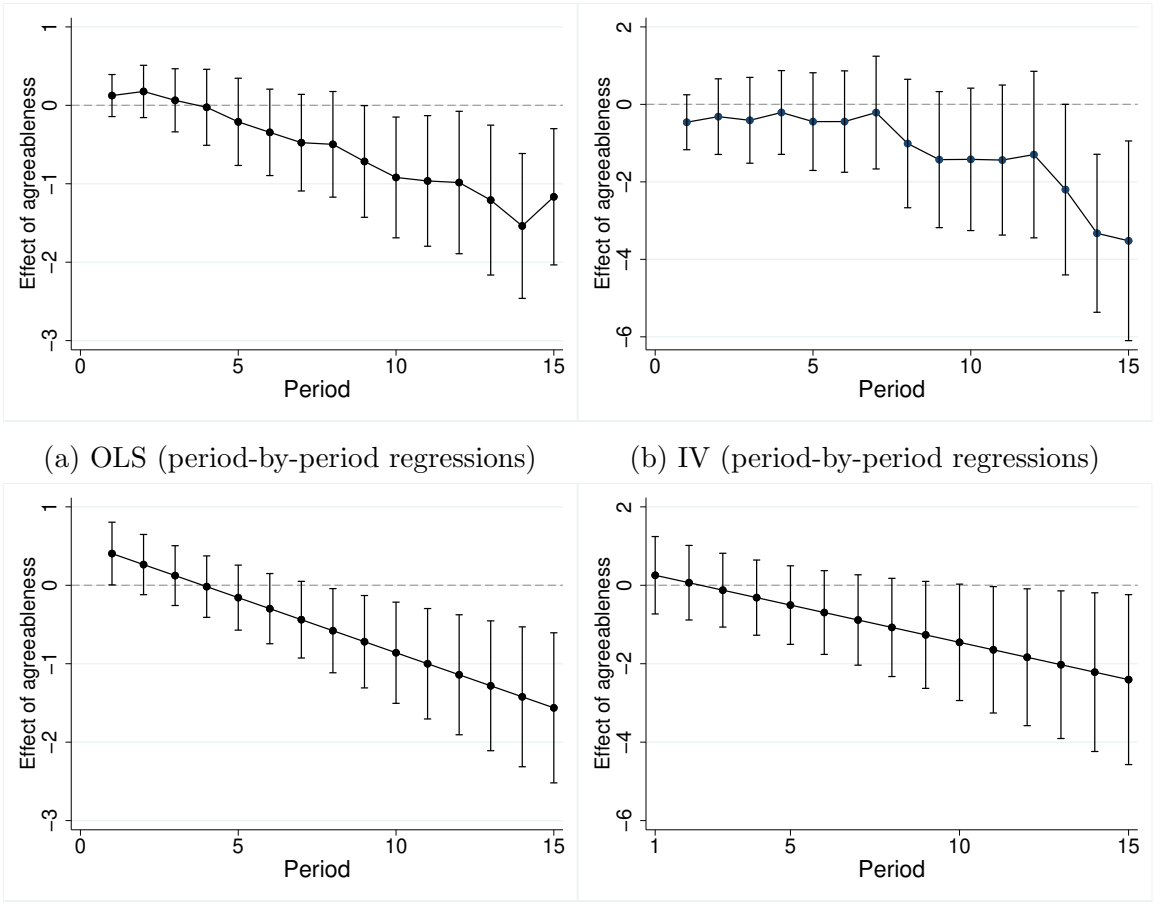
As a robustness check, the fourth column of Table 1 repeats that in the third column using a single instrument that captures the notion of social desirability. Thus, we define $Desirability_{it'}$, $i$'s expressed desirability of manager $t'$, as the sum of worker $i$'s ratings of this manager's extraversion, agreeableness, conscientiousness and openness minus her rating of the manager's neuroriticism, and use it to instrument for the effect of $i$'s agreeableness on the payment decision of manager $t$. The results are virtually identical to those in the third column. Overall, the results suggest that worker agreeableness affected the manager's decision of how to split the prize winnings between herself and the worker.

## 4.3 The Effect of Agreableness Over Time

If the effect of agreeableness on the worker's earnings was due to face-to-face interactions with the manager, one may hypothesize that this effect strengthened with the number of interactions, as subjects became acquainted with their team members and gradually assimilated their personality traits. To study the dynamics of the effect of agreeableness over time, we re-estimated the models in the second and third columns of Table 1 separately for each period. This led to 30 regressions, 15 for the OLS specification, and 15 for the IV specification. The coefficients on agreeableness together with 95% confidence intervals are reported in the top two panels of Figure 2. Consistent with the hypothesis that the worker's personality was absorbed by the manager gradually, we find that the marginal effect of agreeableness was indistinguishable from zero for the first several periods of the interaction; with time, the effect grew more negative, and eventually reached significance.

As a robustness check, we augmented the regressions in the second and third columns of Table 1 by including all periods of the interaction (i.e., 15 in each half of the experiment, as opposed to focusing on end-of-match outcomes), controlling for period number, and controlling for interactions between period number and each of the personality traits of both the worker and the manager. Thus, in the OLS specification, we regressed the $Difference_{it}$ variable on the personality traits of the worker, the personality traits of the manager, output, effort, period number, interactions between period number and the worker's personality traits, and interactions between period number and the manager's personality traits. We did the same in the IV specification. In addition, in the IV specification, we used the worker's evaluations of each of the manager's personality traits as instruments for worker agreeableness and interactions between period number and the worker's evaluations of each of the manager's traits as instruments for interactions between period number and worker agreeableness. The results concerning worker agreeableness are shown in in the bottom two panels of Figure 2.[15] The overall time trend is similar to that obtained in the period-by-period analysis. Overall, the results are consistent with the hypothesis that it took time for the manager to become acquainted with her worker's personality and respond to it.

[15]The full results are reported in the appendix. We find there that none of the other personality traits of the worker are significant, but several of the interactions between period number and personality traits of the worker are.




(a) OLS (period-by-period regressions)

(b) IV (period-by-period regressions)

(c) OLS (model with period interactions)

(d) IV (model with period interactions)

Figure 2: **The change in the marginal effect of agreeableness over time.** 95% confidence intervals are plotted around the marginal effects at each period. In each model, the effect is insignificant in the early periods and becomes negative and significant over time.

# 5 Conclusion

We studied the effect of personality on bargaining power in a controlled experiment, designed to broadly reflect team production in an organization. The combined results reported in this paper point to two main observations: agreeableness of an individual at the bottom of a given hierarchical relationship is associated with decreased bargaining power, and this effect becomes stronger as the individual's personality is learned. Agreeableness is typically defined as "the tendency to act in a cooperative, unselfish manner" (Becker et al., 2012, Table A.1). We suggest that this tendency is perceived by managers, and, perhaps subconsciously, exploited. Managers found agreeable workers more willing to accept harsher terms, and hence paid them less.

In the future, it would be interesting to relax the bargaining problem we studied here and understand just how robust our results are to specific details of the economic environment. For instance, although we held the hierarchy fixed in our experiment, some evidence suggests that personality is related with status-seeking behavior (Kyl-Heku and Buss, 1996), and, hence, one's status too. Therefore, the effect of personality on a typical organization is likely to be much more complex than the one observed in this paper. Nevertheless, an important motivation of this study is to open the door for detailed experimental analysis of personality in environments that are both strategic and not anonymous, as is the case in many important economic relationships. Potential applications of this idea range from a deeper understanding of earnings determination in organizations to the relevance of Luxembourg in European politics.

Finally, it seems reasonable to hypothesize that disagreeable workers exhibited characteristic behavioral traits that were effectively unobserved to us as experimenters (speaking in a louder voice, etc.). The goal of this study was to investigate the effect of other people's personality on one's economic decisions, rather than trying to understand in depth the channels through which personality traits express themselves. Understanding these channels more deeply, as well as how they interact with strategic considerations, seems to us an exciting topic for future research.

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# A Omitted Tables

| | (1) Perc. N. | (2) Perc. A. | (3) Perc. C. | (4) Perc. E. | (5) Perc. O. | (6) Perc. of des. |
|---|---|---|---|---|---|---|
| $Difference_{it'}$ | 0.00210 | -0.0168 | -0.00149 | 0.000504 | -0.00469 | -0.0245 |
| | (0.00982) | (0.0140) | (0.01000) | (0.0112) | (0.0101) | (0.0415) |
| Income | 0.00196 | 0.0218 | 0.0167 | 0.00489 | -0.00438 | 0.0371 |
| | (0.0159) | (0.0213) | (0.0181) | (0.0233) | (0.0185) | (0.0693) |
| Neuroticism of worker | 0.0550 | 0.0734 | -0.0373 | -0.145 | 0.000925 | -0.163 |
| | (0.0705) | (0.111) | (0.0631) | (0.0922) | (0.0861) | (0.315) |
| Agreeableness of worker | -0.229*** | 0.282** | 0.216** | 0.138 | 0.124 | 0.987** |
| | (0.0831) | (0.120) | (0.0855) | (0.0961) | (0.0930) | (0.381) |
| Conscientiousness of worker | 0.107* | -0.0498 | -0.0673 | -0.0564 | -0.0533 | -0.334 |
| | (0.0631) | (0.0900) | (0.0672) | (0.0846) | (0.0688) | (0.258) |
| Extraversion of worker | -0.131* | 0.0837 | 0.181** | -0.0209 | 0.201*** | 0.577* |
| | (0.0699) | (0.108) | (0.0785) | (0.0920) | (0.0679) | (0.321) |
| Openness of worker | 0.0574 | 0.00430 | -0.0225 | -0.000174 | 0.0595 | -0.0162 |
| | (0.0551) | (0.0927) | (0.0668) | (0.0861) | (0.0743) | (0.262) |
| Neuroticism of manager | -0.0245 | 0.128 | 0.152** | -0.00651 | 0.0977 | 0.396 |
| | (0.0639) | (0.0775) | (0.0729) | (0.0868) | (0.0679) | (0.282) |
| Agreeableness of manager | 0.0301 | -0.0303 | -0.0788 | 0.0390 | -0.00508 | -0.105 |
| | (0.0546) | (0.0731) | (0.0751) | (0.0644) | (0.0718) | (0.265) |
| Conscientiousness of manager | 0.106* | 0.0732 | 0.0933 | -0.0867 | -0.0213 | -0.0474 |
| | (0.0579) | (0.0954) | (0.0651) | (0.0880) | (0.0778) | (0.262) |
| Extraversion of manager | -0.0183 | -0.0395 | -0.0954 | 0.126 | 0.00968 | 0.0193 |
| | (0.0675) | (0.110) | (0.0857) | (0.0783) | (0.0941) | (0.343) |
| Openness of manager | -0.0317 | -0.0107 | 0.0781 | -0.0815 | 0.101 | 0.118 |
| | (0.0689) | (0.0986) | (0.0768) | (0.0756) | (0.0757) | (0.321) |
| Constant | 2.541**** | 3.264**** | 3.356**** | 3.242**** | 3.459**** | 10.78**** |
| | (0.145) | (0.210) | (0.166) | (0.219) | (0.170) | (0.613) |
| R-squared | 0.223 | 0.179 | 0.270 | 0.0902 | 0.206 | 0.203 |
| F-statistic | 2.870 | 1.587 | 2.980 | 0.937 | 1.789 | 1.933 |
| Observations | 79 | 79 | 79 | 79 | 79 | 79 |

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Table 3: **The worker's perceptions, earnings, and the personality traits of both teammates.** Perceptions in only the second half of the experiment are used, and the earnings differential in the first half of the experiment is included as a control. The effects of the earnings differential on perceptions are not significant.

| | OLS | IV |
|---|---|---|
| Neuroticism of worker | 0.0612 | 0.111 |
| | (0.275) | (0.239) |
| Period | 0.278**** | 0.284**** |
| | (0.0334) | (0.0332) |
| Neuroticism of worker × Period | -0.0261 | -0.0206 |
| | (0.0337) | (0.0353) |
| Agreeableness of worker | 0.545** | 0.446 |
| | (0.215) | (0.534) |
| Agreeableness of worker × Period | -0.140**** | -0.190** |
| | (0.0359) | (0.0820) |
| Conscientiousness of worker | 0.0101 | 0.0369 |
| | (0.234) | (0.222) |
| Conscientiousness of worker × Period | 0.0616 | 0.0692* |
| | (0.0389) | (0.0393) |
| Extraversion of worker | -0.0772 | -0.0405 |
| | (0.251) | (0.248) |
| Extraversion of worker × Period | 0.0799* | 0.0799* |
| | (0.0455) | (0.0436) |
| Openness of worker | 0.231 | 0.232 |
| | (0.218) | (0.240) |
| Openness of worker × Period | -0.0290 | -0.0195 |
| | (0.0346) | (0.0358) |
| Neuroticism of manager | -0.310 | -0.276 |
| | (0.282) | (0.264) |
| Neuroticism of manager × Period | 0.0451 | 0.0451 |
| | (0.0392) | (0.0394) |
| Agreeableness of manager | -0.122 | -0.101 |
| | (0.269) | (0.273) |
| Agreeableness of manager × Period | -0.00538 | -0.00651 |
| | (0.0413) | (0.0408) |
| Conscientiousness of manager | 0.0989 | 0.114 |
| | (0.230) | (0.224) |
| Conscientiousness of manager × Period | -0.0103 | -0.0112 |
| | (0.0462) | (0.0456) |
| Extraversion of manager | 0.0117 | 0.00668 |
| | (0.282) | (0.277) |
| Extraversion of manager × Period | -0.0459 | -0.0496 |
| | (0.0475) | (0.0474) |
| Openness of manager | 0.00318 | -0.00684 |
| | (0.209) | (0.205) |
| Openness of manager × Period | 0.0547 | 0.0551 |
| | (0.0412) | (0.0408) |
| Output | -0.587**** | -0.609**** |
| | (0.170) | (0.158) |
| Effort | -0.00734 | |
| | (0.0131) | |
| Constant | -2.426* | -3.049**** |
| | (1.221) | (0.701) |
| R-squared | 0.206 | 0.194 |
| F-statistic (second stage)" | 7.843 | 8.173 |
| Underidentification teat | | 0.170 |
| Weak identification test | | 2.167 |
| Overidentification test | | 0.631 |
| Observations | 2340 | 2340 |

Worker-clustered standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Table 4: **The effect of personality on earnings differentials.** OLS regression in the first columns, 2SLS results in the second column. Period number and interactions between period number and personality traits are included. The interaction between worker agreeableness and period is negative and significant, suggesting that the manager learns to respond to it over time.

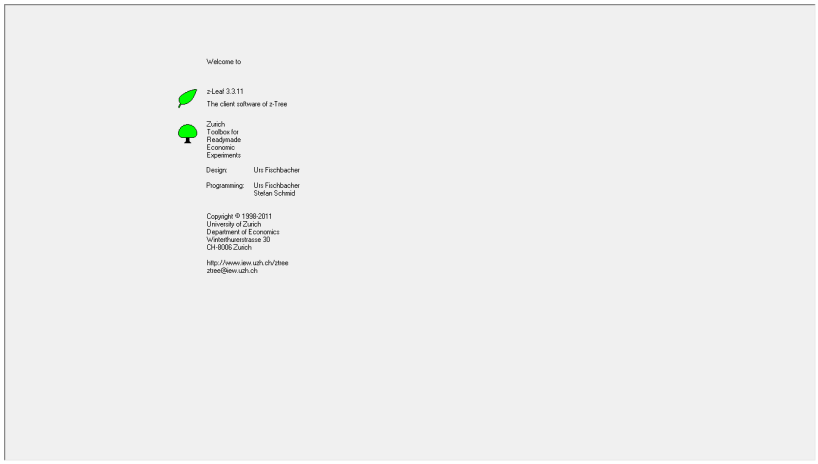
# B Instructions

In this game, there is a team with Person B and Person A. The role of Person B is

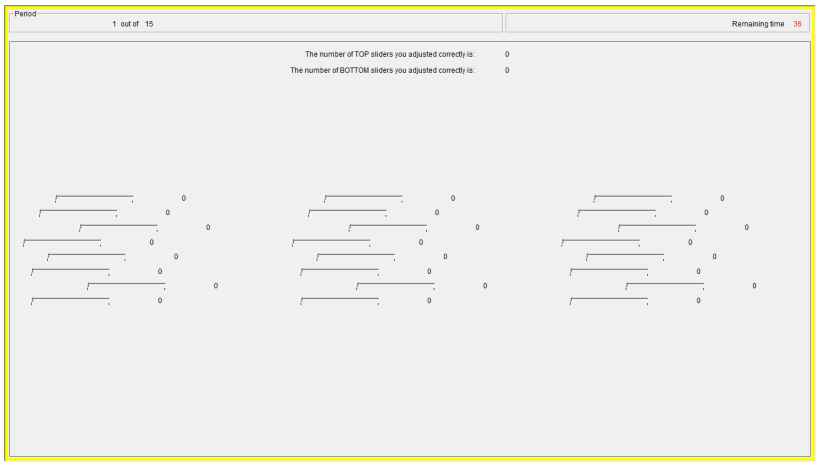
1. to give recommendations to Person A, and
2. to decide how prize money (described below) should be distributed between the team members.

The game will last 15 periods OR until Person B runs out of money.

**In the first period of the game, there is no recommendation.** When the game starts (Period 1 out of 15), Person B will see a screen like this




and Person A will see a screen like this

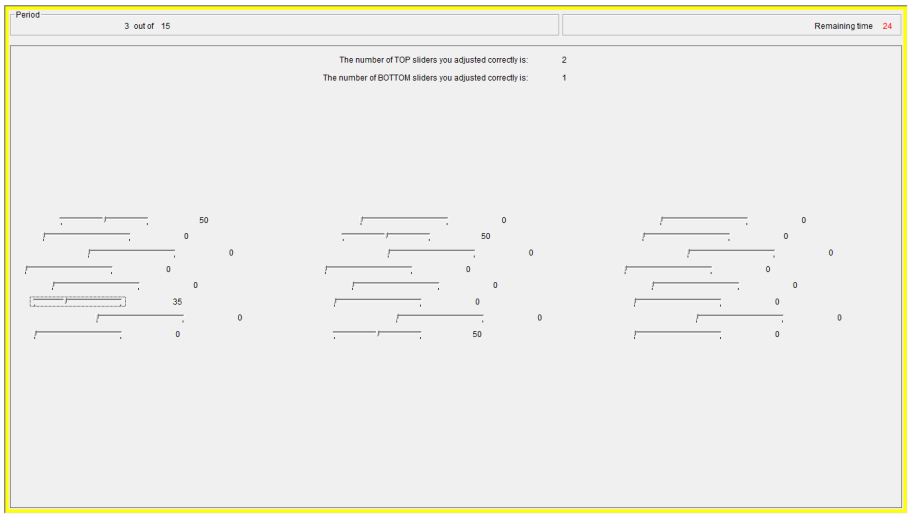


Person A will see 24 sliders on their screen. He/she has **40 seconds** to adjust the sliders.

TOP sliders are sliders in the first four rows. BOTTOM sliders are sliders in the last four rows.

Therefore, Person A will have 12 TOP sliders, and 12 BOTTOM sliders.

Adjusting a slider correctly means adjusting it to position 50. For example, in the screen grab below, one slider in the **first** row has been adjusted to position 50 (correct, TOP), one slider in the **second** row has been adjusted to position 50 (correct, TOP), one slider in the **sixth** row has been adjusted to position 35 (incorrect, BOTTOM), and one slider in the **eighth** row has been adjusted to position 50 (correct, BOTTOM).




Notice that a message in the top part of the screen is informing Person A that two TOP sliders have been adjusted correctly (in the **first** and **second** rows) and one BOTTOM slider has been adjusted correctly (the one in the **eighth** row). The only other slider that has been adjusted – the one in the **sixth** row – has not been adjusted correctly.

# How money is earned

If you are Person A, you earn **one penny for each slider NOT at position 50**. This money is yours to keep; Person B cannot take it away.

Therefore, in the example above, where three sliders are at 50, Person A will get 21 cents if they keep all sliders at their current positions.

Why would Person A want to adjust sliders at all? **One and only one of the 24 sliders contains a prize.**

**BUT YOU DON'T GET THE PRIZE MONEY AUTOMATICALLY.** Aside from the pennies Person A gets for unadjusted sliders, Person B is completely in control of the payments received by Person A.

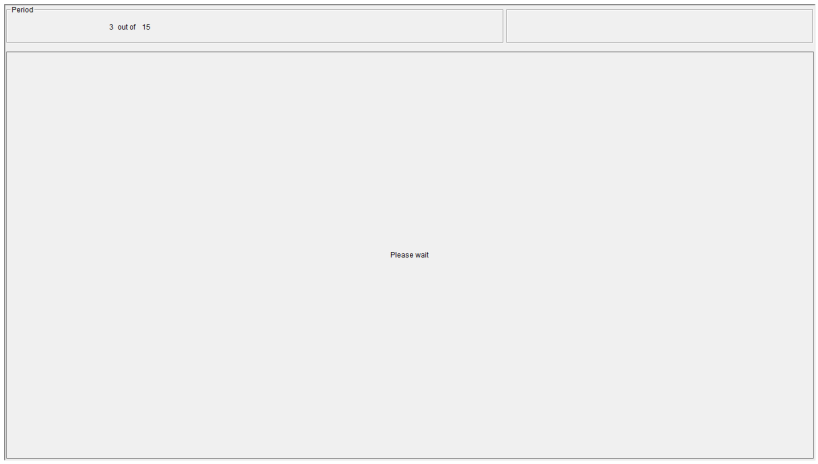
# Where is the prize?

The prize can either be behind a TOP or a BOTTOM slider.

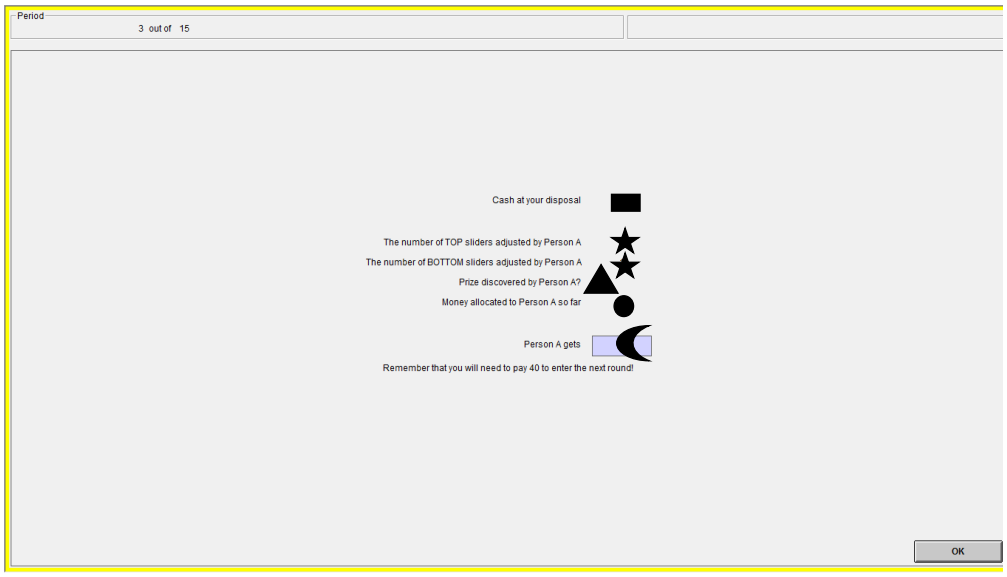
Whether the prize is behind a TOP/BOTTOM slider in the **next** round only depends on where the prize was in **this** round.

Person A will never know where the prize is. At the end of every round, Person B will see whether or not the prize was discovered. He/she will use this information to make recommendations to Person A.

After the 40 seconds given to Person A to adjust their sliders run out, Person A will see a screen like this



and Person B will see a screen like this




Now, Person B has to decide how much he/she wants to pay Person A. Person B has **unlimited time** to make this decision.

In the beginning of the experiment, Person B starts out with 500 cents.

## 40 cents are subtracted from Person B's earnings at the beginning of every period.

Therefore, as soon as Period 1 starts, 40 cents are subtracted from 500, leaving person B with 460.

## If a prize is discovered, Person B gets 400 cents added to their total funds.

Therefore, you are Person B, and Person A discovered the prize, your available funds (or "Cash at your disposal") at the end of Period 1 will be 860. You will see this number in of the rectangle ( ■ ) in the screen grab above.

In place of the triangle ( ▲ ), you will see the word "YES" or "NO." YES means that Person A discovered the prize. NO means that Person A did not discover the prize.

Behind the stars (★) you will find information about how many TOP and BOTTOM sliders Person A adjusted.

Person B has to decide how much to **pay or fine** Person A. This number is entered behind the moon symbol ( ☾ ).

Behind the circle (●) is information about how much Person B paid Person A so far. Whatever is entered behind the moon gets added to the number behind the circle.

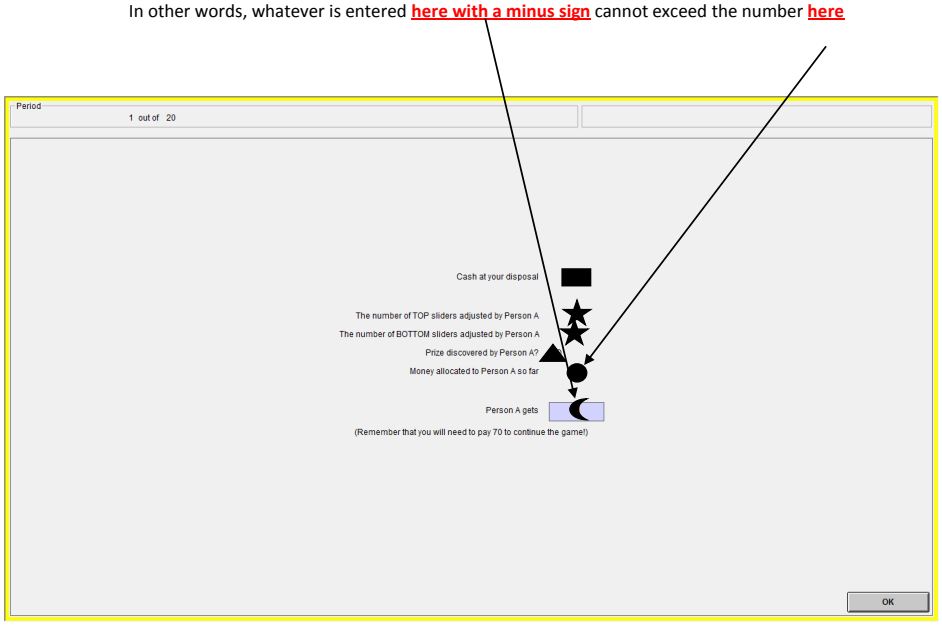
# Paying (or fining) Person A

There are a couple of restrictions on how Person B can pay (fine) Person A.

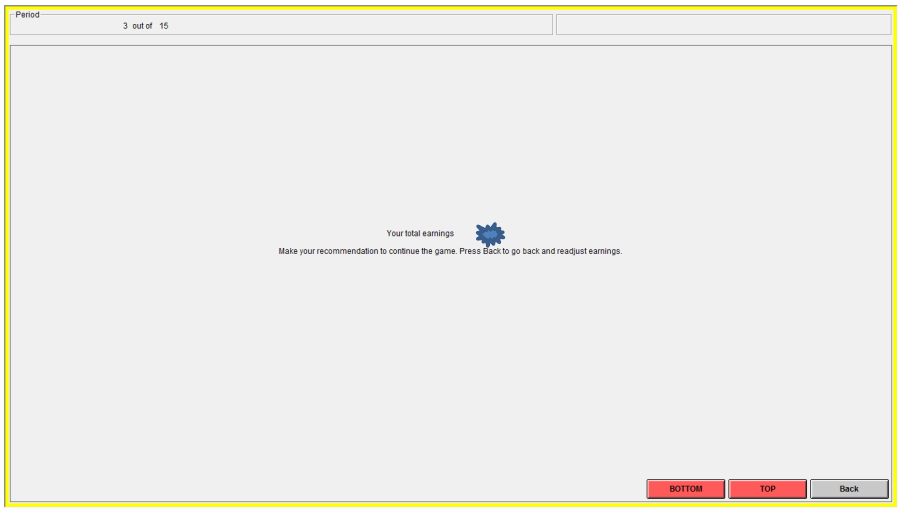
1. **Person B has to make sure that they don't go over the cash at their disposal.** Therefore, if Person B has 1700 cents available, they have to pay Person A no more than 1700.

2. **Person B cannot take more money from Person A than what Person A has been paid so far.**

   In other words, whatever is entered **here with a minus sign** cannot exceed the number **here**

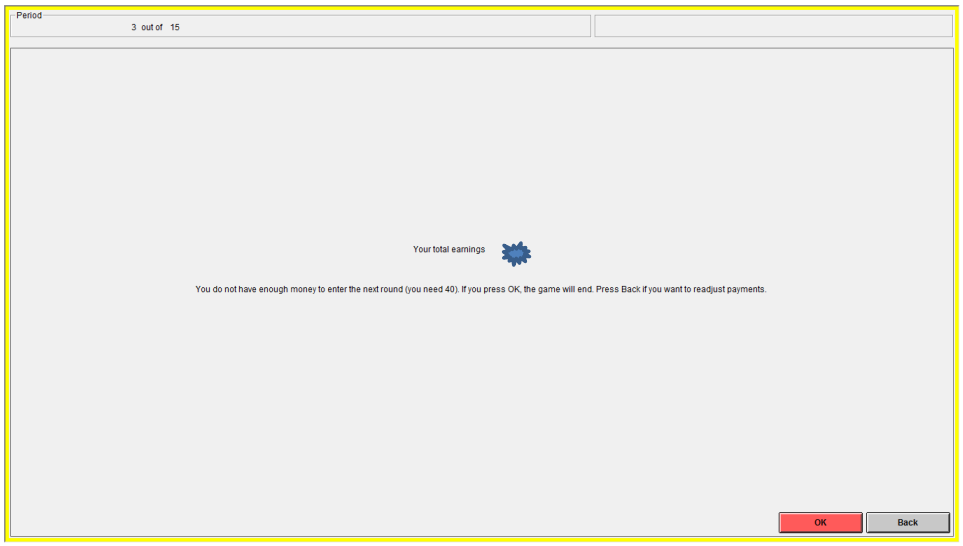


After Person B decides how to pay Person A**, if and only if he/she is left with more than 40**, Person B will see a screen like this




At this point, Person B has to make a recommendation to Person A about which sliders to move.

If Person B has been left with less than 40 after paying Person A, his/her screen will look like this:



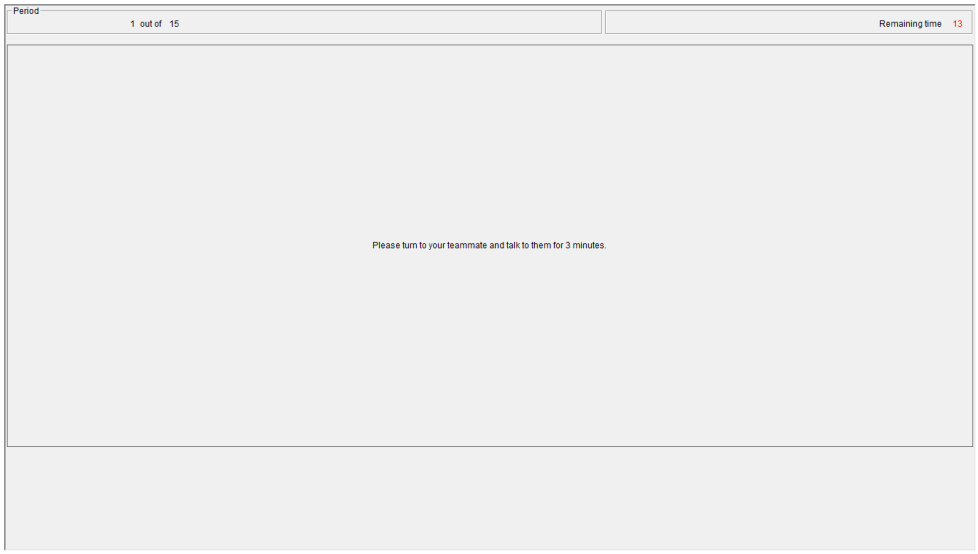

Pressing OK at this point finishes the experiment.

Assuming Person B has been left with more than 40 and the experiment continues, both team members will see their earnings displayed on the screen.

Next, Person A will again see their sliders, and Person B will have to wait 40 seconds before paying Person A and making the next recommendation.

# Communication

At the end of Periods 5 and 10, instead of continuing to the next round, all team members will see the following on their screen.




At this point, Person A and Person B will have three minutes to discuss the game.

**The purpose of these discussions is for Person B to understand how he/she wants to adjust the way he/she has been paying each Person A.**

**You can discuss anything related to the game at this time. As Person B, you share your thoughts and concerns about what Person A is doing. As Person A, you can share your thoughts and concerns about what Person B is doing.**

**You can discuss anything related to the game.**

After the three minutes expire, the experiment will resume.

# Payment

You will be paid **privately**.

Person B will not see how much Person A made. (Although, if he/she keeps count of sliders moved and payments received in the course of the experiment, he/she could calculate this information.)

Person A will not know how much money Person B earned.

# C Personality Questionnaire

Here are a number of characteristics that may or may not describe you. For example, do you agree that you seldom feel blue? Please fill in the number that best indicates the extent to which you agree or disagree with each statement listed below. Be as honest as possible, but rely on your initial feeling and do not think too much about each item.

Use the following scale:

| 1 - - - - - - - - | 2 - - - - - - - - - | 3 - - - - - - - - - | 4 - - - - - - - - | 5 |
|---|---|---|---|---|
| **Strongly Disagree** | | **Neither Agree Nor Disagree** | | **Strongly Agree** |

1. ___ Seldom feel blue.
2. ___ Am not interested in other people's problems.
3. ___ Carry out my plans.
4. ___ Make friends easily.
5. ___ Am quick to understand things.
6. ___ Get angry easily.
7. ___ Respect authority.
8. ___ Leave my belongings around.
9. ___ Take charge.
10. ___ Enjoy the beauty of nature.
11. ___ Am filled with doubts about things.
12. ___ Feel others' emotions.
13. ___ Waste my time.
14. ___ Am hard to get to know.
15. ___ Have difficulty understanding abstract ideas.
16. ___ Rarely get irritated.
17. ___ Believe that I am better than others.
18. ___ Like order.
19. ___ Have a strong personality.
20. ___ Believe in the importance of art.
21. ___ Feel comfortable with myself.
22. ___ Inquire about others' well-being.
23. ___ Find it difficult to get down to work.
24. ___ Keep others at a distance.
25. ___ Can handle a lot of information.
26. ___ Get upset easily.
27. ___ Hate to seem pushy.
28. ___ Keep things tidy.
29. ___ Lack the talent for influencing people.
30. ___ Love to reflect on things.
31. ___ Feel threatened easily.
32. ___ Can't be bothered with other's needs.
33. ___ Mess things up.
34. ___ Reveal little about myself.
35. ___ Like to solve complex problems.
36. ___ Keep my emotions under control.
37. ___ Take advantage of others.
38. ___ Follow a schedule.
39. ___ Know how to captivate people.
40. ___ Get deeply immersed in music.
41. ___ Rarely feel depressed.
42. ___ Sympathize with others' feelings.
43. ___ Finish what I start.
44. ___ Warm up quickly to others.
45. ___ Avoid philosophical discussions.
46. ___ Change my mood a lot.
47. ___ Avoid imposing my will on others.
48. ___ Am not bothered by messy people.
49. ___ Wait for others to lead the way.
50. ___ Do not like poetry.
51. ___ Worry about things.
52. ___ Am indifferent to the feelings of others.

53. ___ Don't put my mind on the task at hand.
54. ___ Rarely get caught up in the excitement.
55. ___ Avoid difficult reading material.
56. ___ Rarely lose my composure.
57. ___ Rarely put people under pressure.
58. ___ Want everything to be "just right."
59. ___ See myself as a good leader.
60. ___ Seldom notice the emotional aspects of paintings and pictures.
61. ___ Am easily discouraged.
62. ___ Take no time for others.
63. ___ Get things done quickly.
64. ___ Am not a very enthusiastic person.
65. ___ Have a rich vocabulary.
66. ___ Am a person whose moods go up and down easily.
67. ___ Insult people.
68. ___ Am not bothered by disorder.
69. ___ Can talk others into doing things.
70. ___ Need a creative outlet.
71. ___ Am not embarrassed easily.
72. ___ Take an interest in other people's lives.
73. ___ Always know what I am doing.
74. ___ Show my feelings when I'm happy.
75. ___ Think quickly.
76. ___ Am not easily annoyed.
77. ___ Seek conflict.
78. ___ Dislike routine.
79. ___ Hold back my opinions.
80. ___ Seldom get lost in thought.
81. ___ Become overwhelmed by events.
82. ___ Don't have a soft side.
83. ___ Postpone decisions.
84. ___ Have a lot of fun.
85. ___ Learn things slowly.
86. ___ Get easily agitated.
87. ___ Love a good fight.
88. ___ See that rules are observed.
89. ___ Am the first to act.
90. ___ Seldom daydream.
91. ___ Am afraid of many things.
92. ___ Like to do things for others.
93. ___ Am easily distracted.
94. ___ Laugh a lot.
95. ___ Formulate ideas clearly.
96. ___ Can be stirred up easily.
97. ___ Am out for my own personal gain.
98. ___ Want every detail taken care of.
99. ___ Do not have an assertive personality.
100. ___ See beauty in things that others might not notice.

Use the following scale:

| **1** - - - - - - - - **2** - - - - - - - - - **3** - - - - - - - - - **4** - - - - - - - - **5** | | |
|---|---|---|
| **Strongly Disagree** | **Neither Agree Nor Disagree** | **Strongly Agree** |

BFAS Scoring Key:

*Neuroticism*

Withdrawal: 1R, 11, 21R, 31, 41R, 51, 61, 71R, 81, 91

Volatility: 6, 16R, 26, 36R, 46, 56R, 66, 76R, 86, 96

*Agreeableness*

Compassion: 2R,12, 22, 32R, 42, 52R, 62R, 72, 82R, 92

Politeness: 7, 17R, 27, 37R, 47, 57, 67R, 77R, 87R, 97R

*Conscientiousness*

Industriousness: 3, 13R, 23R, 33R, 43, 53R, 63, 73, 83R, 93R

Orderliness: 8R, 18, 28, 38, 48R, 58, 68R, 78R, 88, 98

*Extraversion*

Enthusiasm: 4, 14R, 24R, 34R, 44, 54R, 64R, 74, 84, 94

Assertiveness: 9, 19, 29R, 39, 49R, 59, 69, 79R, 89, 99R

*Openness/Intellect*

Intellect: 5, 15R, 25, 35, 45R, 55R, 65, 75, 85R, 95

Openness: 10, 20, 30, 40, 50R, 60R, 70, 80R, 90R, 100

Reverse response scores for items followed by "R" (i.e. 1=5, 2=4, 4=2, 5=1). To compute scale scores, average completed items within each scale. To compute Big Five scores, average scores for the two aspects within each domain.

Reference:

DeYoung, C. G., Quilty, L. C., & Peterson, J. B. (2007). Between facets and domains: 10 Aspects of the Big Five. *Journal of Personality and Social Psychology, 93,* 880-896.

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