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Ideas are cheap:

When and why adults value labor over ideas

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### **Abstract**

What do people value about a creation: the idea behind it, or the labor needed for its implementation? Recent developmental research suggests that children by the age of 6 begin to value ideas over labor. Yet, much less is known about whether adults similarly attribute a higher value to ideas and idea givers than to labor and idea executors. In seven studies ( $N = 1,463$ ), we explored the relative valuation of ideas versus labor in adults, its mechanisms and boundary conditions. Participants learned about an idea giver and a laborer who collaborated to create a product and indicated who deserves ownership and monetary compensation for the product. Contrary to what has been reported for children, Studies 1a-1c found that participants valued the contribution of the laborer more than the contribution of the idea giver. This labor-valuation effect emerged even when participants themselves were idea givers (Study 1b), and it was replicated across different populations (including legal professionals, Study 1c) and contexts (e.g., art works and businesses, Study 2). Studies 3a and 3b established perceived effort as a central psychological process behind the labor-valuation effect. Finally, Study 4 extended the effect to the realm of praise and blame judgments, showing that laborers receive more praise for positive outcomes, but less blame for negative outcomes, relative to idea givers. The current findings may provide a useful framework for understanding the role of effort in lay people's valuation of ideas and labor, thereby bridging research on creativity, effort, and valuation judgments.

*Keywords:* Idea Valuation; Labor Valuation; Creativity; Perceived Effort; Praise and Blame Judgments

*“What one does is what counts and not what one had the intention of doing.”*

—Pablo Picasso (1881-1973)

### **Introduction**

Imagine spending a rainy Saturday afternoon at the museum. Although you are not an expert, you generally enjoy art and today you particularly appreciate some of the pieces in the new exhibition. But then you stumble across this: Yves Klein, oil on canvas, displaying a simple blue square. Nothing else, no title, just blue. As many other people might be inclined to, you begin to ask yourself why this should be considered “art” or, for that matter, why this should be of any value and be displayed in a respectable museum. The domain of art offers a particularly striking example for the dissociation between observable labor—as manifested in the art piece—and unobservable ideas and concepts behind the work. However, neither labor (“doing”), nor ideas (“intentions”) alone seem sufficient for such creations. Typically, both are necessary contributions and should thus be valued by people to some degree. This raises an interesting question that includes but is not limited to the domain of art: do people generally think that ideas are cheap, and that it is the labor needed for their execution that really matters, or do they value ideas in their own right, for example, when legally protecting them as in the case of Yves Klein and his color “blue”?

The goal of the present research was to explore lay people’s relative valuations of ideas and idea givers in comparison to laborers and idea executors. We do not know yet whether and how adults might value one over the other. Because creations frequently involve both idea givers and laborers, comparing how their relative contributions are valued may shed light on lay people’s conceptualization of creativity and its relation to psychological processes such as perceived effort. In addition to adults’ take on the idea-versus-labor issue, we thus examine how perceptions of effort and outcome valence might contribute to it. As we focus on collaborative creations involving the execution of a creative idea, the prototypical scenario

is situated in a more or less creative context. However, we explore a wider range of scenarios, some of which are highly prototypical for the creative context (e.g., art), and some of which might be considered less prototypical (e.g., businesses).

### **Unobservable Minds and Valuation of Ideas**

People frequently refer to minds and mental states in order to explain behavior that they observe—for example, when considering an actor’s intention before judging his or her behavior (Cushman, 2008). Minds are so important to us that we also perceive them in non-human or non-living entities (Epley, Waytz, & Cacioppo, 2007). People even impose complex mental narratives on simple geometrical figures such as circles and squares when they are showing systematic movement (Heider & Simmel, 1944). Our cognitive architecture seems to be designed in such a way that it differentiates minds from the physical world containing and surrounding them (Bloom, 2004; Forstmann & Burgmer, 2015, 2017; Hood, Gjerseoe, & Bloom, 2012). Humans begin to utilize their mind-reading abilities at a very early age (Frith & Frith, 2003), and routinely refer to mental states to explain much of the complex social behavior they observe or are part of (Waytz, Gray, Epley, & Wegner, 2010). In other words, humans rely on mental states as an important source of information to make sense of the world.

One of the mental capacities that people seem to value in particular is our ability to come up with ideas that are both novel and useful (Amabile, 1983). Such creativity of the mind is strongly desired by most people, and has been associated with a host of desirable states such as personal well-being (Hirt, Devers, & McCrea, 2008) or interpersonal attractiveness (Griskevicius, Cialdini, & Kenrick, 2006). In fact, creative ideas are not just valued by lay people or studied by scholars, but they become increasingly important in today’s economy—consequently referred to as the “creative economy” (Howkins, 2002).

Research documenting the valuation of originals over duplicates is particularly suited to illustrate adults' and children's idea-valuation tendencies. This valuation of originals is evident already in children (Hood & Bloom, 2008), and it has been observed across various domains such as art (Newman & Bloom, 2012) and consumer behavior (van Horen & Pieters, 2012; 2013). For example, consumers show a strong preference for original brands over copycat brands (van Horen & Pieters, 2012; 2013). Similarly, in the domain of art, lay people and experts alike are willing to pay substantially more money for an original art piece than for a duplicate—even when they cannot tell the difference between the two. In fact, our legal system protects the certificate of authenticity attached to an original art piece and punishes those who try to sell forgeries.

Finally, developmental findings help to shed some light on the relative valuation of both ideas and labor. These findings suggest that by the age of five, children understand that other people have ideas and dislike the copying of these ideas (Olson & Shaw, 2011). Moreover, children's aversion to plagiarism emerges across different cultures that vary with regard to how much value they place on the protection of ideas—such as the United States, Mexico, and China (Yang, Shaw, Garduno, & Olson, 2014). More specifically, children dislike plagiarism because it negatively affects a creator's reputation by taking credit away from him or her (Shaw & Olson, 2015). Young children show an appreciation of creative ideas, and they acknowledge the superiority of original ideas over mere copies. These developmental findings hence mirror what previous research with adult samples has revealed: people appreciate original ideas and dislike duplicates and copycats.

The most straightforward comparison of idea valuation as opposed to labor valuation, however, has been conducted with 4-6 year-old children in a study by Li, Shaw, and Olson (2013). These authors found that 6-year-old children (but not 4-year-old children) evinced a robust preference for ideas over labor. Specifically, in a set of three studies, 6-year-olds preferred a picture that was based on their idea to a picture that was based on their labor. This

relative valuation of ideas over labor also emerged from a third-person perspective, that is, when children were asked to assign ownership of a creation to an idea giver or a laborer who were in disagreement about who owns the creation. Whereas previous research has suggested that adults generally value ideas—much as children do (Li et al., 2013)—, we do not know yet how they value ideas in direct comparison to their execution, that is, the labor needed to implement them.

### **Observable Effort and Valuation of Labor**

Regardless of how much people value ideas, ideas usually need to be executed and implemented to have impact and bring about change. Consequently, it should come as no surprise that modern societies greatly value effort and are even described as “working societies” that glorify labor (Arendt, 1960). The Japanese society took this to the extreme and has since the 1970’s been coping with “karōshi,” that is, “overwork death” (Nishiyama & Johnson, 1997)—people have literally worked themselves to death. Such an existential meaning of labor is corroborated by meta-analytic findings attesting to unemployment’s detrimental effect on mental health (Paul & Moser, 2009).

Numerous accounts attest to the important function of labor and effort, both in intrapersonal and interpersonal signaling of value (see Inzlicht, Shenhav, & Olivola, 2018, for a recent overview). Not just humans (Lewis, 1965), but also considerably less complex animals such as rats (Lydall, Gilmour, & Dwyer, 2010) have been found to place more value on rewards following increased levels of effort. The association between perceived effort and valuation becomes evident in many domains spanning from dissonance reduction via effort justification (e.g., increased liking of a group after having invested great effort to become a member; Aronson & Mills, 1959) to the IKEA effect (valuation of mundane objects such as standardized IKEA boxes upon having folded them oneself as opposed to evaluating pre-assembled ones; Norton, Mochon, & Ariely, 2012). In addition to increasing the perceived

value of objects and goals, effort can itself be rewarding, for example, when exerting effort during challenging tasks and experiencing flow (Csikszentmihalyi, 2014). More broadly, valuation of labor is also a pillar of one of the world religions, more specifically, of a protestant work ethic; Furnham, 1990), endorsed by millions of individuals.

Corroborating the view of effort as an important cue that signals value, research has shown that people consider an object of art to be more valuable if its creator has invested more (vs. less) effort into making it—a phenomenon labelled “effort heuristic” (Kruger, Van Boven, & Altermatt, 2004). These considerations extend to the domain of ownership ascriptions. Specifically, previous research indicates that people tend to determine ownership according to the “labor rule”: whoever invested labor into creating something, should become the owner (Kanngiesser & Hood, 2014). Such a “labor rule” has been established across different cultures (Kanngiesser, Itakura, & Hood, 2014) and is considered especially important if the invested effort increases the objective value of the creation.

Finally, development studies suggest that, under certain circumstances, children do not only value ideas but also effort. For instance, children as young as three years (but also adults) transfer the ownership of one person’s property to another person following the second person’s investment of “creative labor” into that property—for example, when crafting something new from modeling clay owned by someone else (Kanngiesser, Gjersoe, & Hood, 2010). In addition, and similar to adults, children also prefer objects that they themselves created over identical objects created by others. They thus display a similar tendency to value their own labor, but they may do so for different reasons than adults (Marsh, Kanngiesser, & Hood, 2018).

Taken together, people seem to generally value ideas, as much as they seem to generally value effort and labor. However, none of the previous studies directly pitted the contribution of an idea giver against the contribution of a laborer to assess whether and under which conditions adults may value one over the other. Insofar as effort is primarily associated

with visible labor, people might neglect its role in the less accessible idea-generation process, hence underappreciating ideas and idea givers.

### **Present Research**

In order to investigate these propositions, the basic experimental set-up in our research introduced two target persons who collaborated to create a product (e.g., a picture, a start-up business, or a meal). One target was presented as the idea giver, whereas the other target was presented as the laborer, executing the idea. Then participants were asked how much they valued the idea giver's and the laborer's contributions to the mutual creation, thereby assessing participants' relative preferences for one over the other.

First, we ran an exploratory study, adapting previously used materials and procedures for adult samples (Study 1a). Contrary to 6-year-old children (Li et al., 2013), adult participants in that study displayed a clear labor-valuation effect. We conceptually replicated this finding in two follow-up studies that additionally tested potential boundary conditions such as adopting a perspective that should facilitate egocentrically-motivated valuation of ideas (Study 1b) or legal expertise that should make participants particularly sensitive to the protection of ideas (Study 1c). We then ran another replication study in yet another population, to establish generalizability of the labor-valuation effect across various domains, including art, cooking and business (Study 2). An additional set of studies tested the process hypothesis that perceived effort underlies the relative appreciation of labor over ideas, using both a statistical approach to mediation (Study 3a) and an experimental approach (Study 3b). Lastly, we extend the labor-valuation effect to another judgment domain, that is, attributions of responsibility for product success versus failure. Drawing from previous research on asymmetries of blame and praise judgments (e.g., Pizarro, Uhlmann, & Salovey, 2003), we tested a potential asymmetry between idea giver and laborer when assigning praise for positive outcomes as opposed to blame for negative outcomes (Study 4).

For all studies, we report all measures, conditions, data exclusions, and how we determined our sample sizes (Simmons, Nelson, & Simonsohn, 2011). The scenarios used for all studies are reported throughout the main text and can additionally be accessed all at once in the Supplementary Online Material (SOM).

## Study 1a

### Idea versus Labor Valuation in Adults

We designed Study 1a to explore the previously observed idea-valuation effect among young children in an adult sample. We closely followed the procedure by Li and colleagues (2013) and adapted the material to an online data-collection context with adult participants (e.g., we refrained from using dolls). We used a scenario (Li et al., 2013, Study 3) in which two targets are involved in the creation of a picture, and participants judge—on the basis of the targets’ individual contributions—who should own the picture. In addition to this ownership measure (i.e., *ownership* condition), we implemented a second condition in which we instead asked participants how much money each of the targets deserves for their individual contributions to the picture (i.e., *money* condition). This extended the previously used ownership measure to the realm of resource allocations, thus operationalizing “type of valuation” in two different ways.

Finally, we developed a new questionnaire assessing individual differences in idea-valuation and labor-valuation tendencies that we included as a metric predictor in the current study. We included this novel scale for two main reasons: first, it comprises items that assess both idea and labor valuation independently from a specific context or domain, thus providing a novel measure of domain-general valuation of ideas and labor. Second, the scale might provide evidence for the external validity of the scenario used in the current study, as well as some of the subsequent studies (i.e., Studies 1b, 1c, 2, and 3a). Specifically, if scores on this novel scale meaningfully predicted participants’ reactions to the idea/labor scenario, this

would indicate that these reactions were not entirely driven by a general response bias (e.g., always prefer the first agent mentioned) or other individual differences (e.g., preference for fairness and equal valuations). Instead, the idea/labor valuation scale might provide some external validation that the scenario used is at least to some degree sensitive to variations in participants' general tendencies to value ideas and labor, respectively.

We a priori considered our first study to be explorative. However, we anticipated that individual differences in idea and labor valuation, as assessed by our newly designed questionnaire, would emerge as meaningful predictors of ownership judgments and resource allocations.

## Method

**Participants and design.** We set sample size a priori to approximately  $n = 150$  participants per condition to achieve stable estimates for correlations between the idea and labor valuation questionnaire and the continuous as well as binary dependent measures (Schönbrodt & Perugini, 2013). We recruited 303 English-speaking adults via Amazon's online data-collection service Mechanical Turk (MTurk).<sup>1</sup> Participants received \$0.30 as compensation for completing the study (duration: less than five minutes). A total of 33 participants (ownership condition: 10; money condition: 23)<sup>2</sup> were excluded from analyses based on an attention-check item (see below), leaving a final sample of 270 participants (108 females, 162 males,  $M_{\text{age}} = 33.68$ ,  $SD = 10.82$ ).

Participants were randomly assigned to either make an ownership judgment (i.e., *ownership* condition;  $n = 142$ ) or to allocate money between idea giver and laborer (i.e., *money* condition;  $n = 128$ ).

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<sup>1</sup> For all MTurk studies, we applied filter criteria to increase data quality. Specifically, these criteria were an approval rate of 95% or higher, and location only United States. Where necessary, we additionally employed qualifications that prevented MTurk participants from participating in multiple studies that included the same or highly similar measures (Chandler, Paolacci, Peer, Mueller, & Ratliff, 2015). Please refer to Buhrmester, Kwang, and Goslin (2011), Hauser and Schwarz (2016), and Peer, Vosgerau, and Acquisti (2014), for a more detailed discussion of data quality for studies involving MTurk samples.

<sup>2</sup> Due to an unequal distribution of these exclusions across experimental conditions,  $\chi^2(1) = 5.84$ ,  $p = .016$ ,  $\Phi_c = .14$ , we repeated all key analyses across the raw data, that is, including all 303 participants. Results remained virtually identical (see SOM, for details).

**Materials and procedure.** Participants were asked to read a short scenario.

Participants in the *ownership* condition saw the vignette from Li and colleagues (2013, Study 3, p. 42): “Sally and Anna are making a picture. Sally thinks of an idea for the picture, and she tells Anna how to make it. Then, Anna makes the picture. Sally and Anna fight over who gets to take the picture home.” Next, participants were asked “What do you think: Who should get the picture?” Participants gave a binary response (i.e., Sally or Anna). In the *money* condition, we made some modifications to the original vignette (in italics) so that it read as follows: “Sally and Anna are making a picture. Sally thinks of an idea for the picture, and she tells Anna how to make it. Then, Anna makes the picture. *It turns out that a mutual friend of theirs really likes the picture and offers to pay 1700 USD to buy it.*” Next, these participants were asked “What do you think: Who deserves how much money?” Participants gave responses in two textboxes, one for Sally and one for Anna. In case of numerical responses that did not add up to the total of 1700, participants received an error message and were prompted to correct their response.

Next, all participants were asked whether Anna or Sally came up with the idea for the picture. This item served as an attention check. Finally, participants completed the newly developed questionnaire assessing idea/labor valuation (i.e., ILV questionnaire). The ILV questionnaire included six items (e.g., “Ideas are a dime a dozen. It’s the execution of ideas that is valuable”, “Contributing original ideas to a project is more worthy of reward than contributing labor for their execution”; see Table 1 for all items). Responses were given on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

## Results

**Ownership.** Responses to the ownership item were coded such that high values reflect idea valuation (1 = idea giver; 0 = laborer). Following Siegel (1956), for all studies involving this binary ownership measure, we performed binomial tests assuming large samples and correcting for continuity. In all cases, we tested the observed frequencies against an expected

frequency of  $P = .50$  (i.e., equal distribution). Contrary to what has been found for children (Li et al., 2013), for adults, we did not find an idea-valuation effect, but a clear labor-valuation effect. Specifically, a binomial test revealed that a majority 71.83% ( $n = 102/142$ ) of participants in the ownership condition thought that the laborer should own the picture, whereas only 28.27% ( $n = 40/142$ ) of participants thought that the idea giver should own the picture,  $z = 5.12$   $p < .001$ .

**Money.** For this and all subsequent studies involving the money-allocation measure, we first report the mean allocations for both idea giver and laborer, and then calculate the percentage of money allocated to the laborer to test this value against equal distribution (i.e., 50%). Corroborating the effect on ascribed ownership, participants in the money condition thought that from a total of 1700 USD, the laborer ( $M = 1,048.97$ ,  $SD = 294.49$ ) deserves more money than the idea giver ( $M = 651.03$ ,  $SD = 294.49$ ). Consistently, the percentage of money allocated to the laborer ( $M = 61.70$ ,  $SD = 17.32$ ) was significantly higher than 50%,  $t(125) = 7.58$ ,  $p < .001$ , Cohen's  $d = 0.68$ , 95%  $CI_d$  [0.48; 0.87].

**ILV questionnaire.** An exploratory, principal-component factor analysis with Varimax rotation and Kaiser normalization produced two factors with Eigenvalues greater than 1, together explaining 70.69% of the total variance. The first factor comprises items that reflect a valuation of ideas, whereas the second factor comprises items that reflect a valuation of labor. Both factors were moderately correlated,  $r(270) = -.293$ ,  $p < .001$ , 95%  $CI_r$  [-.431; -.159]. Factor loadings for the rotated solution can be found in Table 1. Consequently, we averaged responses to the three labor-valuation items (Cronbach's  $\alpha = .72$ ) and the three idea-valuation items ( $\alpha = .85$ ) to arrive at composite scores for labor valuation and idea valuation, respectively.

Both labor valuation and idea valuation emerged as meaningful predictors of ownership judgments and money allocation decision, with each factor revealing unique explanatory power. Specifically, in a multiple logistic regression analysis (idea giver = 1, laborer = 0), the

labor-valuation facet emerged as a negative predictor of ascribed ownership to the idea giver,  $B = -.544$ ,  $SE = .214$ , Wald's  $\chi^2(1) = 6.48$ ,  $p = .011$ ,  $OR = 0.58$ , 95%  $CI_{OR} [0.38; 0.88]$ , whereas the idea-valuation facet emerged as a positive predictor of ascribed ownership to the idea giver,  $B = .521$ ,  $SE = .203$ , Wald's  $\chi^2(1) = 6.55$ ,  $p = .010$ ,  $OR = 1.68$ , 95%  $CI_{OR} [1.13; 2.51]$ . Similarly, in a linear regression analysis on the percentage of money allocated to the laborer, the labor-valuation facet emerged as a positive predictor,  $\beta = .355$ ,  $SE = .080$ ,  $t = 4.43$ ,  $p < .001$ , 95%  $CI_{\beta} [.203; .495]$ , whereas the idea-valuation facet emerged as a negative predictor,  $\beta = -.269$ ,  $SE = .081$ ,  $t = -3.35$ ,  $p = .001$ , 95%  $CI_{\beta} [-.416; -.116]$ .

Table 1  
*Study 1a: Rotated factor solution*

|  | Factor         |                 |
|--|----------------|-----------------|
|  | 1              | 2               |
|  | Idea Valuation | Labor Valuation |
| The real value of any creation is in the idea behind it, not the implementation.   | .886           |                 |
| Contributing original ideas to a project is more worthy of reward than contributing labor for their execution.                     | .862           |                 |
| Ideas are more valuable than their mere execution.   | .855           |                 |
| Ideas are overrated compared to the hard work needed for their implementation.   |                | .836            |
| Ideas are a dime a dozen. It's the execution of ideas that is valuable.  |                | .835            |
| Most "new" ideas usually already exist in some form. It's solid implementation that is necessary to extract the value of any idea. |                | .677            |

*Notes.* Rotated factor loadings for the six items comprising the idea/labor valuation questionnaire from Study 1a. Factor loadings smaller than .4 are not displayed.

## Discussion

In contrast to the idea valuation effect that Li and colleagues (2013) observed for 6-year-olds employing an almost identical scenario, the results from this first exploratory study revealed a clear labor-valuation effect among adults. Specifically, we found that (a) adults were more likely to ascribe ownership of an artistic object to the person who actually made it

than to the person who came up with the idea, (b) adults favored the laborer over the idea giver by giving him or her more than 60% of the overall monetary compensation for the product, and (c) individual differences in general idea/labor valuation tendencies predicted the observed labor-valuation effect in meaningful ways.

## Study 1b

### Labor Valuation by Idea Givers and Idea Executors

We designed Study 1b to replicate the previously observed labor-valuation effect among adults and to examine its robustness. Specifically, we presented participants with the same scenario as in Study 1a and again asked them to allocate a certain amount of money to an idea giver and a laborer. Extending the previous study, in a between-subjects design, we additionally manipulated who the specific targets in this scenario were. Specifically, participants either imagined the two target persons from Study 1a (i.e., *others-as-targets* condition), themselves as idea giver and a friend of theirs as laborer (i.e., *self-as-idea-giver* condition), or themselves as laborer and a friend of theirs as idea giver (*self-as-laborer* condition). As individuals particularly value their own ideas (Ariely, 2010), introducing the self as idea giver represents a rather conservative test of the labor-valuation effect.

Therefore, we expected to replicate the labor-valuation effect in the conditions that either included two target persons or the self as laborer. In comparison, we anticipated that the labor-valuation effect might be attenuated in the condition that included the self as idea giver, potentially indicating a boundary condition for the effect observed thus far.

## Method

**Participants and design.** Based on the effect sizes observed in the previous study and accounting for potential data exclusions, we set sample size a priori to a minimum of  $n = 60$  participants per condition. We recruited 203 English-speaking adults via MTurk. Participants received \$0.30 as compensation for completing the study (duration: less than five minutes).

Eight participants were excluded from analyses because they failed an attention-check item (*others-as-targets* condition: 2; *self-as-idea-giver* condition: 4; *self-as-laborer* condition: 2).

The final sample thus comprised 195 adults (83 females, 110 males, 2 other,  $M_{\text{age}} = 35.61$ ,  $SD = 11.40$ ).

Participants were randomly assigned to one of three conditions: *others-as-targets* condition ( $n = 66$ ) versus *self-as-idea-giver* condition ( $n = 65$ ) versus *self-as-laborer* condition ( $n = 64$ ).

**Materials and procedure.** Participants read the same scenario as in Study 1a, introducing an idea giver and a laborer, both of whom contributed to making a picture. Participants in the *others-as-targets* condition received the identical scenario from Study 1a, thus representing an exact replication of the money condition from that study. We only replaced the names with “Person A” (formerly Sally, the idea giver) and “Person B” (formerly Anna, the laborer), to account for a potential name-preference bias. Participants in the remaining two conditions received slightly modified versions of the picture scenario. Specifically, they read “You and a friend are making a picture. You think of an idea for the picture and tell your friend how to make it. Then, your friend makes the picture.” (*self-as-idea-giver* condition) and “You and a friend are making a picture. Your friend thinks of an idea for the picture and tells you how to make it. Then, you make the picture.” (*self-as-laborer* condition) In both conditions, this was followed by “It turns out that a mutual friend of yours really likes the picture and offers to pay 1700 USD to buy it.” In the current study, all participants were asked to allocate 1700 USD between the idea giver and the laborer. In case of numerical responses that did not add up to the total of 1700, participants received an error message and were prompted to correct their response.

Next, participants responded to an attention-check item and filled in the ILV questionnaire from the previous study. We again averaged responses to the three labor-valuation items ( $\alpha = .67$ ,  $M = 4.08$ ,  $SD = 1.16$ ) and the three idea-valuation items ( $\alpha = .81$ ,  $M$

= 3.62,  $SD = 1.18$ ) to arrive at composite scores for labor valuation and idea valuation, respectively. In the current study, the two valuation tendencies were not significantly correlated,  $r(195) = -.085, p = .238, 95\% CI_r [-.286; .129]$ .

## Results

**Money.** Replicating the previous findings, participants overall allocated more money to the laborer ( $M = 953.30, SD = 271.14$ ) than the idea giver ( $M = 746.70, SD = 271.14$ ). Consistently, the mean percentage of money allocated to the laborer ( $M = 56.09, SD = 15.91$ ) across all three conditions was significantly higher than 50%,  $t(194) = 5.35, p < .001, d = 0.38, 95\% CI_d [0.24; 0.53]$ . A one-way ANOVA on the mean percentage of money allocated to the laborer with Condition as between-factor did not reveal a significant main effect of Condition,  $F(2, 192) = 0.06, p = .939, \eta_p^2 = .001$ , indicating that the labor-valuation effect was obtained across all three conditions (Figure 1).

Consistent with our expectations, participants in the *others-as-targets* condition allocated more of the 1700 USD to the laborer ( $M = 945.91, SD = 206.32$ ) than to the idea giver ( $M = 754.09, SD = 206.32$ ). The mean percentage of money allocated to the laborer ( $M = 55.64, SD = 12.14$ ) was significantly higher than 50%,  $t(65) = 3.78, p < .001, d = 0.46, 95\% CI_d [0.21; 0.72]$ , thus replicating the labor-valuation effect observed in the money condition from the previous study. Likewise, participants in the *self-as-laborer* condition favored themselves as laborers ( $M = 962.66, SD = 283.10$ ) over their friend as idea giver ( $M = 737.34, SD = 283.10$ ). The mean percentage of money allocated to the laborer ( $M = 56.63, SD = 16.65$ ) was again significantly higher than 50%,  $t(63) = 3.18, p = .002, d = 0.40, 95\% CI_d [0.14; 0.65]$ . Even participants in the *self-as-idea-giver* condition allocated more money to the laborer ( $M = 952.31, SD = 315.37$ ), represented by their friend, than to themselves ( $M = 747.69, SD = 315.37$ ). The mean percentage of money allocated to the laborer ( $M = 56.02, SD = 18.55$ ) was again significantly higher than 50%,  $t(64) = 2.62, p = .011, d = 0.32, 95\% CI_d [0.07; 0.57]$ .

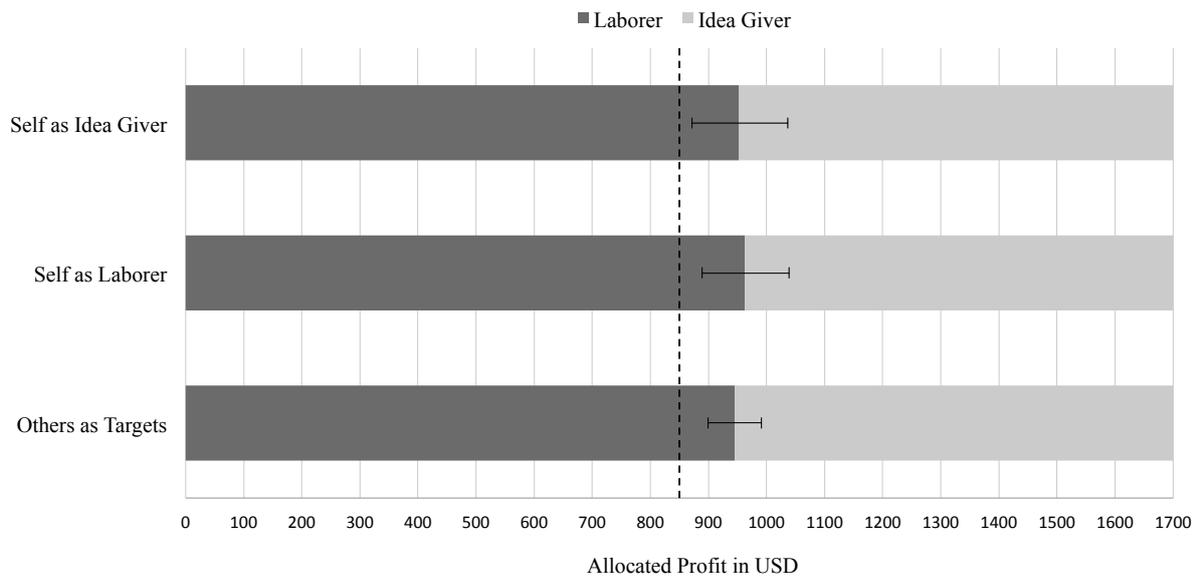


Figure 1. Allocated profit in USD (range from 0-1700) as a function of target person (laborer vs. idea giver) and perspective condition. Half of the endowment (i.e., 850 USD) is specified at the vertical dotted line. Error bars represent 95% CIs of mean proportions (Study 1b).

**ILV Questionnaire.** Replicating the previous study, both valuation tendencies again emerged as meaningful—albeit non-significant—predictors of money allocation. Specifically, in a linear regression analysis across all three conditions on the mean percentage of money allocated to the laborer, individual differences in labor valuation again emerged as a positive predictor,  $\beta = .132$ ,  $SE = .071$ ,  $t = 1.85$ ,  $p = .066$ , 95%  $CI_{\beta} [-.035; .310]$ , whereas individual differences in idea valuation emerged as a negative predictor,  $\beta = -.123$ ,  $SE = .071$ ,  $t = -1.72$ ,  $p = .087$ , 95%  $CI_{\beta} [-.273; .011]$ . No significant interaction between valuation tendencies and Condition emerged,  $F(2, 192) = 1.58$ ,  $p = .208$ ,  $\eta_p^2 = .016$ , indicating that both valuation tendencies predicted money allocation similarly across conditions.

## Discussion

Taken together, the present study replicated the findings of Study 1a, suggesting that adult participants valued the contribution of a laborer more than that of an idea giver. Remarkably, participants allocated more money to the laborer even when they themselves imagined to have contributed the idea to a mutual outcome. Lastly, participants' valuation

tendencies as measured by the ILV questionnaire again predicted the observed labor-valuation effect in a theoretically plausible way—albeit not significantly so.<sup>3</sup>

## Study 1c

### Labor Valuation among Experts

Building on the findings from the first two studies, we sought to replicate the labor-valuation effect one more time in a different population. We were able to obtain data from trained legal professionals, mostly working as judges at a civil court. Assuming that a training in civil law would sensitize judges to matters of intellectual property and copyright issues (i.e., rights of idea givers), we suppose that such a sample would offer a rather conservative test of the previously observed labor-valuation effect. More generally, such expert samples are often recommended as being particularly well suited for conservative tests of judgment heuristics, as such biases can be potentially attenuated by expertise in the respective domain (Kruger et al., 2004; Tversky & Kahneman, 1971). We anticipated to replicate the previously observed labor-valuation effect, but we expected that the effect size might turn out to be somewhat smaller in the current expert sample.

### Method

**Participants and design.** We could not determine sample size a priori due to the small number of available experts. The participating judges attended a conference on interview techniques and evaluation of witness statements in civil litigation at the German Judicial Academy (Deutsche Richterakademie) in Wustrau, Germany.<sup>4</sup> A total of 27 judges (9 females, 17 males, 1 unspecified,  $M_{\text{age}} = 44.27$ ,  $SD = 1.65$ ) participated in this study. They

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<sup>3</sup> In fact, when regressing the mean percentage of money allocated to the laborer on participants' idea and labor valuation tendencies as measured by the ILV questionnaire only in the *others-as-targets* condition (i.e., the condition most closely resembling Study 1a), no significant relations emerged (labor-valuation scale:  $\beta = .028$ ,  $SE = .119$ ,  $t = 0.22$ ,  $p = .825$ , 95%  $CI_{\beta} [-.218; .239]$ ; idea-valuation scale:  $\beta = -.001$ ,  $SE = .112$ ,  $t = -0.01$ ,  $p = .993$ , 95%  $CI_{\beta} [-.193; .149]$ ). These analyses, however, are only based on a total of 66 participants, and sample size of the current study was not geared towards replicating these correlations in each of the experimental conditions individually.

<sup>4</sup> We thank (masked for review) for collecting these data for us.

were offered candy as compensation and took approximately ten minutes to work through all materials. Most of the judges ( $n = 18$ ) indicated that they currently work at a civil court.

Participants had an average of 15.46 years of work experience ( $SD = 10.41$ ). All participants completed a booklet that included the idea/labor picture scenario from the previous studies.

**Materials and procedure.** Participants were asked to take part in a study on “characteristics of moral experts.” They worked through a booklet containing various questions related to another research project.<sup>5</sup> At the end of this booklet, all participants saw the picture scenario from the previous studies. All participants completed two measures, one asking about ownership of the picture and one asking about allocation of money among the idea giver (Person A) and the laborer (Person B) (see Studies 1a and 1b).

## Results

**Ownership.** Responses to the ownership item<sup>6</sup> were coded such that high values reflect labor valuation (0 = idea giver; 1 = laborer). Consistent with the results of Studies 1a and 1b, a labor-valuation effect emerged. Specifically, a binomial test revealed that the vast majority of 81.82% ( $n = 18/22$ ) of the experts thought that the laborer should get to own the picture, whereas only a minority of 18.18% ( $n = 4/22$ ) thought that the idea giver should get to own the picture,  $z = 2.77$ ,  $p = .006$ . Due to the small sample size, we conducted an additional analysis, assuming small samples (recommended if  $N \leq 25$ ; Siegel, 1956): results remained virtually identical,  $p = .004$ .

**Money.** Consistent with the effect on ascribed ownership, participants thought that from a total of 1700 EUR, the laborer ( $M = 897.83$ ,  $SD = 234.75$ ) deserves more money than does the idea giver ( $M = 802.17$ ,  $SD = 234.75$ ). However, this difference was descriptively smaller than in our previous two studies and the mean percentage of money allocated to the

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<sup>5</sup> Details about the preceding questions and the related research project can be obtained from the corresponding author.

<sup>6</sup> Five participants did not provide an answer. Unlike in the previous online studies, we could not prompt participants to provide an answer.

laborer ( $M = 52.83$ ,  $SD = 13.03$ ) was not significantly higher than 50%,  $t(25) = 1.11$ ,  $p = .279$ ,  $d = 0.22$ , 95% CI<sub>d</sub> [-0.17; 0.60].<sup>7</sup>

## Discussion

In sum, results from the current study provide additional support for the robustness of the previously established labor-valuation effect among adults. Particularly, even judicial experts evinced such a labor-valuation effect. These judges mostly worked at a civil court, thus we assumed that they were more familiar with matters of intellectual property and copyright law than lay people typically are. Nevertheless, a vast majority of the judges ascribed ownership of a mutual creation to the laborer. In the current study, the effect on allocations of money did not reach significance. This could be due to a weaker labor-valuation effect among these experts or to reduced statistical power based on the very small ad hoc sample that was available. Considering the strong effect for ownership ascriptions, the small sample is likely to be the more probable explanation. The limitations of the current study notwithstanding, these results were obtained with a German-speaking adult expert sample, and the replication of the labor-valuation effect with respect to ownership ascriptions thus provides convergent evidence for the previously observed labor-valuation effect across different populations.

## Study 2

### Labor Valuation Across Contexts

We designed Study 2 to extend the previous results in numerous ways: first, we sought to establish generalizability of the labor-valuation effect across different domains beyond art. To do so, we included various scenarios in addition to the picture scenario used in Studies 1a-

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<sup>7</sup> Four participants either did not provide any response or provided responses that did not add up to 1700 EUR. Unlike in the previous online studies, we could not prompt them to make sure that their allocations would add up to 1700. The reported mean allocations for idea giver and laborer are thus based on 23 participants—that is, excluding both outliers and missing values—, whereas the mean percentage of money allocated to the laborer is based on responses from 26 participants, thus retaining all but one participant with missing values.

1c. Second, we explored three psychological judgments as potential predictors of the labor-valuation effect. Specifically, we assessed judgments of importance, responsibility, and effort with regard to the contributions of an idea giver and a laborer, respectively. Third, on an exploratory basis, we examined whether the labor-valuation effect shows meaningful associations with established dispositional variables. We included two individual-differences measures that are conceptually related to the valuation of ideas and labor and may thus predict the observed labor-valuation effect. These were creative identity, that is, people's perception of creativity being a central part of "who they are" (Farmer, Tierney, & McIntyre, 2003; see also Vincent & Kouchaki, 2016) and protestant work ethic, reflecting individual differences in the valuation of "hard work" and frugality (Maes & Schmitt, 2001; see also Furnham, 1990).

We expected to replicate the previously observed labor-valuation effect across different domains. We additionally expected that such a labor-valuation effect would be reflected in participants' judgments of perceived importance, responsibility, and effort attributed to the laborer (vs. the idea giver). Finally, we anticipated that participants with a strong creative identity would show an attenuated labor-valuation effect, whereas participants with a strong protestant work ethic would evince an amplified labor-valuation effect.

## **Method**

**Participants and design.** In an attempt to generalize our findings to various populations, in the current study, we recruited a German-speaking online student sample. We contacted participants who were registered in an online database. We aimed for approximately  $N = 250$  participants to be able to detect a small to moderate effect (correlation between dispositional predictors and labor valuation) with 80% power and a two-tailed test. A total of 261 participants completed the study. Participants were given the opportunity to enroll in a lottery for gift cards (total of ten gift cards of €20,00 [ $\approx$  \$24,00] each) as compensation (duration: approximately ten minutes). Data from twelve participants were excluded from analyses, because these participants either failed an attention check, or they participated more

than once (in which case the second data set was discarded). The final sample thus comprised 249 participants (181 females, 63 males, 5 other,  $M_{\text{age}} = 27.70$ ,  $SD = 5.92$ ). All participants saw the identical materials in the sequence described below.

**Materials and procedure.** Participants first saw a series of five short scenarios, consecutively presented on the screen. Similar to the picture scenario from the previous studies, participants always learned that two target individuals were involved in a mutual creation process, wherein one person was introduced as the idea giver and the other person as the laborer. Unlike in the original picture scenario by Li and colleagues (2013), we omitted the reference to the idea giver “telling the laborer what to do,” because we were also interested in participants’ unbiased perceptions of responsibility (see General Discussion, for a more detailed consideration of this potential confound). The five scenarios captured the following domains: movies, books, internet start-ups, art works, and cooking (for complete wordings, see Table 2).

For each scenario, on a scale from 1 (*Person A*; i.e., idea giver) to 7 (*Person B*; i.e., laborer), we asked participants to indicate who was more important for the respective project, who had more responsibility, and who put more effort into it. Subsequently, for each scenario, participants learned that the respective creation (e.g., the business or the art work) had been sold. They were then asked to indicate, in percentages, what share of the profit they would allocate to the idea giver and the laborer, respectively. Participants received an error message in case that their estimates did not add up to 100 percent.

Upon completion of the five scenarios, participants proceeded to a six-item questionnaire assessing their creative identity that we adapted from previous research to the current student sample (Farmer et al., 2003). Sample items read “I often think about being creative” and “I only have a vague concept of myself as a creative person” (reversed) ( $\alpha = .90$ ,  $M = 4.21$ ,  $SD = 1.48$ ) (see Appendix). Finally, participants completed a ten-item questionnaire measuring protestant work ethic (Maes & Schmitt, 2001), containing items such as “Through

hard work one becomes a better person” and “Hard work builds the character” ( $\alpha = .80$ ,  $M = 3.91$ ,  $SD = 0.96$ ) (see Appendix). Participants responded to items of both measures on scales from 1 (*do not agree at all*) to 7 (*completely agree*). Both measures were not significantly correlated,  $r(249) = -.067$ ,  $p = .295$ , 95% CI<sub>r</sub> [-.191; .063]. Finally, towards the end of the study and embedded in an unrelated questionnaire, participants saw an attention-check item as previously used.

## Results

Our analytic approach focused on participants’ responses to the newly developed idea/labor valuation scenarios (i.e., profit allocated to the laborer as measure of valuation). We then examined whether and how the psychological judgments (importance, responsibility, and effort) predicted any valuation tendency. Finally, we explored whether and how creative identity and protestant work ethic were related to any valuation tendency. Given a relatively high number of measures in this study, and to allow for a more concise presentation of the results, we collapsed across scenarios and report results for individual scenarios in Table 2. Additionally, we employed multi-level modeling to account for variance between the scenarios.

**Idea/labor valuation scenarios.** Analyses again focused on the mean percentage of profit allocated to the laborer. Across all scenarios ( $\alpha = .56$ ; see Table 2, for individual statistics), participants again preferred the laborer ( $M = 60.36$ ,  $SD = 9.29$ ) over the idea giver ( $M = 39.64$ ,  $SD = 9.29$ ) when allocating profits. Participants thus allocated approximately one fifth of the profit more to the laborer than to the idea giver. Consistently, the mean percentage of profit allocated to the laborer was significantly higher than 50%,  $t(248) = 17.59$ ,  $p < .001$ ,  $d = 1.12$ , 95% CI<sub>d</sub> [0.96; 1.27]. All scenarios with the exception of the movie scenario produced highly significant labor-valuation effects (all  $ts \geq 8.46$ ,  $ps < .001$ ,  $ds \geq 0.54$ )—the movie scenario revealed a non-significant pattern in the predicted direction,  $t(248) = 1.78$ ,  $p = .077$ ,  $d = 0.11$ , 95% CI<sub>d</sub> [-0.01; 0.24].

To account for the variance between the scenarios, we conducted an additional test of the labor-valuation effect by fitting a cross-classified multi-level model. We fitted an empty model with participants' profit allocation to the laborer as the dependent variable. We included a random intercept at the level of participants and scenarios (Judd, Westfall, & Kenny, 2012). The estimate of the model's intercept indicated that the profit allocated to the laborer was significantly higher than 50% (intercept = 60.36,  $t[4.13] = 2.92$ ,  $p = .042$ ), supporting the results obtained with a one-sample  $t$ -test.

**Psychological judgments.** Participants' relative judgments of perceived importance, responsibility, and effort with regard to each scenario resembled the pattern observed for allocations of profits. We again collapsed responses across scenarios (i.e., alphas denote reliabilities across scenarios). Values greater than 4 reflect relative ascriptions to the laborer, whereas values below 4 reflect relative ascriptions to the idea giver. Values were tested against the neutral mid-point of the scale (i.e., 4). Across scenarios, participants judged the laborer to be more important than the idea giver ( $\alpha = .53$ ,  $M = 4.13$ ,  $SD = 0.79$ ,  $t[248] = 2.66$ ,  $p = .008$ ,  $d = 0.17$ , 95%  $CI_d [0.04; 0.29]$ ), they thought that the laborer had more responsibility than the idea giver ( $\alpha = .66$ ,  $M = 5.21$ ,  $SD = 0.82$ ,  $t[248] = 23.42$ ,  $p < .001$ ,  $d = 1.48$ , 95%  $CI_d [1.30; 1.66]$ ), and they perceived the laborer to have invested more effort into the project than the idea giver ( $\alpha = .64$ ,  $M = 5.06$ ,  $SD = 0.80$ ,  $t[248] = 21.05$ ,  $p < .001$ ,  $d = 1.33$ , 95%  $CI_d [1.16; 1.50]$ ). All three judgment dimensions were positively and significantly correlated ( $r$ s ranged from .136 to .379). Details for each scenario can be found in Table 2. We repeated these analyses using multi-level modeling. The results showed that participants judged the laborer to have more responsibility (intercept = 5.21,  $t[4.97] = 8.62$ ,  $p < .001$ ), to have invested more effort into the project (intercept = 5.07,  $t[4.29] = 4.87$ ,  $p = .007$ ) but to be equally important as the idea giver (intercept = 4.13,  $t[4.15] = 0.50$ ,  $p = .64$ ).

We next simultaneously regressed the mean percentage of profit allocated to the laborer on all three judgment dimensions. This analysis revealed that perceived importance ( $\beta$

= .267,  $SE = .044$ ,  $t = 6.13$ ,  $p < .001$ , 95%  $CI_{\beta}$  [.161; .378]), responsibility ( $\beta = .320$ ,  $SE = .047$ ,  $t = 6.86$ ,  $p < .001$ , 95%  $CI_{\beta}$  [.212; .426]), as well as effort ( $\beta = .455$ ,  $SE = .045$ ,  $t = 10.09$ ,  $p < .001$ , 95%  $CI_{\beta}$  [.336; .581]) all emerged as significant positive predictors of the observed labor-valuation effect, with effort ascriptions having the greatest predictive power ( $\beta_{\text{effort}} > \beta_{\text{responsibility}}$ ,  $Z = 2.07$ ,  $p = .039$ ;  $\beta_{\text{effort}} > \beta_{\text{importance}}$ ,  $Z = 2.99$ ,  $p = .003$ ;  $\beta_{\text{responsibility}} = \beta_{\text{importance}}$ ,  $Z = 0.82$ ,  $p = .412$ , all two-tailed). A multi-level analysis confirmed that effort ( $\beta = .390$ ,  $SE = .021$ ) indeed had a greater predictive power than did importance ( $\beta = .301$ ,  $SE = .020$ ),  $Z = 3.07$ ,  $p = .002$ , and responsibility ( $\beta = .260$ ,  $SE = .020$ ),  $Z = 4.48$ ,  $p < .001$ , which again did not differ,  $Z = 1.45$ ,  $p = .147$ .

**Dispositional predictors.** We regressed the mean percentage of profit allocated to the laborer simultaneously on both creative identity and protestant work ethic. This analysis revealed that protestant work ethic emerged as a positive predictor ( $\beta = .134$ ,  $SE = .063$ ,  $t = 2.11$ ,  $p = .036$ , 95%  $CI_{\beta}$  [.004; .255]), whereas creative identity was unrelated to profit allocations ( $\beta = -.039$ ,  $SE = .063$ ,  $t = -0.62$ ,  $p = .537$ , 95%  $CI_{\beta}$  [-.160; .086]). The same results were obtained using a multi-level analysis (protestant work ethic:  $b = 1.30$ ,  $p = .033$ ; creative identity:  $b = -0.25$ ,  $p = .527$ ).

## Discussion

Taken together, results from this study attested to the robustness of the labor-valuation effect across numerous artistic and non-artistic contexts as well as different populations. Extending the previous studies (Study 1a and 1b: MTurk samples; Study 1c: sample of professional German judges), the current study found support for a labor-valuation effect within a German student sample across five different scenarios. Additionally, perceptions of the laborer (vs. the idea giver) as important, responsible and having invested effort into the mutual creation determined allocation of profits. Importantly, although all three psychological judgments positively predicted relative profit allocations to the laborer, perceived effort seems to be of particular relevance. This was substantiated by comparing the predictive power of the

three psychological judgments tested in the current study. Results indicated that perceived effort consistently yielded the greatest predictive effect on labor-valuation tendencies. In addition, previous literature corroborates the notion that valuation judgments are determined by perceived effort (Kruger et al., 2004; Inzlicht et al., 2018). Therefore, in the next studies, we focus on perceived effort as a potential psychological explanation for the labor-valuation effect.

Table 2  
*Study 2: Results for individual idea/labor scenarios*

|  | Importance                 | Responsibility             | Effort                     | Profit                       |
|--|----------------------------|----------------------------|----------------------------|------------------------------|
| <b>Scenario #1: movie</b><br>Person A thinks of a story for a movie.<br>Person B writes the script for the movie.  | 3.48 <sup>***</sup> (1.33) | 4.96 <sup>***</sup> (1.30) | 4.65 <sup>***</sup> (1.23) | 51.49 <sup>†</sup> (13.20)   |
| <b>Scenario #2: book</b><br>Person A thinks of a story for a book.<br>Person B writes the book.  | 4.01 (1.34)                | 4.99 <sup>***</sup> (1.28) | 5.18 <sup>***</sup> (1.31) | 58.51 <sup>***</sup> (15.08) |
| <b>Scenario #3: start-up</b><br>Person A thinks of a business plan for a new internet start-up.<br>Person B executes the business plan and founds the company. | 3.91 (1.31)                | 5.40 <sup>***</sup> (1.20) | 4.70 <sup>***</sup> (1.25) | 59.00 <sup>***</sup> (13.26) |
| <b>Scenario #4: picture</b><br>Person A has the idea for a picture.<br>Person B paints the picture.  | 5.04 <sup>***</sup> (1.37) | 5.65 <sup>***</sup> (1.18) | 5.84 <sup>***</sup> (1.10) | 73.22 <sup>***</sup> (17.04) |
| <b>Scenario #5: multi-course menu</b><br>Person A thinks of a recipe for a multi-course menu.<br>Person B cooks the multi-course menu.                         | 4.22 <sup>**</sup> (1.31)  | 5.06 <sup>***</sup> (1.33) | 4.96 <sup>***</sup> (1.34) | 59.58 <sup>***</sup> (17.87) |

*Notes.* Results for each of the five idea/labor scenarios from Study 2. Scenario texts were translated from German. Judgments of importance, responsibility, and effort were indicated on seven-point scales (1 = *Person A*, 7 = *Person B*). Values below 4 indicate stronger ascriptions to the idea giver, whereas values above 4 indicate stronger ascriptions to the laborer. Values were tested against the mid-point of the scale (i.e., 4). Allocations of profits were indicated in percentages for both Person A and Person B. Values represent the mean percentage of profit allocated to the laborer for each scenario, which was tested against equal distribution (i.e., 50%). Standard deviations are in parentheses. <sup>†</sup> $p < .10$  \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

### Study 3a

#### Labor Valuation and Perceived Effort

Having established a robust labor-valuation effect across multiple domains and different populations, we next turn to a potential psychological mechanism behind this effect. Based on the notion that people rely on effort to infer quality (Kruger et al., 2004; Inzlicht et al., 2018), and based on the previous study that suggested perceived effort as a strong predictor of labor valuation, we contend that valuing labor over ideas might be the result of overestimating effort attributed to the laborer and underestimating effort attributed to the idea giver. Following a statistical mediation approach, we designed the current study to test this possibility. In addition, we implemented a new experimental manipulation: some participants made valuation judgments only with regard to the laborer (i.e., *laborer-focus* condition), whereas other participants made valuation judgments only with regard to the idea giver (i.e., *idea-giver-focus* condition), in an otherwise identical scenario. This allowed us to gain converging support for a labor-valuation effect across within- and between-subjects study designs.

Mirroring our previous studies, we predicted a main effect of our new manipulation such that valuation scores for the laborer would be greater than for the idea giver. Additionally, we expected participants to attribute more effort to the laborer than to the idea giver, which in turn should mediate the effect of the experimental manipulation on valuation scores.

#### Method

**Participants and design.** Based on previously observed effect sizes, we intended to recruit approximately  $n = 100$  participants per between condition. We collected data from 199 adults via MTurk. Participants received \$0.30 as compensation for completing the study (duration: less than five minutes). Based on a manipulation-check item, 37 participants needed to be excluded from analysis (*laborer-focus* condition: 26; *idea-giver-focus* condition:

11),<sup>8</sup> leaving a final sample of 162 participants (74 females, 88 males,  $M_{\text{age}} = 35.73$ ,  $SD = 11.77$ ).

Participants were randomly assigned to either a *laborer-focus* condition ( $n = 74$ ) or an *idea-giver-focus* condition ( $n = 88$ ).

**Materials and procedure.** Participants saw the same scenario as in Study 1b (*others-as-targets* condition). However, depending on condition, either the laborer or the idea giver was rendered salient. Specifically, participants in the *laborer-focus* condition read that “John and a friend are making a picture. John’s friend thinks of an idea for the picture and tells John how to make it. Then, John makes the picture. John and his friend fight over who gets to take the picture home.” Conversely, participants in the *idea-giver-focus* condition read that “John and a friend are making a picture. John thinks of an idea for the picture and tells his friend how to make it. Then, John’s friend makes the picture. John and his friend fight over who gets to take the picture home.” Thus, we manipulated between participants whether the focal target person (i.e., John) was either the laborer or the idea giver.

Subsequently, all participants estimated the degree of effort that John had put into the creation process. Specifically, on a scale from 1 (*not at all*) to 7 (*very much*), they indicated their agreement with three items, keeping in mind John’s contribution: “John invested a lot of effort”, “John spent quite some time”, and “John really exerted himself”. These items served as our measure of perceived effort (Kruger et al., 2004). Responses to the three effort items were collapsed ( $\alpha = .94$ ,  $M = 4.30$ ,  $SD = 1.55$ ).

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<sup>8</sup> Exclusions were based on a manipulation-check item asking participants who of the two target persons came up with the idea for the picture (i.e., John vs. John’s friend). Because the wording of this item emphasized the contribution of the idea giver as the focal agent, participants in the laborer-focus condition (26/100 = 26.0%) might have been more likely to confuse the laborer with the idea giver than participants in the idea-giver-focus condition (11/99 = 11.1%),  $\chi^2(1) = 7.29$ ,  $p = .007$ ,  $\Phi_c = .19$ . For the latter, the focal agent (i.e., John) was also described as the idea giver, whereas for the former, the idea giver corresponded to the non-focal agent (i.e., John’s friend). To rule out that participants were generally less attentive in the laborer-focus condition, we repeated all key analyses across the raw data, that is, including all 199 participants. Results remained virtually identical (see SOM, for details).

Next, participants were asked whether John should get the picture (binary response format: yes vs. no). Again, to complement the ownership measure, all participants then learned “[...] that a mutual friend of theirs really likes the picture and offers to pay 1700 USD to buy it.” They were asked how much of the money they thought John deserved (open response format; allowed values ranged from 0 to 1700). Finally, participants responded to the manipulation-check item described earlier.

## Results

**Labor-valuation effect.** Responses to the ownership item were coded such that high values reflected greater ownership ascriptions to the target person John. Consistent with a labor-valuation effect, participants in the laborer-focus condition (60/74 = 81.10%) were more than twice as likely to ascribe ownership to John as were participants in the idea-giver-focus condition (32/88 = 36.40%),  $\chi^2(1) = 32.76, p < .001, \Phi_c = .45$ . Participants in the laborer-focus condition ( $M = 1079.41, SD = 321.64$ ) also allocated significantly more money to John than did participants in the idea-giver-focus condition ( $M = 697.16, SD = 369.99$ ),  $t(160) = 6.95, p < .001, d = 1.10, 95\% CI_d [0.76; 1.43]$ . Allocations in the laborer-focus condition were significantly higher than what would be expected if the money was distributed equally among laborer and idea giver (i.e., 850 USD for each),  $t(73) = 6.14, p < .001, d = 0.71, 95\% CI_d [0.46; 0.97]$ , whereas allocations in the idea-giver-focus condition were significantly lower than such an equal distribution,  $t(87) = -3.88, p < .001, d = -0.41, 95\% CI_d [-0.63; -0.19]$ . Participants’ ownership ascriptions and their money allocations were significantly correlated,  $r(162) = .532, p < .001, 95\% CI_r [.404; .639]$ . Hence, for the subsequent mediational analysis, we *z*-transformed and collapsed both measures such that high values reflect greater overall valuation.

**Effort as mediator.** Consistent with our expectations, when John was described as the laborer ( $M = 5.22, SD = 1.14$ ), participants ascribed to him greater effort than when he was described as the idea giver ( $M = 3.54, SD = 1.44$ ) of the project,  $t(159.38) = 8.29, p < .001, d$

= 1.31, 95% CI<sub>d</sub> [0.97; 1.65]. We next tested a mediation model wherein participants' perception of John's effort mediated the effect of our focus manipulation (whether John was laborer or idea giver) on the overall valuation of John's contribution (see Figure 2).

Controlling for perceived effort reduced the direct effect of the focus manipulation (0 = idea-giver focus; 1 = laborer focus) on valuation (without the mediator:  $\beta = .532$ ,  $SE = .067$ ,  $t = 7.95$ ,  $p < .001$ , 95% CI <sub>$\beta$</sub>  [.383; .669]), though it was still significant (with the mediator:  $\beta = .326$ ,  $SE = .074$ ,  $t = 4.42$ ,  $p < .001$ , 95% CI <sub>$\beta$</sub>  [.175; .478]). Consistently, a bias-corrected bootstrapping analysis (Preacher & Hayes, 2008) revealed that the indirect effect through perceived effort was significant,  $b = .216$ ,  $SE = .049$ , 95% CI <sub>$b$</sub>  [.118, .313].

## Discussion

Taken together, this study replicated the previously observed labor-valuation effect among adults. In the current study, we used a new between-subjects manipulation that prompted participants to provide judgments about either the idea giver or the laborer. Additionally, the current findings revealed that perceived effort partially explained why participants valued labor over ideas: the laborer's contribution was perceived to have been more effortful, which in turn increased its valuation relative to that of the idea giver.

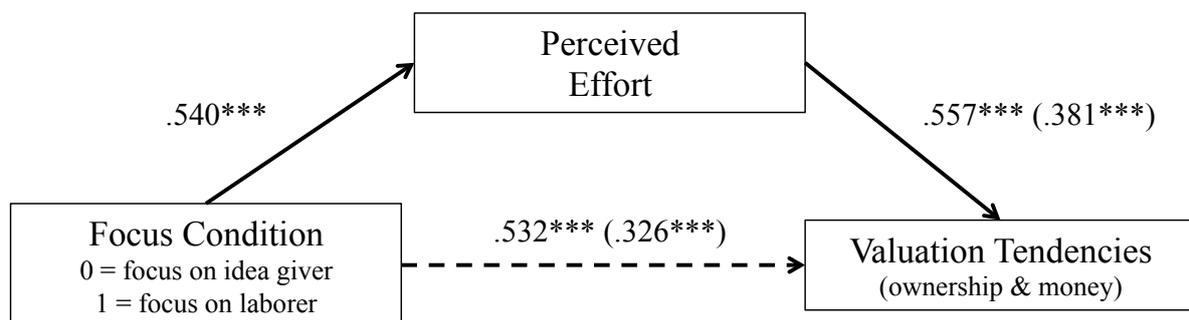


Figure 2. Mediation model wherein perceived effort underlies the effect of focus condition on valuation tendencies. Numbers represent standardized regression coefficients; numbers in parentheses represent standardized simultaneous regression coefficients (Study 3a). \*\*\* $p < .001$

## Study 3b

### Labor Valuation and Manipulated Effort

In this study, we experimentally manipulated perceived effort to gain additional support for its causal role in explaining the labor-valuation effect. After all, participants might value labor for other reasons and this higher valuation could have made them ascribe a higher effort to the laborer. Therefore, we created two different scenarios in which either the laborer or the idea giver was described as having invested most effort into a joint project.

We expected that increasing perceptions of effort invested by the idea giver (vs. the laborer) would significantly attenuate the previously observed labor-valuation effect—thus testing our process by manipulating the mediator. To explore whether labor valuation can be considered a default, we also included a baseline condition for comparison purposes in which we did not explicitly mention how much effort idea giver or laborer invested into the mutual creation.

### Method

**Participants and design.** In this study, we again recruited German-speaking students registered in an online database. We aimed for approximately  $n = 100$  participants per between condition to be able to detect medium-sized effects. A total of 367 participants completed the study. Participants were again given the opportunity to enroll in a lottery for gift cards as compensation (total of ten gift cards of €20,00 [ $\approx$  \$24,00] each). One participant in the baseline condition failed an attention check and was thus excluded from analyses, leaving a final sample of 366 participants (268 females, 95 males, 3 other,  $M_{\text{age}} = 26.95$ ,  $SD = 5.64$ ).

Participants were randomly assigned to one of three between-subjects conditions: *effort-laborer* condition (i.e., laborer invested more effort than idea giver;  $n = 125$ ), *effort-idea-giver* condition (i.e., idea giver invested more effort than laborer;  $n = 124$ ), or *baseline* condition (no mention of effort;  $n = 117$ ).

**Materials and procedure.** Similar to previous studies, participants again learned about two target persons, artist A and artist B. Artist A (idea giver) was described as having had an idea for a painting, and then telling artist B (laborer) how to make it. Artist B then made the painting. Unlike in the previous scenarios, the present scenario presented crucial additional information and a photo of an actual painting (see Appendix). Participants in the *baseline* condition then learned the title of the painting, and how artist A came up with the idea for it, as well as how artist B made it (translations of these descriptions can be found in the Appendix). This context provided us with the opportunity to increase or decrease the effort invested by the idea giver and the laborer. Following Kruger and colleagues (2004), we chose time invested as a proxy for effort invested. Specifically, participants in the *effort-laborer* condition additionally read that artist A (idea giver) invested 4 hours to develop the idea for the painting, whereas artist B (laborer) invested 26 hours to make the painting. Contrary, participants in the *effort-idea-giver* condition additionally learned that artist A (idea giver) invested 26 hours to develop the idea for the painting, whereas artist B (laborer) invested 4 hours to make the painting.

Similar to previous studies, all participants then learned that, upon completion, both artists fought over who actually owns the painting. Participants were asked to indicate who should be allowed to keep the painting (0 = *artist A*, idea giver or 1 = *artist B*, laborer). Additionally, they learned that later on, an art collector showed interest in the work and offered 1700 EUR to buy it. As in previous studies, participants indicated how much money the idea giver and laborer should receive.

As a manipulation check, participants then answered two questions assessing perceived effort on a scale from 1 (*artist A*) to 7 (*artist B*). Specifically, these items read “Who invested more effort into the painting?” and “Who invested more time into the painting?” As expected, both items were significantly correlated,  $r(366) = .398, p < .001, 95\%$  CI<sub>r</sub> [.299; .488], and thus collapsed into one score with higher values reflecting relatively

greater perceptions of effort ascribed to the laborer ( $M = 4.48$ ,  $SD = 1.54$ ). Finally, participants' attention was assessed by having them indicate who came up with the idea for the painting (artist A or artist B).

## Results

**Manipulation check.** A univariate ANOVA confirmed that effort perceptions differed across conditions,  $F(2, 363) = 234.79$ ,  $p < .001$ ,  $\eta_p^2 = .56$ . Specifically, participants in the effort-laborer condition ( $M = 5.51$ ,  $SD = 1.00$ ) ascribed relatively more effort to the laborer than did participants in the effort-idea-giver condition ( $M = 2.86$ ,  $SD = 1.14$ ),  $t(247) = 19.53$ ,  $p < .001$ ,  $d = 2.48$ , 95%  $CI_d$  [2.14; 2.80], and participants in the baseline condition ( $M = 5.09$ ,  $SD = 0.95$ ),  $t(240) = 3.37$ ,  $p = .001$ ,  $d = 0.43$ , 95%  $CI_d$  [0.18; 0.69]. Participants in the baseline condition also ascribed relatively more effort to the laborer than did participants in the effort-idea-giver condition,  $t(239) = 16.46$ ,  $p < .001$ ,  $d = 2.12$ , 95%  $CI_d$  [1.80; 2.44].

**Ownership.** A chi-square test confirmed that ownership ascriptions varied across conditions,  $\chi^2(2) = 8.92$ ,  $p = .012$ ,  $\Phi_c = .16$  (Figure 3a). Once again confirming the labor-valuation effect, a binomial test revealed that participants in the baseline condition were significantly more likely to ascribe ownership (0 = idea giver; 1 = laborer) to the laborer (70.09%,  $n = 82/117$ ) than the idea giver (29.91%,  $n = 35/117$ ),  $z = 4.25$ ,  $p < .001$ . Participants in the effort-laborer condition evinced a similar labor-valuation effect, thus ascribing ownership preferably to the laborer (70.40%,  $n = 88/125$ ) than the idea giver (29.60%,  $n = 37/125$ ),  $z = 4.47$ ,  $p < .001$ , whereas those in the effort-idea-giver condition showed no preference for either the laborer (54.47%,  $n = 67/123$ ) or the idea giver (45.53%,  $n = 56/123$ ),  $z = 0.90$ ,  $p = .368$ .

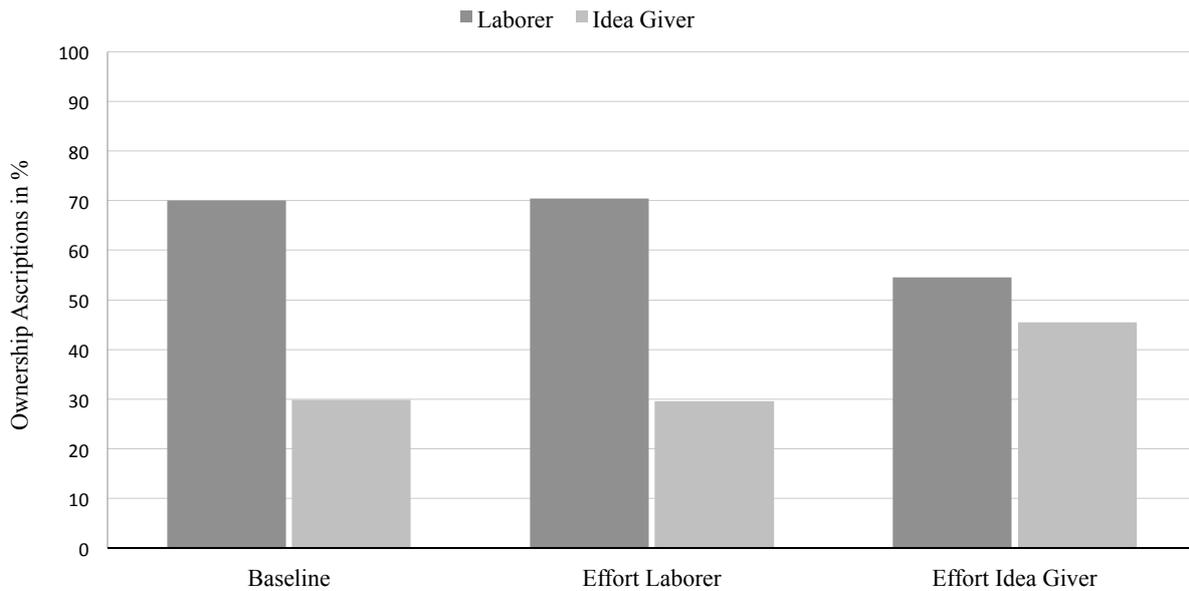
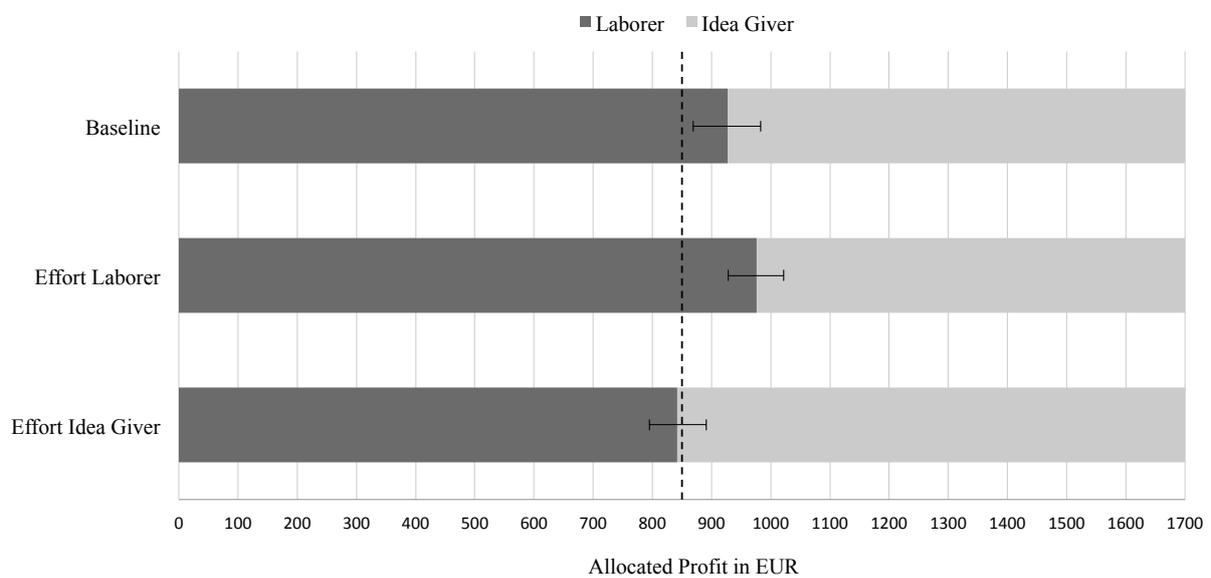


Figure 3a. Ascriptions of ownership to the laborer and the idea giver in percentages as a function of effort-salience condition. High values reflect stronger ownership ascription (Study 3b).

**Money.** Participants again overall allocated more money to the laborer ( $M = 915.18$ ,  $SD = 303.34$ ) than the idea giver ( $M = 784.82$ ,  $SD = 303.34$ ). The mean percentage of money allocated to the laborer ( $M = 53.83$ ,  $SD = 17.84$ ) was again significantly higher than 50%, indicating a labor-valuation effect across conditions,  $t(365) = 4.11$ ,  $p < .001$ ,  $d = 0.21$ , 95%  $CI_d$  [0.11; .32].

A univariate ANOVA confirmed that the mean percentage of money allocated to the laborer differed across conditions,  $F(2, 363) = 6.38$ ,  $p = .002$ ,  $\eta_p^2 = .03$  (Figure 3b). Specifically, participants in the effort-laborer condition ( $M = 57.44$ ,  $SD = 17.74$ ) were more likely to prefer the laborer than were participants in the effort-idea-giver condition ( $M = 49.55$ ,  $SD = 17.43$ ),  $t(247) = 3.54$ ,  $p < .001$ ,  $d = 0.45$ , 95%  $CI_d$  [0.20; 0.70], who, in turn, were less likely to prefer the laborer than were participants in the baseline condition ( $M = 54.52$ ,  $SD = 17.58$ ),  $t(239) = -2.20$ ,  $p = .029$ ,  $d = -0.28$ , 95%  $CI_d$  [-0.54; -0.03]. There was no significant difference between effort-laborer and baseline conditions,  $t(240) = 1.28$ ,  $p = .201$ ,  $d = 0.17$ , 95%  $CI_d$  [-0.09; 0.42].

In line with the results for ascribed ownership, and indicating a default labor-valuation effect, participants in the baseline condition allocated relatively more money to the laborer than the idea giver,  $t(116) = 2.78, p = .006, d = 0.26, 95\% \text{ CI}_d [0.07; 0.44]$ . Similarly, participants in the effort-laborer condition displayed such a labor-valuation effect,  $t(124) = 4.69, p < .001, d = 0.42, 95\% \text{ CI}_d [0.24; 0.60]$ , whereas those in the effort-idea-giver condition showed no significant preference,  $t(123) = -0.29, p = .776, d = -0.03, 95\% \text{ CI}_d [-0.20; 0.15]$ .



*Figure 3b.* Allocated profit in EUR (range from 0-1700) as a function of target person (laborer vs. idea giver) and effort-salience condition. Half of the endowment (i.e., 850 EUR) is specified at the vertical dotted line. Error bars represent 95% CIs of mean proportions (Study 3b).

## Discussion

Taken together, results from this study replicate the previously established labor-valuation effect with new materials. Noteworthy, people's labor-valuation tendency did not significantly reverse under circumstances in which the idea giver invested considerably more time into a mutual project than did the laborer (i.e., 26 hours versus 4 hours). Specifically, instead of a significant reversal, raising the perceived effort of the idea giver eliminated the previously observed labor-valuation effect such that participants showed no preference for either laborer or idea giver. People thus seem to have a robust tendency associating effort

primarily with contributing labor and not with contributing ideas. Extending Study 3a, in which the mediator was measured, the current study manipulated perceptions of invested effort by the laborer and the idea giver. Furthermore, comparisons to a baseline condition revealed that labor valuation might be the default inclination, and that making the idea giver's effort salient can at least eliminate the labor-valuation effect, thus offering a tool to divert people's initial effort-valuation associations from labor to ideas—even though, this effort-salience manipulation was still not strong enough to reverse the effect.

## Study 4

### Labor Valuation and Valence of Outcome

So far, our studies have consistently shown the labor-valuation effect when the joint product was a success. Accordingly, it seems that people give more praise to laborers than to idea givers. Do laborer also receive more blame when things go wrong and the joint product is a failure? Research has shown that perceived intentionality plays a particularly important role when explaining and evaluating negative outcomes (Morewedge, 2009; see also Knobe, 2003). For example, perceivers are more likely to assume that a target person did something on purpose if that action entails negative (as opposed to positive) consequences (Knobe, 2003). Similarly, people expect a human agent with intentions behind unfair offers in an ultimatum game, whereas they are more likely to expect a computer behind fair offers (Morewedge, 2009).

Assuming that people attribute the intention for a creation to the idea giver and not to the laborer, in the case of a negative outcome (e.g., product failure), the previously observed asymmetry might reverse. Specifically, due to the relatively greater relevance of perceived intentionality over perceived effort when blaming others for negative outcomes, people might generally praise laborers more than idea givers for a positive outcome, but blame idea givers more than laborers for a negative outcome. To examine this possible boundary condition, we

adapted a scenario from Study 2 and experimentally manipulated whether a mutual creation of an idea giver and a laborer was perceived as positive or negative by a third party.

Additionally, we assessed how much effort participants ascribed to the laborer relative to the idea giver.

Drawing from the results of our previous studies, we expected participants to ascribe more effort to the laborer than to the idea giver. We also tested whether valence of outcome will moderate the effect of perceived effort on labor valuation. Specifically, we expected that ascriptions of effort to the laborer will be linked to stronger labor valuation (i.e., praise judgments) only in the case of positive outcomes. For negative outcomes (i.e., blame judgments), we did not expect such a relation, as for negative outcomes, intentions (ideas) should matter more than effort invested by the laborer.

## Method

**Participants and design.** We again aimed for approximately  $n = 100$  participants per between condition to be able to detect small-to-medium effects. A total of 221 adults completed the study via MTurk. Participants received \$0.30 as compensation for completing the study (duration: less than five minutes). Based on attention checks, 27 participants were excluded (*positive-outcome* condition: 18; *negative-outcome* condition: 9)<sup>9</sup>, so that the final sample comprised 194 adults (102 females, 92 males,  $M_{\text{age}} = 36.31$ ,  $SD = 11.89$ ).

Participants were randomly assigned to either a *positive-outcome* condition ( $n = 92$ ) or a *negative-outcome* condition ( $n = 102$ ).

**Materials and procedure.** Participants read a short, newly designed scenario<sup>10</sup> adapted from Study 2, describing three target persons: Jesse, Alex, and Sam. Specifically, they learned that “Two friends, Jesse and Alex want to surprise a mutual friend, Sam, with a

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<sup>9</sup> Even though twice as many participants were excluded from the positive-outcome condition compared to the negative-outcome condition, the distribution of these exclusions across experimental conditions did not significantly deviate from an equal distribution,  $\chi^2(1) = 3.51$ ,  $p = .061$ ,  $\Phi_c = .13$ . But because it almost did, we again repeated all key analyses across the raw data, that is, including all 221 participants. Results remained virtually identical (see SOM, for details).

<sup>10</sup> We thank (masked for review) for serving as idea giver for this scenario.

home-cooked meal. To do so, Jesse thinks of a recipe for the meal. Alex then goes ahead and cooks the meal.” On a scale from 1 (*definitely Jesse*) to 7 (*definitely Alex*), all participants were then asked to complete three rating items assessing perceived effort (i.e., “Who invested more effort?”, “Who spent more time?”, “Who really exerted him-/herself?”). Higher values thus reflect stronger effort ascription to the laborer over the idea giver. Responses to the perceived-effort items were collapsed ( $\alpha = .86$ ,  $M = 5.75$ ,  $SD = 1.04$ ).

Depending on condition, some participants then read about a positive outcome of the mutual creation, whereas others read about a negative outcome. Specifically, those in the *positive-outcome* condition learned that “Shortly thereafter, Sam arrives and tries the meal. It turns out that Sam really likes the food and finishes the whole dish, asking for more!”, whereas those in the *negative-outcome* condition learned that “Shortly thereafter, Sam arrives and tries the meal. It turns out that Sam does not like the food at all, does not finish the dish and would never consider asking for more!” We then asked participants how much praise (positive-outcome condition) or how much blame (negative-outcome condition) Jesse and Alex deserved for the positive (negative) outcome, each on scales ranging from 1 (*none at all*) to 7 (*a lot*). Note that we assessed praise (blame) orthogonally for the idea giver (Jesse) and the laborer (Alex). Subsequently, all participants completed two manipulation-check items, one asking “Who had the idea for the recipe?” (*Jesse* versus *Alex*) and one asking “Did Sam enjoy the meal?” (*Yes, Sam really liked the food* versus *No, Sam did not like the food at all*).

## Results

**Effort.** As we assessed perceived effort on one scale ranging from 1 (idea giver) to 7 (laborer), we tested whether the corresponding effort index was significantly higher than the mid-point of the scale (i.e., 4), indicating relative effort ascriptions to the laborer over the idea giver. Confirming previous results, participants overall ascribed more effort to the laborer than the idea giver,  $t(193) = 23.42$ ,  $p < .001$ ,  $d = 1.68$ , 95%  $CI_d$  [1.46; 1.90]. Perceived effort

did not differ a priori between the two outcome conditions,  $t(192) = 0.59, p = .558, d = 0.08$ , 95% CI<sub>d</sub> [-0.20; 0.37].

**Valuation.** We next conducted a mixed-model ANOVA with Outcome (negative vs. positive) as between-subjects factor and Target (idea giver vs. laborer) as within-subjects factor. This analysis revealed that participants overall gave higher praise judgments ( $M = 5.23, SD = 0.88$ ) for the positive outcome than they gave blame judgments ( $M = 3.93, SD = 1.41$ ) for the negative outcome,  $F(1, 192) = 57.81, p < .001, \eta_p^2 = .23$ . Participants overall also gave higher praise/blame judgments for the laborer ( $M = 4.84, SD = 1.81$ ) than the idea giver ( $M = 4.26, SD = 1.66$ ),  $F(1, 192) = 23.79, p < .001, \eta_p^2 = .11$ . Importantly, a significant interaction Condition  $\times$  Target emerged,  $F(1, 192) = 84.88, p < .001, \eta_p^2 = .31$  (Figure 4).

Specifically, in the case of a positive outcome, participants ascribed more praise to the laborer ( $M = 6.15, SD = 1.04$ ) than the idea giver ( $M = 4.30, SD = 1.49$ ),  $t(91) = 9.51, p < .001, d = 1.40$ , 95% CI<sub>d</sub> [1.05; 1.75], whereas in the case of a negative outcome the reverse was true, as participants ascribed more blame to the idea giver ( $M = 4.22, SD = 1.80$ ) than the laborer ( $M = 3.65, SD = 1.52$ ),  $t(101) = 3.21, p = .002, d = 0.45$ , 95% CI<sub>d</sub> [0.17; 0.73].

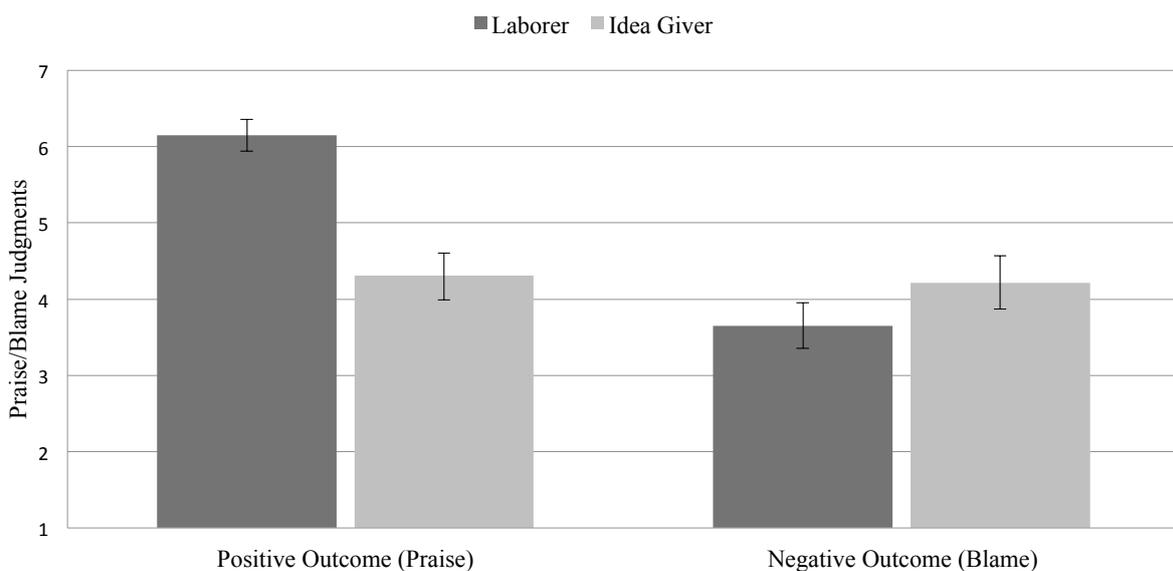


Figure 4. Judgments of praise (positive-outcome condition) and blame (negative-outcome condition) on a seven-point scales for the laborer and the idea giver. Error bars represent 95% CIs of mean values (Study 4).

**Regression-based moderation.** In order to examine whether the previously observed effect of perceived effort on labor valuation would be moderated by outcome valence, we also ran a regression-based moderation analysis following the procedure outlined by Hayes (2013). Specifically, we included perceived effort as the predictor ( $X$ ), the difference score of idea-giver judgments subtracted from laborer judgments as the criterion ( $Y$ ), and the outcome-valence condition ( $-1 =$  negative outcome;  $+1 =$  positive outcome) as the moderator ( $M$ ). This regression revealed a significant interaction effect Effort  $\times$  Outcome on judgments,  $b = 0.62$ ,  $SE = .11$ ,  $t = 5.45$ ,  $p < .001$ , 95%  $CI_b$  [.40; .84]. For the positive outcome, perceived effort positively predicted relative praise ascribed to the laborer,  $b = 1.15$ ,  $SE = .17$ ,  $t = 6.90$ ,  $p < .001$ , 95%  $CI_b$  [.82; 1.48]. Contrary, for the negative outcome, there was no such relation between perceived effort and ascriptions of blame,  $b = -0.08$ ,  $SE = .15$ ,  $t = -0.55$ ,  $p = .584$ , 95%  $CI_b$  [-0.39; 0.22].

## Discussion

In sum, results from our final study add to the previous findings in some important ways: first, they replicate the labor-valuation effect and extend it to a novel judgment domain (i.e., responsibility attribution). Second, they replicate the previously observed asymmetry between idea giver and laborer regarding effort perceptions. Third, they replicate the effect of this perceived effort on labor valuation. Fourth, the current findings extend the labor-valuation effect to the realm of praise and blame judgments, indicating that outcome valence of a mutual creation between an idea giver and a laborer judged by a third party determines who people focus on when ascribing praise versus blame. Specifically, people again ascribed more praise to the laborer than to the idea giver when their creation was a success, while they ascribed more blame to the idea giver than the laborer when their creation was a failure. Thus, the current results indicate that perceived effort shaped participants' valuation judgments only in the case of positive but not negative outcomes.

However, the current operationalization of outcome valence might have been ambiguous to some degree. Specifically, we intended to manipulate whether the mutual creation had a positive (i.e., success) or a negative (i.e., failure) outcome. We did, however, not implicate any harm in the negative-outcome condition—thus, the negative outcome could also be construed as the absence of a positive outcome. Furthermore, in this condition, the fact that Sam (i.e., the third party evaluating the outcome) did not like the meal might have been due to a mismatch between his or her preferences and the idea for the recipe, resulting in greater blame ascriptions to the idea giver over the laborer. Had we described Sam as a mushroom enthusiast, and the idea for the recipe as a creative variation of Sam’s favorite mushroom dish, participants instead might have inferred that the negative outcome must have been caused by the laborer’s poor execution of an otherwise flawless mushroom recipe, resulting in greater blame ascriptions to the laborer in the negative-outcome condition as well.

Because Sam was described as a mutual friend, however, we assumed that all three actors would be perceived as being familiar with each others’ preferences to some degree, such that a striking mismatch between the idea for the recipe and Sam’s preferences could indeed be interpreted as failure on behalf of the idea giver—either because the idea for the recipe was generally poor, or because it did not fit the context of Sam’s preferences. Nevertheless, more research is needed in order to explore these additional possibilities and further pinpoint the role of outcome valence on the observed labor-valuation effect—an issue we will return to below.

### **General Discussion**

Are ideas cheap? Whereas children do not seem to think so (Li et al., 2013), the current research suggests that adults do. Despite the fact that people might generally value creativity (Ritter & Rietzschel, 2017), the current set of studies ( $k = 7$ ;  $N = 1,463$ ) suggests that adults seem to associate labor with greater observable effort, which in turn helps explain

why adults value labor over ideas. Specifically, when people learn that one person contributed the idea to make something, whereas another person contributed labor to make it, the laborer is appreciated substantially more than the idea giver.

We observed this labor-valuation effect for ascriptions of ownership over the mutual creation (Studies 1a, 1c, 3a, and 3b), allocation of money (Studies 1a, 1b, 2, 3a, and 3b), and judgments of praise to both contributing parties (Study 4). Attesting to the robustness of this finding, the labor-valuation effect emerged even when participants imagined themselves to have been the idea giver (Study 1b), and in a sample of experts (Study 1c). Finally, we observed labor valuation across different domains such as art, cooking, and business (Study 2) and across different populations such as U.S. American online samples (Studies 1a, 1b, 3a, and 4) as well as German students (Studies 2 and 3b) and German professional judges (Study 1c).

We have argued that adults might be inclined to rely on observable effort as a cue to determine how much they should value the idea giver's and the laborer's contribution (Kruger et al., 2004; Inzlicht et al., 2018). Consistent with this notion, our participants were indeed more inclined to perceive the laborer as having invested more effort into the mutual creation than the idea giver. This increased perception of effort, in turn, partially explained the labor-valuation effect (Study 3a). Experimentally manipulating the salience of effort further attested to this explanation and—via comparison to a baseline condition—suggested that valuation of labor might be the default judgment inclination (Study 3b). Finally, drawing from the literature on the role of intentionality in praise and blame judgments (Knobe, 2003; Pizarro et al., 2003), we documented a boundary condition of the labor-valuation effect: although participants praised the laborer more than the idea giver when their joint project was a success, the idea giver received most of the blame for a project failure, hence reversing the previously observed judgment asymmetry (Study 4).

### **Generalizability of the Current Findings**

The noteworthy consistency of the labor-valuation effect in adults across different samples and operationalizations notwithstanding, the generalizability of this effect has certainly limits. Here, we discuss four potential boundary conditions in more detail: creativity versus non-creativity, skill and mastery, power and status, as well as cross-cultural differences.

**Creativity versus non-creativity.** The current research was partially motivated by developmental research that compared idea and labor valuation in children (Li et al., 2013). To explore this effect in adults, we conducted the initial studies with highly similar scenarios to increase comparability. In addition, we developed novel scenarios to generalize our findings across different domains (cf. Study 2). However, to varying degrees, most of these scenarios are situated in a creative context (e.g., art or cooking). Consistent with scenarios used in previous research, the creative context may provide a particularly prototypical example for collaborative work that requires both a creative idea and labor to execute it.

It should be acknowledged, however, that the distinction between idea giver and laborer, in general, might be less plausible in a non-creative context. There, the role of idea givers, providing the idea for a creation, might be less important in the first place, thus rendering the comparison to a laborer less meaningful. Consequently, valuation of labor might potentially even be more pronounced in such non-creative contexts.

**Skill and mastery.** As most of the scenarios reported here require the laborer to execute a creative idea (e.g., make a picture or cook a meal), a certain level of skill or mastery seems necessary for successfully doing so. Such perceptions of skill or mastery on behalf of the laborer, in turn, might contribute to participants' tendency to value the laborer's contributions over the contribution of the idea giver. Likewise, idea givers might be perceived as less skilled—or even incompetent—, because they do not execute their ideas themselves. We acknowledge that the scenarios used provide little information that participants could use to disambiguate these issues.

Building on the present explanatory model, future research may examine the role of perceived skill or mastery and relate it to effort perceptions. Specifically, labor that requires a particularly high degree of mastery might also be associated with more effort than more simplistic kinds of labor. On the other hand, a very high level of mastery might be associated with an expert status—and experts sometimes seem to effortlessly master their work, thus leading to perceptions of enhanced mastery and low effort. In either case, a certain degree of skill and mastery might be a moderating variable, facilitating labor valuation.

**Power and status.** Moreover, is it possible that adult participants considered laborers as the less powerful, exploited party, thus feeling sympathy towards them, and assigning greater rewards to them in the service of restoring justice. However, we believe this to be rather unlikely. Previous research has instead shown that higher rewards are associated with agents who hold more (vs. less) power (Keltner, Gruenfeld, & Anderson, 2003). Importantly, the present labor-valuation effect emerged regardless of whether the idea giver was described as being in charge and telling the laborer what to do (Studies 1a, 1b, 1c, 3a, and 3b; see also Li et al., 2013) or not (Studies 2 and 4).

Thus, the potential confound, that power and status may be mostly associated with idea givers who initiate and oversee the creation process (e.g., an employer delegating work) as opposed to laborers who merely execute the idea givers' orders (e.g., employees working towards the employer's goals), does not seem to explain the robust labor-valuation effect that we observed.

**Cross-cultural differences.** Finally, an important context feature that might moderate idea and labor valuation pertains to cross-cultural differences. We attempted to gather evidence for the labor-valuation effect across a wide range of populations, including U.S. American MTurk samples, German student samples, and German legal experts. Nonetheless, all of our samples are WEIRD samples, that is, Western, Educated, Industrialized, Rich, and Democratic (Henrich, Heine, & Norenzayan, 2010).

As noted earlier, children dislike copycats—thereby showing an appreciation of original ideas over mere labor—across non-WEIRD cultures as well, for example, Mexico and China (Yang et al., 2014). Similarly, out of a variety of potential reasons for attributing ownership—including creation, familiarity, first contact, and equity—three- and five-year-old children consistently chose those as owners of an object who created it. These ownership intuitions emerged across children growing up in seven highly contrasted social, economic, and cultural circumstances, including regions within the USA, China, and Brazil (Rochat, Robbins, Passos-Ferreira, Oliva, Dias, & Guo, 2014).

Turning to adults, the general association between effort and value, in contrast to children's robust idea valuation, seems to be consistent across cultures to some degree as well (Inzlicht et al., 2018). However, work ethic, that is, the valuation of “hard work” and frugality (Furnham, 1990) might differ between cultures, even independently from people's individual religious beliefs (Giorgi & Marsh, 1990). Taken together, people's tendency to associate labor with more effort, and in turn, effort with value, might vary in accordance with cultural belief systems, thereby moderating the relative valuation of labor over ideas. Future research on idea and labor valuation should thus include adult samples from non-WEIRD populations to further explore the boundaries of the present findings.

### **Relation to Developmental Findings**

Our results are at odds with the idea-valuation effect documented by Li and colleagues (2013). Whereas 4-year-old children did not favor either the idea giver or the laborer, 6-year-old children consistently preferred ideas over labor and assigned ownership to an idea giver rather than a laborer. Adapting the basic experimental set-up for adult samples nevertheless resulted in a robust valuation of labor over ideas in our studies. Interestingly, the idea-valuation effect among children emerged even though they themselves spent considerably more time in the labor condition than they did in the idea-giver condition (Li et al., 2013). While this observation is consistent with our adult participants' intuition that contributing

labor is typically more effortful than contributing an idea, the increased effort associated with labor (vs. ideas) does not seem to drive children's valuation judgments. Consistently, the so-called "IKEA effect" emerges at the age of five, but it seems to be mainly associated with the development of children's self-concept—hinting at the possibility that perceived effort might matter more to adults than young children (Marsh, Kanngiesser, & Hood, 2018).

Taken together, some of the features of these developmental studies are more consistent with idea valuation (i.e., the idea giver being described as in charge), whereas others seem more consistent with our account of labor valuation via increased effort perceptions (i.e., the time children spent contributing an idea versus labor). It could also be that children spend more time making a picture compared to coming up with an idea for a picture, but that they do not perceive the activity itself to be effortful. After all, children like to draw and make pictures or other artefacts. In order to test our effort-based account in a developmental context, one would need to either measure perceived effort across different activities that children engage in, or manipulate the salience of effort (see Study 3b) to determine whether children evince idea valuation mostly in domains in which they do not perceive labor as effortful—such as drawing or crafting.

An additional possibility might be grounded in different reward structures that young versus older idea givers and laborers typically experience: because children might not be such skilled laborers yet, people may praise them mostly for their ideas and their creativity, as opposed to their hard work. Contrary, adults may receive praise predominantly for labor and productivity (e.g., in work settings). Future developmental research might investigate idea and labor valuation in older children and adolescents who have (recently) entered secondary school, thereby extending Li and colleagues' (2013) samples of 4- and 6-year-old children. The transition to secondary school might be accompanied with a stronger focus on achievement, hard work, and industriousness, resulting in a consequential shift within the reward structure, more closely resembling that of adults.

## **Contributions and Implications**

**Lay conceptions of creativity.** The current account of effort-based depreciation of ideas might also relate to people's tendency to mystify the creative process and creativity more broadly (Baas, Koch, Nijstad, & De Dreu, 2015; see Ritter & Rietzschel, 2017, for an overview). Particularly, precisely because perceivers cannot observe mental effort (i.e., generation of a creative idea) as much as they can observe physical effort (i.e., labor when executing an idea), lay people may downplay the role of effort in the creative process. Consistently, they seem to associate creative thinking with a state of mind that is characterized by rather superficial information processing and little attentional focus. They additionally seem to believe that creative ideas mainly emerge in contexts of mind wandering, incubation, and positive moods (Baas et al., 2015), thereby neglecting the mental effort that might have preceded any particular creative insight. Even the metaphors we use to describe the emergence of good ideas (e.g., as light bulbs) conform to the perception of good ideas appearing out of thin air and seemingly without prior effort (Elmore & Luna-Lucero, 2016).

As lay people's conceptions of what creativity is and how it works have tangible outcomes (O'Connor, Nemeth, & Akutsu, 2013), it seems important to understand why and how precisely lay people mystify the creative process. The present account revolving around asymmetrical perceptions of effort associated with ideas and labor, may advance this understanding.

**Outcome valence and morality.** As Study 4 suggested, the preferential weighing of a laborer's over an idea giver's contribution is contingent upon the mutual creation having positive outcomes. For negative outcomes, we have observed a reversal of this asymmetry, such that people tend to blame the person who contributed the idea over the person who executed it. In addition, the current research documents that outcome valence moderates the relation between perceived effort and valuation tendencies such that only for positive

outcomes did effort predict praise judgments. For negative outcomes, however, effort was unrelated to blame judgments.

Future research might extend these initial results in the domain of outcome valence to the domain of morality. For instance, one might consider cases in which good or moral ideas are poorly executed as opposed to bad or immoral ideas that are well executed. Such research might inform us about people's intuitions about some of the most horrific ideas and intentions of human history such as the holocaust that was executed with cold-blooded efficiency by henchmen like Adolf Eichman. Many of them have tried to dilute their responsibility by referring to their status as mere "laborers" in a dehumanizing system, just following orders of "idea givers" and adhering to their laws (Arendt, 1963).

**Practical implications.** On a methodological note, our basic experimental paradigm adapted from previous research (Li et al., 2013), that contrasts a single idea giver with a single laborer, could be viewed as artificial, because in real life ideas are often either executed by the idea giver her- or himself, or they are passed on to a group of laborers executing individual steps towards a larger creation. However, people's ideas are not always so complex that they need to be executed by an entire corporation, but a more common experience is to work in smaller groups or dyads in which sometimes one individual works towards the idea of another. However, we acknowledge that the set-up remains artificial to some degree in the experimental context of the current research.

Nevertheless, we believe that the current findings can have some implications for more applied domains such as how people think about the job market. In many domains, such as automobile production, physical labor has already largely been delegated to machines, and for other domains, such as autonomous driving, we are in the midst of the transition. In fact, machines become more and more intelligent and capable of learning (machine learning; LeCun, Bengio, & Hinton, 2015). So what is left for us to do? Human work of the future seems to be work of the mind. However, as the current findings suggest, we seem to have

trouble appreciating such unobservable effort of the mind. At this point in time, the creativity of the human mind still seems to exceed that of computers. As part of our adjustment to these new developments, scholars and practitioners in various job markets might be able to utilize perceived effort as a cue to signal value of mental work done by humans. As the present research suggests, increasing the salience of effort associated with the contribution of ideas can at least eliminate the robust default inclination of preferring labor over ideas (Study 3b). Whereas businesses of today make use of the “labor illusion” to modify consumers’ perceptions (Buell & Norton, 2011), businesses of tomorrow might profit from a shift of linking effort with executing observable labor to it being more strongly associated with generating unobservable ideas.

The current work might also corroborate research on people’s tendency to mystify creativity (Ritter & Rietzschel, 2017). However, in trying to increase awareness of the idea-generation process as an effortful and systematic activity, the present findings might offer some insights for practitioners in the domain of education and training to overcome this tendency. Particularly, empirical research suggests that creativity trainings that frame creativity as effortful and actual hard work as opposed to unsystematic and unfocused incubation of the mind are more likely to improve creative performance (Scott, Leritz, & Mumford, 2004; see also Ritter & Mostert, 2017). Construing creativity as malleable and effortful, in turn, might also help reduce some of the stereotypes about the—incorrectly assumed to be mostly male—“creative genius.” Such biases are based on the (erroneous) assumption that creativity is some mysterious capacity that people either possess or lack, and that men happen to be more likely to possess, but women lack. An effort-based account of creativity would be more in line with the empirical reality and prevent us from entertaining stereotypes like assuming that men, due to their alleged innate talent, generate ideas effortlessly like they turn on “light bulbs,” whereas only women, who lack such talent, need to nurture ideas over time by investing hard work (Elmore & Luna-Lucero, 2017). In fact,

construing creativity as malleable—and thus worthy of investing effort—, can help to promote factual creative performance (O'Connor et al., 2013).

### **Conclusion**

Sometimes people think that ideas are cheap, and that labor is everything. As we have seen, people's labor-valuation tendency rests on observable effort as a cue to inform their judgments. Despite our general inclination to value effort, labor, and work, most of what humans create these days, however, rests upon unobservable minds generating ideas. People should thus by no means stop appreciating effort and hard work, but rather take some time to consider the invisible labor done by creative minds as well.

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## Appendix

### Creative-Identity Questionnaire (Study 2)

In this questionnaire, we are interested in how important creativity is to you personally. Please use the scale provided to indicate your (dis)agreement with each of the following statements.

*[In diesem Fragebogen interessieren wir uns dafür, wie wichtig Kreativität für Sie persönlich ist. Bitte nutzen Sie die zur Verfügung gestellte Skala um anzugeben, wie sehr Sie jeder der folgenden Aussagen (nicht) zustimmen.]*

1. I often think about being creative.  
*[Ich denke oft darüber nach, kreativ zu sein.]*
2. My friends think of me as a creative person.  
*[Meine Freunde halten mich für einen kreativen Menschen.]*
3. I do not have a clear concept of myself as a creative person. (reversed)  
*[Ich habe nur eine vage Vorstellung von mir selbst als kreativer Persönlichkeit.]*
4. My friends think that creativity is important to me.  
*[Meine Freunde denken, dass mir Kreativität wichtig ist.]*
5. To be a creative person is an important part of my identity.  
*[Eine kreative Person zu sein, ist ein wichtiger Teil meiner Identität.]*
6. My colleagues or fellow students don't really expect me to be creative. (reversed)  
*[Meine Kollegen oder Kommilitonen erwarten nicht unbedingt von mir, dass ich kreativ bin.]*

### Protestant-Work-Ethic Questionnaire (Study 2)

This questionnaire is about your opinion on the topic “work and life.” For each statement, please indicate how much you (dis)agree.

*[In diesem Fragebogen geht es um Ihre Ansicht zum Thema "Arbeit und Leben". Geben Sie bitte bei jeder der folgenden Aussagen an, wie sehr Sie ihr zustimmen oder nicht.]*

1. Dislike of hard work usually reveals a weak character.

*[Abneigung gegen harte Arbeit offenbart in der Regel einen schwachen Charakter.]*

2. Life is a constant struggle with one's own weaknesses.

*[Das Leben ist ein ständiger Kampf gegen die eigenen Schwächen.]*

3. Through hard work one becomes a better person.

*[Durch harte Arbeit wird man zu einem besseren Menschen.]*

4. There is nothing so satisfying than the feeling that one has done a good job.

*[Es gibt kaum etwas so Befriedigendes wie das Gefühl, dass man seine Arbeit gut gemacht hat.]*

5. Hard work builds the character.

*[Harte Arbeit bildet den Charakter.]*

6. Hard work yields more than spontaneous ideas.

*[Harte Arbeit bringt mehr als spontane Ideen.]*

7. Willingness to abstain and frugality are among the most important objectives in education.

*[Verzichtsbereitschaft und Genügsamkeit gehören zu den wichtigsten Erziehungszielen.]*

8. If one wins a lot of money, he or she should not spend it, but invest it into the future.

*[Wenn einer viel Geld gewinnt, sollte er es für die Zukunft anlegen, statt es auszugeben.]*

9. Those who cannot resist the temptations of wealth, reveal weak character.

*[Wer den Verlockungen des Wohlstandes nicht widerstehen kann, offenbart Charakterschwäche.]*

10. Those who want to be successful in the long run, must resist short-term temptations.

*[Wer langfristig erfolgreich sein will, muss sich kurzfristig in Verzicht üben.]*

### **Effort-Salience Manipulation (Study 3b)**

#### **Baseline condition**

Below, you see a photo of the painting (title: "ape with flowers at window"). The idea for the painting is based on artist A's engagement with the work by Gabriel von Max, which deals with the relationship between humans and animals. For its implementation, artist B used acrylic, ink, and spray painting on paper (measures 80 x 100 cm).

*[Weiter unten sehen Sie ein Foto des Bildes (Titel: "Affe mit Blumen am Fenster").*

*Die Idee zum Bild basiert auf Künstler A's Beschäftigung mit dem Werk von Gabriel von Max, das die Beziehung von Mensch und Tier zum Gegenstand hat. Für die Umsetzung hat Künstler B Acryl, Ink, und Sprühfarbe auf Papier (Maße 80 x 100 cm) verwendet.]*

#### **Effort-laborer condition** (key manipulation in bold)

Below, you see a photo of the painting (title: “ape with flowers at window”). The idea for the painting is based on artist A’s engagement with the work by Gabriel von Max, which deals with the relationship between humans and animals. **Up to the idea for the painting, artist A invested approximately 4 hours into this engagement.** For its implementation, artist B used acrylic, ink, and spray painting on paper (measures 80 x 100 cm). **Overall, artist B invested approximately 26 hours into the implementation of the painting.**

*[Weiter unten sehen Sie ein Foto des Bildes (Titel: “Affe mit Blumen am Fenster”). Die Idee zum Bild basiert auf Künstler A's Beschäftigung mit dem Werk von Gabriel von Max, das die Beziehung von Mensch und Tier zum Gegenstand hat. Bis zur Idee zum Bild hat Künstler A ca. 4 Stunden in diese Beschäftigung investiert. Für die Umsetzung hat Künstler B Acryl, Ink, und Sprühfarbe auf Papier (Maße 80 x 100 cm) verwendet. Insgesamt hat Künstler B ca. 26 Stunden in die Umsetzung des Bildes investiert.]*

#### **Effort-idea-giver condition** (key manipulation in bold)

Below, you see a photo of the painting (title: “ape with flowers at window”). The idea for the painting is based on artist A’s engagement with the work by Gabriel von Max, which deals with the relationship between humans and animals. **Up to the idea for the painting, artist A invested approximately 26 hours into this engagement.** For its implementation, artist B used acrylic, ink, and spray painting on paper (measures 80 x 100 cm). **Overall, artist B invested approximately 4 hours into the implementation of the painting.**

*[Weiter unten sehen Sie ein Foto des Bildes (Titel: “Affe mit Blumen am Fenster”). Die Idee zum Bild basiert auf Künstler A's Beschäftigung mit dem Werk von Gabriel von Max, das die Beziehung von Mensch und Tier zum Gegenstand hat. Bis zur Idee zum Bild hat Künstler A ca. 26 Stunden in diese Beschäftigung investiert. Für die Umsetzung hat Künstler B Acryl, Ink, und Sprühfarbe auf Papier (Maße 80 x 100 cm) verwendet. Insgesamt hat Künstler B ca. 4 Stunden in die Umsetzung des Bildes investiert.]*

#### **Painting Shown to Participants (Study 3b)**



*Note.* Photograph of the painting shown to participants in all three conditions (courtesy of [masked for review]). Due to ethical reasons, the original title (“Check out this asshole’s new artblock”) was replaced with “Ape with flowers at window” (Study 3b).