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**Investigating the Effects of Prosocial Motivation on
Creative Idea Generation**

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Abstract

During the last decades, research on motivation in creativity has mainly focused on examining how intrinsic and extrinsic motivators influence creative behavior, whereas little is known about effects of prosocial motivational processes on creative idea generation. The current study investigated how prosocial motivation affects creativity, ideational fluency and persistence. A sample of 40 Swedish young adults performed an as interesting framed idea generation task that was based on a real-world problem. Using a random experimental between-subject design with two conditions, participants performed the same idea generation task either 1) with an opportunity to have a prosocial impact on other people, or 2) without the opportunity to have a prosocial impact. Results indicated no significant differences in creativity or persistence between the two conditions. Ideational fluency was significantly higher in the no impact condition compared to the prosocial impact condition. Results, limitations of the present study and future directions are discussed.

Keywords: prosocial motivation, intrinsic motivation, creativity, ideational fluency, persistence, idea generation, prosocial impact

Investigating the Effects of Prosocial Motivation on Creative Idea Generation

“Creativity is the currency of societal progress and the hallmark of success in organizations” (Grant, 2011, introduction section, para. 1). Not only do organizations often depend on their employees’ creative ideas for products or services in order to innovate, adapt, grow and compete in increasingly dynamic market conditions (Nonaka, 2007; Oldham, 2002), but also, the development of creative solutions has relevance in responding to various issues that societies are facing. Therefore, researchers and organizational practitioners share a strong interest in understanding the drivers and contexts that promote creativity in everyday jobs or situations. What motivates people to generate creative ideas or solutions?

For several decades, research investigating psychological factors that drive creativity usually considered intrinsic motivation, which is based on an individual’s interest and enjoyment of a creative activity itself (Ryan & Deci, 2000), to be an important driver of creativity (Elsbach & Hargadon, 2006). Therefore, past research on motivation and creativity has mainly focused on how different social-environmental contexts shape creativity through its impact on intrinsic motivation (Amabile & Pillemer, 2012; Forgeard & Mecklenburg, 2013). However, in the light of that most theorists usually define creativity as the development of ideas about products, services or solutions that are both, novel and also potentially useful (e.g. Shalley, Zhou & Oldham, 2004), surprisingly little empirical research has examined how the intended beneficiaries of the creative work possibly shape individuals’ creative behavior (Forgeard & Mecklenburg, 2013). Indeed, creative products, services or solutions are often meant to be experienced by relevant others on the receiving end who shall benefit from the creator’s¹ effort in certain ways (Forgeard & Mecklenburg, 2013).

Especially in the light of the continuously growing service sector as well as the increasing popularity of organizational concepts such as social entrepreneurship or social innovation, peoples’ prosocial motivation, referred as the desire to have a positive impact on other people or social collectives (Batson, 1987; Grant, 2007), appears to be a timely and relevant topic in organizational contexts. Whereas organizational research provides initial evidence that prosocial motivational processes can positively impact peoples’ performance and persistence in various work-related tasks (e.g. Grant et al., 2007; Grant, 2008a, 2008b), less is known about its influences in relation to creativity. Therefore, the current study intends to gain deeper understanding about effects of prosocial motivation on different aspects of creative idea generation. Is it sufficient to make creative assignments intrinsically interesting

¹ The term “creator” is used throughout this paper as expression for an individual engaging in a creative activity.

and engaging, or does understanding the potential prosocial impact on beneficiaries further enhance creativity and persistence in creative tasks? The following section will review theories and empirical evidence about the roles of intrinsic and prosocial motivational processes in creative and persistence behavior.

Creative Idea Generation

Despite ongoing debate about what it means to be creative, many contemporary theorists agreed on defining the construct creativity as the production of novel and useful ideas within a given context (see Amabile, 1996; Shalley et al., 2004). Creativity is however a multifaceted phenomenon being explored from various perspectives and involving multiple processes (Ward & Kolomyts, 2010). According to dual process models of creative thinking, creativity entails the interplay between cognitive processes of idea generation and idea evaluation, for developing novel and also useful solutions (Sowden, Pringle, & Gabora, 2015). Divergent thinking is often considered as a key component of creativity, as it involves cognitive processes used to generate and explore multiple ideas in response to an open-ended question (Kaufman, Plucker, & Baer, 2008). Creativity has been assessed in different ways in experimental research. Studies focusing on creative thinking processes for instance assessed participants' output in idea generation tasks on different key-aspects of divergent thinking (Kaufman et al., 2008), that is, measuring how many (*fluency*), varied (*flexibility*), unusual (*originality*) or detailed (*elaboration*) ideas were generated (Torrance & Ball, 1984). Other studies focused on the creative product and assessed the final output by the extent that judges independently agree with their subjective creativity ratings, while not relying on any objective criteria (see Amabile & Pillemer, 2012). Some studies combined product-focused assessments with process-focused measures such as ideational fluency (e.g. Yuan & Zhou, 2008), typically referred as the total number of ideas generated to a task (Kaufman et al., 2008).

Motivation and Creativity

Motivation is a construct “encapsulating the psychological processes that direct, energize, and sustain human behavior” (Grant et al., 2007, p. 54). Research on the role of motivation in creativity developed from the growing interest in the “social psychology of creativity”, which entails the study of how social-environmental factors influence peoples' creativity (Forgeard & Mecklenburg, 2013). According to Amabile's (1983, 1996) componential theory of creativity, motivation is an important component within individuals

that influences creativity in addition to their domain-specific skills (e.g. expertise) and creativity-specific skills (e.g. cognitive styles, personality). This theory further suggests that the surrounding social-environmental context can most directly, immediately and prevalently shape the creative process through its impact on the individual's motivation toward the task at hand (Amabile & Pillemer, 2012).

Intrinsic and Extrinsic Motivation in Creativity

Motivation is typically divided into two types: intrinsic and extrinsic motivation. When individuals feel *intrinsically* motivated, they focus on the process of an activity as their effort is driven by their own interest in and enjoyment of the activity itself (Amabile, 1996; Ryan & Deci, 2000). In contrast, when *extrinsically* motivated, the individual's desire and attention during an activity is redirected towards an outcome external to the process, such as receiving incentives, recognition, or expected performance evaluation (Collins & Amabile, 1999). In Amabile's (1983) early hypothesis on how motivation affects creativity, she proposed, that social contexts that encourage intrinsic motivation enhance creativity, whereas social contexts that promote extrinsic motivation impairs creativity to the extent that it detracts from intrinsic motivation (Forgeard & Mecklenburg, 2013). For several decades, the intrinsic type of motivation has usually been considered as an important driver of creativity (Elsbach & Hargadon, 2006; Grant & Berry, 2011). Emotion theorists and self-determination theorists suggest that intrinsic motivation enhances creativity by increasing positive affect (Silvia, 2008), cognitive flexibility (Fredrickson, 1998), willingness to take on challenges and risks (Gagné & Deci, 2005) as well as by encouraging persistence and sustained effort put into a task (Fredrickson, 1998; Gagné & Deci, 2005). In laboratory experiments, intrinsic motivation is typically manipulated by, for instance, directing participants' focus to different reasons for performing a task, giving task choices or modifying external reward or evaluation conditions (Grant, 2011). However, decades of empirical research conducted in the laboratory and field that linked intrinsic motivation to enhanced creativity yielded equivocal results (George, 2007; Shalley et al., 2004). Amabile (1996) had eventually revised her early intrinsic motivation *hypothesis* of creativity to the intrinsic motivation *principle* of creativity, reflecting that extrinsic motivators may in certain cases not impair or even benefit creativity in synergy with intrinsic motivation. Self-determination theorists suggest, that extrinsic goals that encourage experiences of autonomy and that have been well internalized by the individual are likely conducive to intrinsic motivation. In contrast, extrinsic motivators that

cause feelings of being externally controlled are likely detrimental to intrinsic motivation (Gagné & Deci, 2005). Although the weight of empirical evidence proposes that intrinsic interest and enjoyment drives high creativity (Amabile & Pillemer, 2012), mixed findings in the literature suggest its theorized relationship is more complex and that a deeper understanding of motivational processes driving creativity is required (George, 2007; Shalley et al., 2004).

Beneficiaries as Dimension of Motivation in Creativity

Researchers took recently a rather new approach by proposing that it may be insufficient to only examine how the social-environmental context influences creativity through intrinsic and extrinsic motivators, but also, to take in account how motives to impact beneficiaries shape creative behavior (Forgeard & Mecklenburg, 2013; Grant & Berry, 2011). Creators may hold motivational goals about the intended impact of their creative products, as these are often meant to be experienced by relevant others on the receiving end (Forgeard & Mecklenburg, 2013). In light of the lack of empirical studies in creativity research that consider motives to impact beneficiaries, Forgeard and Mecklenburg (2013) proposed a two-dimensional theoretical framework of motivation in creativity in order to guide future research in that area. These authors view creativity as a dynamic and reciprocal process in which two dimensions interact and shape creativity. The first dimension in their framework is the locus of motivation, i.e. the creator's focus on the intrinsic process or/and extrinsic outcome. The second dimension includes the intended beneficiaries of the creator's work, i.e. the impact on themselves or/and others. Regarding beneficiaries, influences of self-oriented benefits of creativity (e.g. feelings of interest, flow, mental health, obtaining external rewards) have to date been more prevalently studied (e.g. Csikszentmihályi, 1996; Byron & Khazanchi, 2012; Leckey, 2011). The following review is however limited to other-oriented motivational processes as a driver for creativity, focusing on prosocial motivation. Although it is conceivable that anti-social motives may also drive creativity in certain ways, its role in creativity has however yet to be examined.

Prosocial Motivation

Prosocial motivation is usually referred as the desire to expend effort in order to help or benefit other people (Batson, 1987; Grant & Berry, 2011). Prosocial motivation is considered being distinct from altruism and independent from self-interested motives (Grant

& Berg, 2012). “Prosocial motivation can involve, but should not necessarily be equated with, altruism; it refers to a concern for others, not a concern for others at the expense of self-interest” (Grant & Berry, 2011, p. 77; De Dreu, 2006). Similarly, Batson, Ahmad, Powell and Stocks (2008) argued that prosocial motivation can be based on either one or combinations of four underlying goals such as enhancing one’s ego (egoism), genuinely helping others in need (altruism) as well as upholding moral principles (principlism) or one’s relationship to a group (collectivism). In experimental studies researchers usually manipulate prosocial motivation by varying the need expressed by beneficiaries (Batson, 1998; Grant & Berry, 2011).

Prosocial Motivation, Work Performance and Persistence

The role of prosocial motivation has received increasing attention in organizational research. Grant (2007) provided important insights into how social work contexts can cultivate motivations in employees to make a prosocial difference. When job characteristics connect employees to their impact on the beneficiaries of their work, they feel more prosocially motivated and in turn encouraged to invest more time and energy into their tasks as well as into helping beneficiaries (Grant & Berg, 2012). According to Grant (2007), the motivation to make a prosocial difference is fueled by two psychological states. The first state is the perception that one’s actions impact beneficiaries, which can be promoted by giving opportunities for impact and providing knowledge about how one’s work affects others. The second state is the experience of affective commitment to the welfare of the beneficiaries, which can be strengthened by contact with beneficiaries enabling stronger empathy and identification with them. In a number of field and laboratory experiments with employee and student samples Grant and colleagues demonstrated, that connecting participants to their impact on beneficiaries by means of varied interventions increased performance, productivity and persistence in tasks (Grant & Berg, 2012). Persistence is usually referred as amount of time an individual spends on a task and researchers have often used this term to capture maintenance of motivation (Grant, 2008a). For instance, fundraising callers showed increased weekly phone time and weekly donation money raised the subsequent month, when receiving information about how donations benefited student scholarship recipients via a short interpersonal contact with a recipient (Grant et al., 2007) or by reading a vivid letter of a recipient (Grant, 2008a). Also, students spent more time editing another student’s job application cover letter, when they had prior brief contact and learned that he was in dire need of a job (Grant et al., 2007). Further, lifeguards that had never performed a rescue, spent more time working as

well as engaging in helping and safety behavior to benefit guests for a month, when reading stories about other lifeguards performing rescues (Grant, 2008a). Finally, in another study by Turner, Hadas-Halperin and Raveh (2008), radiologists reported more empathy, wrote longer reports and attained a higher diagnostic accuracy when patient photos were included with x-rays (as cited in Grant & Berg, 2012). These examples demonstrate that not only connecting people to their impact on past or current beneficiaries by varied interventions can motivate higher persistence and performance in work-related tasks, but also that providing social information about potential impact on future beneficiaries can trigger similar effects.

According to Grant and Berry (2011) the behaviors examined in the reviewed studies emphasize “working hard” in conducting the tasks, whereas creative tasks on the other hand emphasize “working smart” to generate novel and potentially useful ideas. Previous research has frequently shown a tendency that responses to divergent thinking tasks get more creative across time, while fluency of later responses tends to go down (Beaty & Silvia, 2012). While recent research has begun to empirically examine how prosocial motivational processes relate to creativity (e.g. Grant & Berry, 2011), the effect of prosocial motivation on persistence has to our knowledge to date not been examined in creativity tasks.

Prosocial Motivation and Creativity

Few empirical studies have recently investigated the association between prosocial motivational processes and creativity. Carmeli, McKay, and Kaufman (2013) found in their correlational study with employees that emotional intelligence predicted self-reported creativity, whereby generosity and vigor mediated this effect. Also, in a series of four experiments involving tasks such as drawing, idea generation and an insight problem, Polman and Emich (2011) demonstrated that creative performance was significantly higher when participants were instructed to make creative decisions for the behalf of others than for the self. This effect was mediated by psychological distance, in the sense that creative decisions in behalf of others led individuals to experience higher construal levels, and respectively more abstract thinking. In another series of three studies, Grant and Berry (2011) directly examined the relationship between prosocial motivation and creativity by using correlational and experimental methods with employee and student samples. The results indicated that prosocial motivation moderated the association between intrinsic motivation and independent creativity ratings. In two of these studies, the authors found that perspective taking mediated this moderating effect. In their laboratory experiment, Grant and Berry (2011) manipulated

low and high levels of intrinsic motivation as well as prosocial motivation resulting in four motivational combinations, i.e. experimental conditions. Levels of intrinsic motivation were manipulated by task framing (interesting/boring) combined with alleged task choice (accepted/not accepted). Levels of prosocial motivation were manipulated by the degree of need (high/low) the beneficiaries expressed. In all conditions participants were instructed to generate ideas to help a local music band solving a business problem and that their ideas would be sent to the concerned band members. Results showed that creativity was rated higher by independent experts in the condition with high levels of both intrinsic and prosocial motivation than in the other three conditions. Bechtholdt, De Dreu, Nijstad, and Choi (2010) conducted experiments with three-person groups that performed brainstorming tasks for solving specific problems under different motivational conditions. Similar to Grant and Berry's (2011) results, Bechtholdt et al. (2010) found that groups who expected evaluation of overall group performance (prosocial motive condition) showed higher ideational fluency and originality than groups that expected evaluation and incentives for each member's contribution (pro-self motive condition), but only when epistemic motivation was also high. The concept of epistemic motivation refers to the willingness to expend effort in order to achieve an accurate understanding of the world (De Dreu, Nijstad, & Van Knippenberg, 2008), which closely relates to intrinsic motivation (Forgeard & Mecklenburg, 2013). Thus, how do prosocial and intrinsic motivations relate and interact in the creative process?

Relationship between Intrinsic and Prosocial Motivation

After reviewing the roles of intrinsic and prosocial motivation as drivers of creativity, this section will outline how temporary psychological states of both motivation forms are distinct and in which ways they have been found to interact in the creative process.

Some researchers considered prosocial motivation as a specific form of intrinsic motivation (e.g. Hackman & Oldham, 1976), whereas others highlight the different underlying drivers and reasons for expending effort in an activity. As aforementioned, intrinsic motivation is based on interest and enjoyment in the work itself, taking thus a rather hedonistic perspective; prosocial motivation is based on a concern to benefit others, taking a rather eudaimonic perspective by emphasizing a higher meaning and purpose through the effort (Grant, 2008b; Ryan & Deci, 2001; Waterman, Schartz, & Conti, 2008). According to Grant (2008b), these two motivation forms differ along at least three dimensions: self-regulation, goal directedness and temporal focus. More precisely, intrinsic motivation

involves higher levels of autonomy in self-regulation and requires less conscious self-control than prosocial motivation (Gagné & Deci, 2005). Further, intrinsic motivation is rather process-focused and present-focused by experiencing the engagement in an activity as inherently enjoyable, whereas prosocial motivation is rather outcome-focused and future-focused in the sense of performing an activity for a higher goal to benefit others (Grant, 2008b).

These distinctions along the three dimensions reveal that these motivation forms can be viewed as relatively independent, but research also indicates that they can interact. Drawing on self-determination theory (Ryan & Deci, 2000), Grant (2008b) proposed that prosocial motivation varies in the degree to which its source is intrinsic (autonomous) or extrinsic (controlled). Intrinsic states of prosocial motivation are based on identification or integration with one's values, involving pleasure-based willingness to help, whereas extrinsic states of prosocial motivation includes rather feeling pressured to help due to e.g. obligation, guilt and external control (Cunningham, Steinberg & Grev, 1980; Gebauer, Maio, Riketta, & Broemer, 2008; Ryan & Deci, 2000). Grant (2008b) found in his field studies conducted with firefighters and fundraisers, that prosocial motivation is more positively associated with persistence, performance and productivity, when being accompanied by intrinsic rather than extrinsic motivation. Thus, his research suggests that the source of prosocial motivation – intrinsic or extrinsic – is a moderator of its effect on behavior and performance outcomes. Similarly, the aforementioned results of Bechtholdt et al.'s (2010) and Grant and Berry's (2011) studies revealed a superior creativity performance when prosocial motivation is accompanied with intrinsic forms of motivation. As a possible explanation, these authors argue that both motivation forms synergize to higher creativity, because high intrinsic interest fosters the access to novel ideas (Silvia, 2008) and high prosocial motivation then directs the creator's focus on developing and selecting ideas in potentially useful ways to help beneficiaries effectively (Grant & Berry, 2011). However, these authors didn't directly test this assumption in their studies as they just measured independent overall creativity ratings, but did not assess separate ratings for novelty and usefulness. Also, they did not assess separate effects of intrinsic and prosocial motivation on creativity.

In sum, the foregoing reviewed research suggests that prosocial motivational processes can foster higher performance, productivity and persistence in various work tasks as well as higher creativity, especially when their source is intrinsic.

Aim and Hypotheses

The present study aims to experimentally investigate the effect of prosocial motivation on creativity, ideational fluency and persistence, using a creative idea generation task. Against the background of the foregoing reviewed research, it is expected that creativity, ideational fluency and persistence will be higher when an intrinsically motivating idea generation task is performed with the opportunity to benefit other people (prosocial impact condition) compared to having no impact on others (no impact condition). The following hypotheses are therefore posed:

H1: Creativity will be higher in the prosocial impact condition than in the no impact condition.

H2: Ideational fluency will be higher in the prosocial impact condition than in the no impact condition.

H3: Persistence will be higher in the prosocial impact condition than in the no impact condition.

Method

Experimental Design

A random between-subject experimental design was performed using two conditions. Participants performed an idea generation task either 1) framed as intrinsically interesting and that their efforts would benefit other people (prosocial impact condition), or 2) framed as intrinsically interesting (no impact condition). Three dependent variables were assessed: Creativity, ideational fluency and persistence. The variables intrinsic and prosocial motivation were measured as manipulation check. Also, relevant experiences were assessed as control measures.

Participants

A sample of 42 Swedish young adults participated in the study, 27 were female (64 %) and 15 were male (36 %). The participants were aged between 19 and 29, with a mean age of 23,43 ($SD = 2,18$). The participants were recruited on Lund University Campus and via email, and they received a scratch-off lottery ticket for participating. The selection

prerequisites for participation were to be Swedish and between 18 and 30 years of age. 40 participants were university students, one was employed and one reported to be unemployed. Two participants were excluded from the analysis as they reported they had to rush through the experiment due to personal time restrictions, leaving 13 females (68 %) and 6 males (32 %) in the *prosocial impact condition*, and 12 females (57 %) and 9 males (43 %) in the *no impact condition*. The mean age in the *prosocial impact condition* was 23 ($SD = 2,45$) and the mean age in the *no impact condition* was 23,81 ($SD = 1,94$).

Materials

The experiment was computer-based and included the motivation manipulation, the idea generation task as well as the measurements of interest. Prior the experiment, participants were asked to report their sex, age, occupational status and their field of studies/occupation a brief background questionnaire (see Appendix A).

Motivation manipulation. The two assigned conditions had different framings (see Appendix B²) about the reason for performing the subsequent idea generation task, which were expressed in a description of the project purpose:

Prosocial impact condition. The task was framed as interesting to facilitate intrinsic motivation in participants for the task at hand (Deci, Koestner, & Ryan, 1999; Glynn, 1994; Grant & Berry, 2011). To induce prosocial motivation, participants were instructed that their generated ideas would benefit other people in need (Grant & Berry, 2011):

In the following study you have the possibility to help the local blood centre³ with a current problem. The blood centre has difficulties to recruit younger blood donators. In this project we collect ideas and suggestions from younger people about how this problem could be solved. The suggestions that we collect will be presented to the blood centre's management group who can benefit strongly from young peoples' suggestions. The suggestions shall be used to secure the health care's needs of blood in the future. In that way you could now contribute to help seriously ill people. Of course, the contributions will be presented anonymously. Previous participants have assessed this task as particularly interesting because it is based on a real problem that the blood centre struggles with.

² The texts for motivation manipulation and task instructions are presented in Swedish in the appendix.

³ The specific region of the blood centre was named in the original text, but excluded in the English translation.

No impact condition. The task was framed as interesting to facilitate intrinsic motivation in participants, while receiving no opportunity to impact others with their ideas:

In the following study you will get a problem solving task. Previous participants have assessed this task as particularly interesting because it is based on a real problem that the local blood centre struggles with. The purpose of this study is to examine experiences when working with an interesting real problem. Therefore, after the task you will be asked to answer a survey about it. Your answers are anonymous and will not be used outside of this study.

Idea generation task. The creative task for all participants was to generate ideas and suggestions about how the local blood centre can recruit more young adults as blood donors (see Appendix C). This problem about blood donation was chosen to make the motivation manipulation as authentic as possible by fulfilling the criteria of being real, locally relevant to the population and thematically relevant to potentially helping people:

The local blood centre has difficulties in recruiting younger blood donors. The existing blood donors are getting older. This leads to a problem since the local blood centre is forced to buy blood from external sources which involves high costs and risks. A good access to blood is a prerequisite for being able to give seriously ill patients the care they need. The blood centre requires both recruiting new and younger blood donors and to ensure that they give blood regularly. Ad campaigns and brochures targeted towards younger people have not worked sufficiently enough.

Task instructions were partially adapted from typical brainstorming rules (e.g. Yuan & Zhou, 2008), that is, writing down as many and varied ideas the participants could think of, to try being creative and not to censor their thoughts. There was no time restriction for performing the task. Participants were further instructed to mark each idea with a bullet point and to submit their ideas when they couldn't generate more ideas. The completed idea generation task was assessed on the variables creativity, ideational fluency and persistence.

Creativity. The creativity of the participants was assessed using the Consensual Assessment Technique (Amabile, 1982). Two external raters were recruited that were Swedish university students and regular local blood donors. Both students received two cinema tickets each in return. The raters were provided with each participant's output of the idea generation task on sheets of papers stripped away of any information about the participants or conditions. The second rater received the participants' outputs in reversed

order. The raters were briefly informed about the task that the participants had performed and were then asked to rate each participant's idea generation output on a 6-point scale from low (1) to high (6) creativity. Specific instructions (see Appendix E) were partially adapted from Kaufman, Baer, Cole and Sexton's (2008). Both raters attained good inter-rater reliability ($ICC = .72, p < .001$). Therefore, their ratings were averaged into an overall creativity measure for each participant's idea generation output.

Ideational fluency. Ideational fluency was assessed by the sum of interpretable written ideas that were each marked with a bullet point by each participant.

Persistence. Persistence was measured by the participants' time duration they performed the task. The time duration was recorded in seconds by the online survey tool *LimeSurvey* and was calculated from each participant's point of time clicking to start the idea generation task until the point of time they clicked to submit their ideas.

Manipulation checks and control variables. In a post-experimental questionnaire (see Appendix D) the efficacy of the manipulation and control variables were assessed.

Intrinsic motivation. The Interest/Enjoyment Scale was used, which has been applied in previous studies as a post-experimental self-report measure of intrinsic motivation (e.g. Ryan, Koestner & Deci, 1991). The seven items were rated on a 7-point scale ranging from strongly disagree (1) to strongly agree (7), e.g. "*I would describe this task as very interesting*". Reliability analysis indicated a high reliability of the Interest/Enjoyment Scale for both conditions (prosocial impact condition, $\alpha = 0.92$; no impact condition, $\alpha = 0.89$).

Prosocial motivation. In order to assess self-reported prosocial motivation, the four items from Grant's (2008b) Prosocial Motivation Scale were used and adapted to the specific task of the study, e.g. "*I wanted to have a positive impact on people who need blood donations*". These items were rated on a 7-point scale ranging from strongly disagree (1) to strongly agree (7). Reliability analysis showed a high reliability of the Prosocial Motivation Scale for both conditions (prosocial impact condition, $\alpha = 0.9$; no impact condition, $\alpha = 0.96$).

Relevant experiences. Variables about previous experiences related to the task were assessed to control whether those influenced the results. The participants were asked to rate how important the problem of the blood centre was to them before they did the study on a 7-point scale ranging from not at all important (1) to very important (7). Further, the participants were asked to indicate whether they had been blood donator by a voluntary question (*No, I have never given blood/ No not yet, but I can imagine to become a blood donator/ Yes, I have given blood 1-3 times/ Yes, I give blood regularly/ No answer*). Finally, we assessed whether participants ever gained professional experiences in the domains of marketing/advertisement, recruiting, health care sector, whether they had worked at a blood centre or ever studied psychology.

Procedure

The participants were tested individually in a quiet room at Lund University. The study was solely conducted on a laptop using the online survey application *LimeSurvey*. First, all participants received a brief instruction stating that they have the possibility to partake in a study examining how people solve real-world problems. They were informed that the study involves writing down ideas to a problem that the local blood centre struggles with, filling out a questionnaire afterwards, and that the procedure may roughly take about 15 minutes. Further, participants were ensured that their data are handled completely anonymous, that they have the right to withdraw from the study at any time. After participants had provided informed consent to partake in the study, they firstly filled out the short background questionnaire. Participants were then randomly assigned to the two conditions. Whereas descriptions of the project purpose differed between the two conditions, all participants read the identical task instructions and performed the same idea generation task, without time restrictions. During the study participants were unaware that their time spent on the task was recorded. After task completion participants answered the post-experimental questionnaire. Finally, participants were debriefed about the purpose of the study, informed about the different conditions and that there wasn't such a concrete plan yet to forward the ideas to the local blood centre. The participants were thanked for their time and asked whether they have further questions or comments. The length of the whole study procedure varied from about 10 to 40 minutes.

Results

Preliminary Analysis

When screening the data prior to analysis, on each of the variables persistence and ideational fluency a univariate outlier was detected within the no impact condition group, exceeding the z-value 3.29 (Tabachnick & Fidell, 2007). On these two variables the score of the respective outlying case was reduced to one unit above the next most extreme score in the distribution to diminish its impact. The data were then examined for violation of assumptions underlying independent samples t-test method. On the variable ideational fluency the assumptions of normality within both groups and homoscedasticity were violated.

Bivariate correlation analysis between the variables intrinsic motivation, prosocial motivation, creativity, ideational fluency and persistence performed separately for the two conditions are presented in Table 1. The intercorrelation matrix for the prosocial impact condition showed two significant moderately high positive correlations of prosocial motivation with the variables intrinsic motivation and persistence. The intercorrelation matrix for the no impact condition revealed two significant moderately high positive correlations of ideational fluency with the variables creativity and persistence.

Table 1

Intercorrelation Matrix for Variables of Interest Displayed for the Prosocial Impact Condition (Below the Diagonal) and the No Impact Condition (Above the Diagonal)

		1	2	3	4	5
1. Intrinsic Motivation	Pearson Correlation	-	.42	.08	.14	.37
	Sig. (2-tailed)		.06	.72	.55	.1
2. Prosocial Motivation	Pearson Correlation	.57*	-	.17	.13	.02
	Sig. (2-tailed)	.01		.46	.58	.95
3. Creativity	Pearson Correlation	.26	.26	-	.51*	.37
	Sig. (2-tailed)	.29	.28		.02	.08
4. Ideational fluency	Spearman Correlation	.12	.24	.43	-	.55**
	Sig. (2-tailed)	.63	.33	.07		.01
5. Persistence	Pearson Correlation	.28	.51*	.41	.4	-
	Sig. (2-tailed)	.24	.03	.08	.09	

Note. * $p < .05$ (2-tailed), ** $p < .01$ (2-tailed)

Manipulation Check

Intrinsic motivation. Independent-samples t-test analysis showed no significant difference in ratings on the Interest/Enjoyment Scale between the prosocial impact condition ($M = 4.93$, $SD = 1.3$) and the no impact condition ($M = 5.47$, $SD = 0.83$; $t(38) = 1.61$, $p = .12$, two-tailed). As anticipated, this result indicates equal levels of self-reported intrinsic motivation in participants between both conditions.

Prosocial motivation. Independent-samples t-test analysis revealed that ratings on the Prosocial Motivation Scale did not significantly differ between the prosocial impact condition ($M = 5.82$, $SD = 1.05$) and the no impact condition ($M = 5.69$, $SD = 1.22$; $t(38) = -.35$, $p = .73$, two-tailed). This result suggests that motivation manipulation did not have a significant effect on self-reported prosocial motivation, which will be further discussed in the next section.

Hypothesis Testing

Creativity. Independent-samples t-test analysis revealed that independent ratings of creativity did not significantly differ between the prosocial impact condition ($M = 3.71$, $SD = 1.42$) and the no impact condition ($M = 3.98$, $SD = 1.37$; $t(38) = .6$, $p = .55$, two-tailed).

Ideational fluency. Due to violation of assumptions underlying independent-samples t-test, a Mann-Whitney U Test was performed to test the second hypothesis. Analysis showed that ideational fluency was significantly higher in the no impact condition ($Md = 5$, $n = 21$) than in the prosocial impact condition ($Md = 4$, $n = 19$; $U = 126.5$, $z = -2.03$, $p < .05$, two-tailed). The effect size ($r = .32$) for this analysis was medium.

Persistence. Independent-samples t-test analysis revealed that persistence measured by time duration in seconds did not significantly differ between the prosocial impact condition ($M = 545.06$, $SD = 307.29$) and the no impact condition ($M = 510.07$, $SD = 261.54$; $t(38) = -.39$, $p = .7$, two-tailed).

Relevant Experiences

Independent-samples t-test analysis showed that levels of importance of the local blood donation problem did not differ between the prosocial impact condition ($M = 4.42$, $SD = 1.84$) and the no impact condition ($M = 4.86$, $SD = 1.53$; $t(38) = .82$, $p = .42$, two-tailed).

Frequency distributions of the variables assessing whether participants had been blood donator as well as their professional experiences are presented in Table 2. Since the frequency distributions on these variables were relatively equal between the prosocial impact condition and the no impact condition, it was decided that there was no need to further control for these variables in the analyses.

Table 2

Absolute and Relative Frequency Distributions of Experience-related Variables in the Prosocial Impact Condition, No Impact Condition and Total Sample

Variable	Prosocial Impact		No Impact		Total	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
<i>Have you been blood donator?</i>						
No, I have never given blood.	10	52.7	7	33.3	17	42.5
No not yet, but I can imagine to become donator.	5	26.3	6	28.6	11	27.5
Yes, I have given blood 1-3 times.	2	10.5	4	19	6	15
Yes, I give blood regularly.	2	10.5	4	19	6	15
<i>Professional experience</i>						
Advertising and marketing	3	15.8	4	19	7	17.5
Recruiting	0	0	2	9.5	2	5
Healthcare	4	21.1	4	19	8	20
Work at a blood centre	0	0	0	0	0	0
Studied psychology	3	15.8	5	23.8	8	20
None of these domains	11	57.9	11	52.4	22	55

Discussion

The study aimed to investigate effects of prosocial motivation on different aspects of creative idea generation. In particular, it was hypothesized that creativity, ideational fluency and persistence will be higher when an intrinsically motivating idea generation task is performed with the opportunity to benefit other people (prosocial impact condition) compared to having no impact on others (no impact condition). Results showed no statistically

significant difference in creativity or persistence between the two conditions. Against previous expectation, ideational fluency was significantly higher in the *no impact condition* compared to the *prosocial impact condition*. Thus, none of the initially posed hypotheses *H1*, *H2* and *H3* were supported in this study.

Interpretation of Results

The results of the current study suggest that prosocial motivation accompanied with intrinsic motives did not influence creativity, which does not comply with previous findings of Grant and Berry (2011), who showed in their experiment that participants' creativity was rated higher by independent experts in an experimental condition with high levels of both intrinsic and prosocial motivation. However, the main difference of the current study's experimental design is that it allowed the direct comparison of creativity between the conditions of having a prosocial impact on others by performing an interesting framed idea generation task, or having no impact on beneficiaries with generated ideas. In contrast, in Grant and Berry's (2011) study design participants of all motivational conditions (see introduction) received the opportunity to prosocially impact beneficiaries who expressed either lower or higher needs.

Ideational fluency is often considered as a sub-aspect of creative thinking (Torrance & Ball, 1984; Kaufman et al., 2008). The current study revealed a moderately high positive correlation between ideational fluency and creativity. This suggests that creativity judgments of the raters were associated with the number of generated ideas, but both variables still measured to a certain extent different aspects in this study. Results suggest against initial expectation that more ideas were generated in this study when participants received no opportunity to prosocially impact others compared to having the opportunity for a prosocial impact. A previous laboratory study by Yuan and Zhou (2008) had shown that participants generated less ideas when expecting external evaluation compared to no expected evaluation. Perhaps, participants in the no impact condition of the present study may have had a higher process- and present focus that could have led to more written ideas as they expected no external use of those. Participants in the prosocial impact condition instead may have tended to focus more on a higher outcome (e.g. usage of ideas for blood center) or on deliberating usefulness of ideas (Grant, 2008b; Grant & Berry, 2011), which in turn could have resulted in less written ideas. Further research would be needed investigate this possibility. However, ideational fluency is just one of the conceptualized aspects of divergent thinking (Torrance &

Ball, 1984). Thus, measuring also the other aspects may bring broader insights into effects of prosocial motivation on processes in creative idea generation.

Whereas Grant and his colleagues found that prosocial motivation induced by different interventions increased persistence in different work-related tasks, especially when accompanied with intrinsic motives (Grant et al., 2007; Grant, 2008a, 2008b), the current study did not find that prosocial motivation relates to higher persistence in creative tasks. Importantly, the majority of previous studies from Grant and colleagues were conducted in the field at workplaces. In addition, those studied behaviors (e.g. time spent on the phone, raised money) “emphasize ‘working hard’ in completing the assigned tasks; creativity, however, is more concerned with ‘working smart’ in introducing novel, useful ideas” (Grant & Berry, 2011, p. 91). Thus, different cognitive processes underlying these task types may restrict the comparability of results from the present study to previous studies in terms of persistence. This makes it particularly difficult in the current study to infer in how far the participants’ motivation actually influenced their persistence measured by time duration. Future experimental studies using creative tasks may therefore operationalize persistence differently. Still, persistence may be a relevant aspect as previous research provided evidence for a tendency that generated ideas in divergent thinking tasks get more creative over time (e.g. Beaty & Silvia, 2012). In support, correlation analysis of the present study suggests approaching significant moderate positive correlations between the variables persistence and creativity within both conditions. As researchers often use the concept persistence to capture motivation maintenance (see Grant, 2008a), it may act as a mechanism through which prosocial motivation could affect creativity.

An alternative possible explanation for non-significant differences in creativity and persistence between the two conditions could be that the study design might have failed to make the conditions distinctive enough and to manipulate prosocial motivation effectively. As aforementioned, according to Grant (2007) the motivation to make a prosocial difference is fueled best when people perceive that their task provides the opportunity to significantly benefit others, and additionally feel affectively committed to the welfare of beneficiaries, which can be strengthened by some sort of contact to them. The current study connected participants in the prosocial impact condition to their impact on beneficiaries by describing that their ideas would be anonymously sent to the local blood centre in order to benefit people who may need blood donations in the future. As this description was written from the researcher’s perspective, the manipulation may have been not vivid enough or lacked some

form of a personal contact with beneficiaries. Thus, participants in both conditions might not have differed sufficiently in their experienced motivation and consequences to show the hypothesized effects. Indeed, the analysis of the manipulation check variables unexpectedly revealed that prosocial motivation ratings did not significantly differ between the two conditions, which may possibly indicate that the effectiveness of the manipulation was insufficient. A reason could be that the prosocial nature of the task about the blood center itself may have lead to similarly high ratings on prosocial motivation within both conditions. However, the appropriateness of using Grant's (2008b) scale of self-reported prosocial motivation as manipulation check for the current study may also be questionable. It remains unclear whether participants in the two conditions experienced similar levels of prosocial motivation independent of the experimental manipulation, or whether participants in both groups possibly have similarly felt compelled to overemphasize their prosocial motives due to social desirability. Perhaps, assessing how the participants perceived that their ideas could have a prosocial impact on beneficiaries may have been a more appropriate manipulation check.

Contributions, Limitations and Future Directions

Even though the current study did not reveal the hypothesized results, the attempt contributes to existing research on motivation in creativity by using a study design examining the particular effect of prosocial motivation on creativity, ideational fluency and persistence by comparing a prosocial impact and no impact condition. However, from the obtained results it cannot be fully inferred yet how prosocial motivation affects these aspects of creative idea generation, as the designed study has also several weaknesses and limitations. These limitations may in turn inspire and contribute to new research questions as well as future studies, which will be discussed in the following.

Considering the fact that the sample was composed of Swedish young adults of whom most were students, the generalizability of the results to the general population is very limited. Also, the sample size was quite small in order to detect smaller effects between both groups. Future studies should replicate a similar study with greater samples preferably from other populations.

Importantly, the study did not pretest whether the randomization of participants to the conditions resulted in even baseline levels of creativity in both groups, which weakens the validity of the results.

Further, the definition of ultimate “objective” criteria for creativity and its measurement is a difficult general issue in creativity research. The Consensual Assessment Technique overcomes this issue by relying on subjective assessment and operationalizes the creativity of an artifact to the “extent that expert raters independently agree on this judgment” (Amabile & Pillemer, 2012, p. 6). Thus, the levels of creativity measured in the present study refer to differences within the group of participants’ idea generation outputs judged by a particular panel of raters, not comparable to any external standard (Kaufman et al., 2008). In the present study two local students that had been regular blood donors were judges, but perhaps creativity ratings and thus final results could differ from judges with professional expertise e.g. experts in marketing or recruiting. Also, conventional guidelines on the Consensual Assessment Technique rather recommend that for most purposes five to ten expert judges represent a sufficient group number (Kaufman et al., 2008). The inter-rater reliability was however still sufficient with the small number of two recruited raters.

As this study used a divergent idea generation task addressing a specific domain about blood donor recruitment, the generalizability of the results to other kinds of creativity tasks and domains has yet to be examined. It is conceivable that prosocial motivation has different relevance and influences in creative artwork tasks (e.g. drawing, story writing) compared to creative tasks in domains of business or research and development (e.g. products, services). In addition, the chosen task of the study did thematically not only concern helping others with ideas, but also indirectly benefiting the self as participants could potentially be in need for receiving blood donations someday too. However, prosocial motivation can be based on multiple underlying goals such as altruism and self-interests (Batson et al., 2008). Future studies could however replicate the experiment with a task that concerns more particularly benefiting another person or group.

In terms of persistence measurement, it is conceivable that the information given prior to the experiment that the study procedure may take around 15 minutes could have influenced the participants to orient their actual time duration performing the task to it, compared to as if no rough time frame had been previously mentioned. Also, the time duration measurement can be quite sensitive to other confounds not related to the motivation manipulation (e.g. interruptions, individual writing styles or abilities on computers etc.).

Regarding intrinsic motivation, a further important limitation of the study design is the lack of a control condition testing whether framing the task as interesting actually facilitated intrinsic motivation and in how far it affected the dependent variables. The current

study design involved the same intrinsic motivation manipulation in both conditions, and added a prosocial motivation manipulation to one condition. But it could give valuable insights when future study designs compare differential effects of merely intrinsic vs. prosocial motivation manipulations. Furthermore, Deci et al. (1999) suggest that measuring individuals' self-reported interest and their perceived free choice about doing an activity better assesses intrinsic motivation. Thus, a task choice as used in Grant and Berry's (2011) experiment could be added to manipulate intrinsic motivation in future studies.

Moreover, it would be interesting to replicate the present study using different and more vivid interventions to induce prosocial motivation (e.g. personal contact, letter, photo etc.) or in field contexts over longer periods of time.

As further step, it is also worthwhile to gain deeper understanding about mechanisms through which prosocial motivation may impact creativity. Previous experimental research had identified psychological distance (Polman & Emich, 2011) and perspective taking (Grant & Berry, 2011) as possible mechanisms. As previously indicated, future studies could perhaps examine persistence or vigor as a mechanism through which prosocial motivation exerts an effect on creative thinking. Also, drawing on Grant and Berry's (2011) suggestions it would be interesting to examine whether intrinsic and prosocial motivation have differential effects on the creativity dimensions idea novelty and idea usefulness. This may be relevant, as intrinsic and prosocial motivation each might be beneficial in different parts of the creative idea production process and thus final creativity. For example, Yuan and Zhou (2008) showed in an experiment that expected external evaluation was detrimental in a creative idea generation phase, but beneficial in improving idea appropriateness during a selective retention phase compared to no expected evaluation. Individuals who only expected evaluation during selective retention produced the most creative ideas. Similar differential effects in distinct idea production processes may apply to expected prosocial impact, which has yet to be investigated. As the present research focused on intrinsic and prosocial motivators, future research could examine effects of prosocial motives compared to external motivators (e.g. rewards) or even anti-social motives in creativity.

Conclusion

Against the background that previous research on motivation and creativity has for several decades rather focused on the effects of intrinsic and extrinsic motivators in creativity, the present study contributes to existing creativity research by investigating the particular

effect of prosocial motivation on different aspects of creative idea generation. Results indicate that prosocial motivation did not have a positive effect on creativity and persistence, and negatively affected ideational fluency. However, due to several limitations of the current study more research is needed to infer how prosocial motivation affects creative idea generation. The present study may point at important considerations for future research studies and further development of conceptual frameworks of motivation and creativity. Understanding whether and under which conditions prosocial motivation impacts creativity can be relevant knowledge especially in organizational contexts for developing new policies and practices of connecting people with their impact on beneficiaries in order to promote their creativity.

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Appendix A

Background information

Kön: (man / kvinna / vill inte definiera)

Ålder: ____

Yrkestatus: (student / annat _____)

Studieämne /yrke: _____

Appendix B

Manipulation of prosocial impact condition (1) and no impact condition (2)

(1) Om projektet:

I denna studie har du möjligheten att hjälpa Blodcentralen i Region Skåne med ett aktuellt problem. Blodcentralen har svårt att rekrytera yngre blodgivare. I detta projekt samlar vi idéer och förslag från yngre människor kring hur problemet kan lösas. Förslagen vi samlar kommer att presenteras för Blodcentralens ledningsgrupp som har stor nytta av yngre människors förslag. Förslagen ska användas för att säkra sjukvårdens behov av blod i framtiden. Därmed kan du nu bidra att hjälpa svårt sjuka människor. Naturligtvis presenteras bidragen anonymt. Tidigare deltagare har bedömt den här uppgiften som särskilt intressant för att den utgår ifrån ett riktigt problem som Blodcentralen i Region Skåne brottas med.

(2) Om projektet:

I denna studie får du en problemlösningssuppgift. Tidigare deltagare har bedömt den här uppgiften som särskilt intressant för att den utgår ifrån ett riktigt problem som Blodcentralen i Region Skåne brottas med. Syftet med den här studien är att studera upplevelsen av att arbeta med ett spännande verkligt problem, därför kommer du efter uppgiften att få svara på ett frågeformulär kring detta. De deltar anonymt och dina svar kommer inte att användas utanför denna studie.

Appendix C

Task Instructions and Task

Problemet:

Region Skånes blodcentral har svårt att rekrytera yngre blodgivare. De befintliga blodgivarna blir allt äldre. Detta leder till problem då Region Skåne tvingas köpa in blod utifrån vilket innebär stora kostnader och risker. En god tillgång till blod är en förutsättning för att kunna ge svårt sjuka patienter den vård de behöver. Blodcentralen behöver både rekrytera nya och yngre blodgivare och se till att de ger blod regelbundet. Annonskampanjer och broschyrer riktade mot yngre människor har inte fungerat tillräckligt bra.

Din uppgift:

Din uppgift är att komma på idéer och förslag till hur blodcentralen kan rekrytera unga vuxna. Hur får man yngre människor att ge blod? Kom på så många idéer du kan.

Instruktioner:

- På nästa sida kommer du att skriva dina idéer och förslag i en stor tom ruta.
- Skriv ner så många och så olika idéer du kan komma på, det finns ingen tidsbegränsning
- Försök var kreativ! Censurera inte dina tankar, skriv ner allt du kommer på. Det finns inga rätt eller fel idéer!

När du har läst och förstått instruktionerna klicka på rutan nedan för att komma igång med uppgiften. Om du har några frågor, ställ dessa till försöksledaren nu innan du går vidare.

Jag har läst och förstått instruktionerna!

Läs innan du börjar:

- Skriv alla dina idéer i rutan. Rutans storlek är obegränsad.
- Använd ett nytt streck (-) för varje ny idé.
- När du inte kommer på flera idéer tryck på submit-knappen längst ner.

Kom på idéer och förslag till hur blodcentralen kan rekrytera unga vuxna. Hur får man yngre människor att ge blod?

Mina idéer och förslag:

-

Om du kan inte komma på flera idéer, klicka först i rutan och tryck sedan på “submit ideas”!

Jag är redo att skicka mina idéer och förslag!

Appendix D

Post-experimental Questionnaire

Innan ditt deltagande i denna studie, hur viktig var blodbankens problem för dig? Svara på en skala från "inte alls viktig" till "mycket viktig".

1	2	3	4	5	6	7
inte alls viktig						mycket viktig

Har du varit blodgivare?

- Nej, jag har aldrig gett blod.
- Nej, inte ännu men jag kan tänka mig att bli blodgivare.
- Ja, jag har gett blod 1 - 3 gånger.
- Ja, jag ger blod regelbundet.
- Ingen svar

Har du någon yrkesmässig erfarenhet av någon av följande områden?

- reklam och marknadsföring
- rekrytering
- hälso- och sjukvården
- arbeta på blodbanken
- jag studerar/studerade psykologi
- inget av dessa områden

Har du några ytterligare kommentarer?

Appendix E

Consensual Assessment Technique Instructions

Evaluation of Ideas

Current occupation/education: _____

Age: _____ [] male [] female

How often have you donated blood? _____

The idea collection concerned the problem that the blood centre in region Skåne has difficulties to recruit young people to give blood. But they need to recruit both, new and younger blood donators and to make sure they give blood regularly in order to secure the needs of blood in the future. Therefore, a group of 42 students were asked to come up with ideas and suggestions about how the blood centre in region Skåne can recruit younger people. The question was how to get young adults to give blood?

Your task is now to rate the students' ideas and suggestions to that problem. In order to do this, it is very important that you follow all instructions below!

Instructions:

Please read through all students' ideas **two times**:

- 1) **The first time**, you should only read through the ideas of all 42 persons!
- 2) **The second time**, rate all 42 persons' total idea generation output on a Creativity [kreativitet] scale with 1 being least creative and 6 being most creative. Use the whole 1-6 scale and avoid to assign almost all total idea generations the same rating. There should be a roughly even number of total idea generations at each of the six levels, but the numbers needn't be exactly the same. There is no need to explain or defend your ratings in any way. It's your sense of which idea generations are more and less creative that you should apply.

Use the form for your ratings during the **second time**, draw circles around each rating you assign. It's okay to change, just cross out the incorrect answer.

But before that, start now with the **first time** and read through all students' ideas without using any form. Feel free to ask questions if there are any problems!