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The effects of task instructions in crowdsourcing innovative ideas

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ABSTRACT

The existing literature offers conflicting advice regarding the types of task instructions that increase the quality of ideas during idea generation. Our research examines three types of task instructions: unbounded (participants are asked to generate any ideas they want), suggestive (participants are asked to propose ideas that improve current product benefits), and prohibitive (participants are asked to propose ideas that do not involve current product benefits). We explore the effectiveness of these three types of task instructions in a field study involving 6406 ideas from eYeka, a global crowdsourcing platform. As compared to unbounded task instructions, we find that suggestive task instructions are significantly related to lower idea originality, feasibility, and value. In addition, we find that idea originality and value are statistically equivalent for unbounded and prohibitive task instructions. Together, our results suggest that either unbounded or prohibitive task instructions should be used when crowdsourcing innovative ideas.

1. Introduction

To generate ideas for successful new products, a growing number of firms are using contests through web-based online platforms (Afuah and Tucci, 2012; Bayus, 2013; Boudreau et al., 2011; Jeppesen and Lakhani, 2010; Mačiulienė and Skaržauskienė, 2016; Palacios et al., 2016; Piezunka and Dahlander, 2014). This creative technique, also called crowdsourcing, enables firms to access ideas that might not reside within their organizational boundaries (Howe, 2006).

Our study explores the formulation of task instructions in crowdsourcing. Our purpose is to explore what are the best task instructions to increase the quality of crowdsourced ideas. Formulating the problem to positively influence solution quality is the subject of intense debate within the management community (for instance, see the debate between Von Hippel and Von Krogh, 2015 and Felin and Zenger, 2015; Baer et al., 2013; Natalicchio et al., 2017; Newell and Simon, 1972; Simon, 1973). This topic is exacerbated due to the large number of online idea generation platforms. Participants in such platforms are increasingly exposed to a multitude of different task instructions. Furthermore, the task instructions often represent the only interaction that the organizers have with the participants. Broadcasting a meaningful task instruction is thus crucial to attract the best ideas from external contributors.

Prior research on task formulation has flourished in the tournament-based crowdsourcing literature (Afuah and Tucci, 2012; Coco and

Comacchio, 2016; Jeppesen and Lakhani, 2010; Lüttgens et al., 2014; Piller and West, 2014; Wang et al., 2018). While researchers have considered how to cope with the organizational issues of problem formulation (Lyles and Mitroff, 1980; Sieg et al., 2010; Spradlin, 2012; Von Krogh et al., 2012; Zheng et al., 2011), however, much uncertainty still exists about how to formulate task instructions to increase the quality of submitted ideas. In particular, our research addresses three main limitations of prior literature.

First, one frequent recommendation is to include the objective evaluation criteria of the expected solution into the task instructions (Ghezzi et al., 2017; Sieg et al., 2010). Unfortunately, because many ideation tasks are open-ended and ill-structured (Rittel and Webber, 1973; Terwiesch and Xu, 2008), such criteria do not exist and cannot be indicated into the task instructions (Jeppesen and Lakhani, 2010).

Second, there is still limited agreement if information should be included in task instructions to support the participants' creativity. One research stream supports the view that task instructions should be unbounded in order to let participants free to generate all ideas they have in mind (Harrington, 1975; Katz and Poag, 1979; Paulus et al., 2011; Runco and Okuda, 1991; Shalley, 1995). Other research suggests the opposite, i.e., the boundaries of the task instructions should be specified with some information to better channel participants' creativity. The inclusion of some constraint is assumed to help participants move beyond the common ideas that readily come to mind. In particular, there are frequently two types of such bounded task instructions in online

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Table 1
Overview of task instructions studied in the creativity literature.

Bounded or unbounded	Nature of the task	References	Method	Main findings
Unbounded	Creative task	Harrington, 1975 Katz and Pong, 1979 Runco and Okuda, 1991 Shalley, 1995 Runco et al., 2005 Chen et al., 2005	Experiment (students) Experiment (students) Experiment (students) Experiment (students) Experiment (students) Experiment (students)	<ul style="list-style-type: none"> • Creative tasks increase the originality of ideas. • Creative tasks increase ideational fluency of males (i.e., quantity of ideas). • Creative tasks increase novelty and worthwhileness for both male and female subjects. • Creative tasks increase the originality of ideas. • Creative tasks increase the creativity score. • Creative tasks decrease productivity. • Explaining how to find original ideas increases the originality scores of ideas. • Creative tasks increase the creativity score. • This positive effect is uniform across cultural and ethnic groups. • Having a general goal to be innovative is positively related to idea quantity, idea novelty, idea implementation, and innovation performance on the team level. • A quantity task leads to more ideas and more good ideas than no specific focus, a creative task or a joint quantity and creative task.
Unbounded	Quantity task	Stetler and Magnusson, 2015 Paulius et al., 2011	Field-based (R&D) Experiment (students)	<ul style="list-style-type: none"> • Brainstorming rules improve idea quantity only when combined with a specific, difficult quantity goal. • Exposure of ideas prior to idea generation induces a fixation effect that inhibits creativity. • Exposure of ideas prior to idea generation induces a fixation effect that inhibits creativity. • Explicit instructions to create similar ideas to the examples increases fixation. • Exposure to examples of original ideas increase the number of new concepts • Exposure to non-original ideas increases originality • Exposure to non-original ideas increases originality • Exposure to original ideas decreases fluency (i.e., number of ideas) and increases originality • Exposure to common ideas had no effect on idea originality and fluency.
Bounded	Suggestive task instruction	Litchfield, 2009 Jansson and Smith, 1991 Smith et al., 1993 Perttula and Sipilä, 2007 Agogue et al., 2014 Wang et al., 2018	Experiment (students) Experiment (students) Experiment (students) Experiment (students) Experiment (students) Experiment (crowd)	<ul style="list-style-type: none"> • Prohibitive Task Instructions did not decrease fixation. • Prohibitive Task Instructions decreases fixation. • Prohibitive Task Instructions did not decrease fixation. • Suggestive Task Instructions decreased the number of ideas. • No differences between Unbounded and Prohibitive Task instructions on the number of ideas.
Bounded	Prohibitive task instruction	Smith et al., 1993 Chrysikou and Weisberg, 2005 Viswanathan and Linsey, 2013	Experiment (students) Experiment (students) Experiment (students)	<ul style="list-style-type: none"> • Prohibitive Task Instructions did not decrease fixation. • Prohibitive Task Instructions decreases fixation. • Prohibitive Task Instructions did not decrease fixation. • Suggestive Task Instructions decreased the number of ideas. • No differences between Unbounded and Prohibitive Task instructions on the number of ideas.
Bounded	Decomposed task	Vasconcelos et al., 2017 Dennis et al., 1996 Coskun et al., 2000 Luo and Toubia, 2015	Experiment (students) Experiment (executives) Experiment (students) Experiment (crowd)	<ul style="list-style-type: none"> • Prohibitive Task Instructions did not decrease fixation. • Decomposed task increases the quantity and quality of ideas generated. • Decomposed task increases the quantity of ideas generated. • Decomposed task increases the performance of both low and high-knowledge consumers • Problem decomposition is significantly more beneficial for high-knowledge consumers.
Bounded	Abstract task	Altshuller et al., 1999 Ward et al., 2004 Ejdelind and Karlsson, 2014	Qualitative study Experiment (students) Experiment (crowd)	<ul style="list-style-type: none"> • Turning specific into generic and abstract problems enhances creative thinking. • Abstract task instructions increases novelty compared to specific task instructions. • Tasks formulated in a deep-structure manner enhance creativity (feasibility, customer benefit and novelty) much more than domain-specific tasks.
Bounded	Clarity of the task	Amabile, 1998 Stetler and Magnusson, 2015	Conceptual article Field-based (R&D)	<ul style="list-style-type: none"> • Clear tasks increase creativity because they direct attention and increase motivation. • Clear project goals are positively related to idea implementation. • Most novel ideas are produced under circumstances of either high or low levels of goal clarity.
Bounded	Resources-constrained task	Moreau and Dahl, 2005 Sellier and Dahl, 2011 Mumford, 2002; Weisberg, 2011 Scopelliti et al., 2014	Experiment (students) Experiment (students) Historical case-study Historical case-study Experiment (students)	<ul style="list-style-type: none"> • Requirement and material constraints increase creativity. • Restricting the choice of creative inputs actually enhances creativity for experienced consumers. • Environment/social constraints enable creativity. • Environment/social constraints enable creativity. • Financial constraints increase creativity.

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