

Synergistic Ideation Through Pairing Participants in Facilitated Group Support Systems Sessions

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Abstract

Group Support Systems (GSS) have been used and studied in the support of facilitated ideation sessions for years. The norm for these sessions has been for participants to work individually at GSS workstations. A review of applicable literature suggests that pairing participants at GSS workstations could result in higher quality ideas and participant satisfaction. This paper reports the results of a lab experiment that tested for differences between paired and unpaired facilitated GSS sessions. These results suggest that pairing participants can yield higher quality ideas from facilitated ideation without negative consequences.

Keywords: Group Support Systems, ideation, session quality, satisfaction

Introduction

One of the most common reasons for bringing a group of people together in a business setting is to generate ideas. Osborn described a process to “use the brain to storm a creative problem” and dubbed the practice “brainstorming” (Osborn 1957). Osborn’s approach to ideation has been used many times since with a variety of different techniques. In more recent times this practice has been re-examined in light of emerging information technologies (IT). Specifically, practitioners have used IT in different ways to improve the effectiveness of brainstorming sessions. In fact, an entire segment of computer applications called Group Support Systems (GSS) was developed to help groups in a wide range of tasks, including brainstorming. The emergence of GSS in turn led to a number of studies of how these systems helped the brainstorming process. For example, previous studies have examined the effects of anonymous- versus

attributed-inputs (Connolly, Jessup, and Valacich 1990), how different group sizes affect brainstorming results (Gallupe et al. 1992), and how evaluation of ideas impacts results (Valacich and Schwenk 1995).

The norm for conducting technology-based electronic brainstorming sessions has been to have each participant in a session operate at their own workstation (Dennis and Reinicke 2004; Gallupe et al. 1992; Briggs, Nunamaker, and Sprague 1998). This single-operator configuration is intended to eliminate the potential effects of production blocking and evaluation apprehension. However, occasionally circumstances might dictate pairing participants at workstations, though this paired configuration has not been closely examined within the collaboration context. One area where the performance of pairs has been examined is the use of “pair programming” in software projects. Researchers have found that pair-

ing produces mixed results in terms of productivity and satisfaction (Cao and Xu 2005; Vanhanen and Lassensius 2005), but improvements in team communications and knowledge sharing within some programming teams have been noted (Williams, Shukla, and Anton 2004).

In view of the above, this research proposes to explore the effects of pairing participants at group support system (GSS) workstations for facilitated ideation sessions. Specifically, the study seeks to determine if there is a change in either the quality of the ideas generated or participants’ satisfaction as a result of being paired at GSS workstations. Knowing the answer to this question is important for several reasons. On a practical level, if this study shows that facilitators can pair participants at workstations without impacting session quality or participant satisfaction, they could get more people through facilitated sessions with less equipment

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and time. A review of current literature suggests that pairing may produce both higher quality ideas and higher levels of satisfaction of session participants. This potential outcome is supported by anecdotal evidence from GSS practitioners that indicates that when paired-participant configuration is used to address system availability shortfalls, they serendipitously seem to get higher quality inputs from the ideation session. Yet, this paired-participant configuration has not been empirically studied.

The rest of the paper is organized as follows. The next section will review relevant research on ideation, with special emphasis on how different aspects of IT research and practice may impact the results of paired-participant ideation. Following this review and analysis of extant literature, the over-arching research question and related propositions are presented, and a lab experiment designed to empirically examine them is described. This is followed by a discussion of the results of that experiment and implications for future research and practice.

Background

Several streams of research have examined ideation in its traditional settings and within GSS environments. We focus our review on research that relates to the notions of ideation, the design and use of GSS, and the studies on the effects of pairing work partners for doing tasks. These areas are then drawn together to assess how we expect these topics to impact our research.

Ideation

Osborn's (1957) conception of creative group collaboration has been the foundation of countless ideation sessions. His notion was that when a group worked together to generate ideas, each person's contributions would trigger another idea within his/her own mind and could also spark ideas in the minds of others participating in the ideation session. Osborn called this synergistic effect the "two-way current" of group collaboration and described a signifi-

cant boost in both the number and quality of ideas a group could generate (Osborn 1957). Practitioners conducted brainstorming sessions in a wide variety of ways with what they perceived as acceptable results, but academic study revealed problems with the practice (Taylor, Berry, and Block 1958; Gallupe et al. 1992).

"[If] facilitators can pair participants at workstations without impacting session quality or participant satisfaction, they could get more people through facilitated sessions with less equipment and time."

Taylor et al. (1958) conducted one of the earliest formal studies of Osborn's ideas and showed that group participation actually inhibited creative thinking in their study. Two problems that drew particular attention in other studies were production blocking and evaluation apprehension (Diehl and Stroebe 1987). Production blocking occurs when participants must wait until another participant is done sharing her idea with the group; people forget ideas or miss intermediate discussion while waiting their turn (Diehl and Stroebe 1987). Evaluation apprehension occurs when a participant elects not to share an idea with the group out of "fear of negative evaluations" (Diehl and Stroebe 1991). Examination of these drawbacks showed that both could be overcome with the use of computer-assisted ideation techniques through the power of parallel entry of ideas and anonymity, both of which will be described more fully later (Gallupe et al. 1992).

Another effect that has been identified as a limiting factor in ideation came to be called social loafing (Latané, Williams, and Harkins 1979). This effect was initially identified in experiments by industrial psychologist Walter Moede when one of his students described a reduction in effort that occurred when individuals working in a group were not directly accountable for their performance (Ingham et al. 1974). Despite the fact that those initial stud-

ies involved physical exertion tasks, other studies examined that effect in cognitive tasks and found similar results (Brickner, Harkins, and Ostrom 1986). As such, electronic brainstorming systems (EBS) could be expected to evoke loafing behaviors since anonymity is commonly used for ideation sessions (Dennis and Reinicke 2004). However,

Harkins (1987) found that when participants work together on a task, "their outputs can be compared and they work harder than participants working alone" (p 15). He called this a social comparison effect and concluded that this effect was a form of evaluation that would overcome social loafing (Harkins 1987). The paired-participant approach being investigated for our study may help overcome the effect of social loafing since each participant's contributions will be immediately visible to another participant.

Ideation in Group Support Systems (GSS)

GSS have come to encompass a number of functionalities and technologies related to improving the performance of groups in a variety of roles. This paper focuses solely on the ideation aspect of GSS, which is generally referred to as an electronic brainstorming system (EBS). EBSs resemble traditional brainstorming in that individual members contribute ideas related to a specific topic and other participants can see those contributions to combine and elaborate on those ideas to improve overall results. EBSs differ from traditional brainstorming sessions in that they have specific features that ameliorate the negative effects of production blocking and evaluation apprehension (Briggs, Nunamaker, and Sprague 1998). These systems overcome the

production blocking problem by allowing parallel entry of ideas where each participant has access to a workstation, eliminating the need to wait for others to finish articulating their idea before being recognized for your turn (Gallupe et al. 1992). Many of these systems also have an anonymity feature that allows participants to enter ideas without having those ideas attributed to the specific contributor. This anonymity feature helps alleviate participant concerns about being linked to an idea deemed “bad” by the group, thereby reducing potential negative effects of evaluation apprehension (Gallupe et al. 1992; Dennis and Reinicke 2004).

The effects of production blocking and evaluation apprehension have been examined in several studies, and the magnitude of those effects has been linked to the size of the ideation group (Valacich and Schwenk 1995; Gallupe et al. 1992). In this vein, another stream of research has focused on identifying the right number of participants for EBS ideation sessions. Osborn (1957) originally set the “right” number for brainstorming participants at between five and ten, but numerous studies using EBS have found positive effects for group sizes of four and more (Dennis et al. 1999; Pinsonneault et al. 1999; Gallupe et al. 1992). While these studies have confirmed the general trend that groups using EBS tend to outperform non-EBS groups, and in general larger groups tend to outperform smaller groups, there doesn’t appear to be consensus on what exact number triggers this shift. At the same time, some researchers (Pinsonneault et al. 1999) found that while increasing group size did have a positive effect on ideation, larger groups also introduced the possibility of additional process losses that could reduce positive effects. One of these effects included cognitive overload – becoming inundated with too many ideas being generated by others. The use of paired brainstorming, with fewer active workstations, could alleviate the cognitive load effects found in earlier research.

Effect of Evaluative Tone in Ideation

One effect of the change in the configuration of the GSS session to pairing participants rather than allowing them to perform independently is to expose participants to direct evaluation by their partner. Osborn (1957) recognized the potentially deleterious effects of negative evaluation in a brainstorming session and strongly counseled enforcing a “no judging” rule for brainstorming sessions. But the fact is that participants do occasionally deliver evaluative comments during ideation sessions. Despite Osborn’s concerns, there is evidence to indicate that groups with critical comments injected into the ideation session outperform groups with fewer critical comments (Connolly, Jessup, and Valacich 1990). This increase in group performance occurs because critical comments cue people to further examine the original idea and offer more follow-up comments to elaborate and improve on the original submission (ibid). Interestingly, while groups with more critical comments scored higher in objective measures of their performance, they also reported that they felt lower levels of satisfaction with those sessions. This reduced satisfaction effect is of interest in our study since it is possible that pairing participants may expose them to critical comments from their partner, thereby lowering their perceived satisfaction.

Previous Studies of Paired Phenomena

One area where the performance of paired partners has been examined is the use of “pair programming” in software projects. Pair programming is a software-development technique where “two programmers work together at one computer, collaborating on the same design, algorithm, code or test” (Stotts et al. 2003). Studies of pair programming have yielded mixed results, with some researchers reporting higher levels of productivity and quality (Cao and Xu 2005) and others finding decreases in productiv-

ity and quality (Vanhanen and Lassensius 2005). These variances make it hard to forecast any specific effects of session results in our study, especially when one considers that researchers frequently explain differences in paired programming experiments in terms of differences in the task characteristics. For example, developing a web page is different than coding a mission-critical machine control module, which is in turn different from designing a Business-to-Business database interface system. Similarly, studies allude to potential increases in participant satisfaction yet find no statistically significant data to support solid findings (Williams, Shukla, and Anton 2004; Cao and Xu 2005).

Nevertheless, paired programming studies have found improved team communications and knowledge sharing within programming teams to develop deeper-level thinking (Williams, Shukla, and Anton 2004; Cao and Xu 2005). Paulus and Dzindolet (1993) also examined the effects of multiple participants in brainstorming, though each participant operated independently. They found that members of interactive groups are influenced by the performance of other group members; specifically, they identified competitive aspects of partnered brainstorming which caused performance increases of such magnitude that the increased productivity compensated for procedural blocking effects (Paulus and Dzindolet 1993). These observations lead to an expectation of increased dialogue in the paired ideation sessions and also hint that there could be a higher quality of ideation from the paired participants.

Analysis of Literature

Despite the apparent benefits of expecting positive results from pairing participants in ideation sessions, forecasting specific effects is challenging because the relationships between applicable theories are unclear in the scenario of pairing participants in GSS sessions. As discussed in the literature review, previous studies have shown

that EBSs improve ideation through the incorporation of parallel entry of ideas to alleviate production blocking and the use of anonymity to avoid evaluation apprehension. However, many of these earlier studies compared verbal ideation as envisioned by Osborn and nominal group ideation against GSS ideation with the participants operating in a traditional unpaired-participant configuration. In those traditional GSS sessions, the degree of impact of evaluative tone is determined by the extent to which the participants read the comments of other participants. In this study using a paired configuration, participants will receive that same degree of impact plus a potentially stronger effect due to operating in pairs;

“It will be harder for participants to ‘loaf’ when they have to perform their task in direct interaction with a partner who will be instantly aware of lower levels of effort.”

pairing will allow each person’s ideas to be seen by at least a partner as the ideas are entered. As such, this configuration may reintroduce some degree of evaluation apprehension. However, as noted in other studies, this paired-participant configuration may at the same time help alleviate potential social loafing through a stronger sense of peer evaluation. Thus, pairing participants in the manner prescribed by this study may elicit enough of an evaluative tone to compensate for any losses pairing may cause. Essentially, what is proposed here is that it will be harder for participants to “loaf” when they have to perform their task in direct interaction with a partner who will be instantly aware of lower levels of effort.

Another ideation study has suggested that groups should alternate between group and individual ideation (Brown and Paulus 2002). The idea behind this study was that participants could contribute individually for some period of time, taking advantage of EBS’ features to dampen any potential negative effects of production blocking

and evaluation apprehension, but then could participate in an open group discussion where they could be exposed to more ideas. In that way the individuals may be further stimulated, increasing the overall quality of the ideation session. While our study is not structured in the exact fashion advocated by Brown and Paulus (2002), with distinctly separated phases of individual and group ideation, the expectation is that participants will naturally cycle through phases of quiet individual reflection and interaction with their partner. Thus, it is possible for our paired-participant configuration to achieve the same effect advocated by Brown and Paulus to improve the quality of session ideation.

Dennis and Reinicke (2004) introduced yet another aspect of ideation in their study of EBS that may apply to our study. They recognized that the traditional individual-participant configuration led to a lack of verbal interaction. They proposed that this limited interaction may lower participant satisfaction since the ensuing silence neglected social needs of groups. An example of the positive verbal interaction they were describing would be a comment recognizing a valuable contribution. If their prognostication holds, our study’s paired-participant configuration may result in higher satisfaction ratings for the paired-participant sessions as we anticipate more dialogue between paired ideation partners than is noted in traditional GSS ideation sessions. The significance of this increased satisfaction becomes apparent with the recognition that participants will only continue to use a GSS tool if they are satisfied with the experience. As such, increasing satisfaction is an important driver for our study’s research question and propositions.

Research Question and Propositions

The overall research question for this study is *does pairing participants affect the results of ideation in a facilitated GSS session?* Building from this basic question, the specific propositions are as follows:

- **Proposition 1:** Given an equal number of participants, participants in paired-participant sessions will contribute higher quality ideas than those in traditional GSS sessions.
- **Proposition 2:** Participants in paired-participant sessions will express higher levels of perceived satisfaction as those in traditional GSS sessions.
- **Proposition 3:** Participants in paired-participant sessions will perceive a stronger effect of production blocking than those in unpaired sessions.
- **Proposition 4:** Participants in paired-participant sessions will perceive a stronger effect of evaluation apprehension than those in unpaired sessions.

Research Design

To study the research question and our propositions, we conducted a lab experiment. The treatment was to pair participants in GSS ideation sessions as contrasted with the individual participant configuration found in most GSS ideation sessions. Each GSS session had 12 participants; the traditional unpaired sessions had 12 people at 12 GSS workstations, and the paired sessions had 12 people at 6 workstations. To generate adequate sample size to analyze our propositions, the study required multiple sessions; four sessions were conducted in each of the paired and unpaired configurations.

Session Design and Execution

A key consideration for the design of this study was the fact that the sessions were facilitated. A GSS facilitator is someone who uses technology and carefully-defined techniques to move a

Table 1
Instrumentation

Construct	Measurement
Session Quality	Independent judge rated the feasibility and originality of each non-redundant idea on a five-point Likert scale. Those scores are added to establish a quality score for the idea, and the individual idea scores are summed to generate an overall quality score for the session. (Gallupe et al. 1992)
Quality of Ideas	An idea with a quality score of 7 or higher. (Gallupe et al. 1992)
Elaboration	Calculate an elaboration coefficient by dividing the number of elaborations by the total number of non-redundant, task-oriented ideas in the session. Yields a number in the range of 0.0 and 1.0, with a higher number indicating a higher degree of elaboration in that session. (de Vreede et al. 2000)
Satisfaction	Measured via survey administered at the end of each session. Specific questions for this phenomenon of interest listed in Table 3. (Gallupe et al. 1992)
Production Blocking	Measured via survey administered at the end of each session. Specific questions for this phenomenon of interest listed in Table 3. (Gallupe et al. 1992)
Evaluation Apprehension	Measured via survey administered at the end of each session. Specific questions for this phenomenon of interest listed in Table 3. (Gallupe et al. 1992)

group through a collaboration process (de Vreede and Briggs 2005). Consequently, there is by definition interaction between the facilitator and the group. To minimize differences between sessions, the sessions were scripted so that the facilitator presented information and instructions in the same way at each session. Each session also used an extra researcher, sometimes referred to as the session technographer, to operate the GSS for the session. This measure allowed the facilitator to more precisely focus on executing the session script the same way for all sessions. Additionally, the sessions were conducted in the same room, and the timing was managed such that two groups of participants were facilitated at the same time in the same setting. Additionally, the same GSS tool and facilitator was used for all sessions.

The experimental task involved brainstorming on the following questions: 1) What are good ways to introduce new students to social activities? 2) What are ways to improve the parking situation on campus? and 3) What

are ways to improve campus security? These tasks required no specific task knowledge and because they are perceived as “common interest,” everyone had a stake in the outcome. The subjects in this experiment were all students at a Midwestern metropolitan university and represented a mix of grade-levels and academic disciplines.

Measurement

The ideation sessions were scored from two perspectives: the quality of the participants’ ideas generated during the ideation sessions, and the participants’ perceptions of three constructs relevant to this study – satisfaction, production blocking, and evaluation apprehension.

The unit of analysis for Proposition 1, “Given an equal number of participants, participants in paired-participant sessions will contribute higher quality ideas than those in traditional GSS sessions,” is each session’s results. Previous studies have chosen different methods of measuring the quality of session ideation. Gallupe et al. (1992) measured the origi-

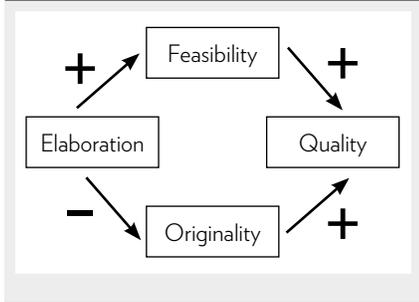
nality and feasibility of each input under the theory that as the originality and feasibility of ideas increased, the quality of the session was higher. Gallupe et al. also counted the number of “high quality” ideas for each session to account for the scenario where the group is looking for just those few “home run” ideas that win the game for them. Vreede, Briggs, Duin, and Enserink (2000) were also interested in session quality, but measured the degree to which inputs built upon previous ideas. Their theory was that as ideas built upon earlier inputs – identifying potential consequences, implications, and benefits – these elaborations increased an idea’s usefulness and thus contributed to overall session quality.

Gallupe et al.’s (1992) measurement system had no explicit capacity to consider elaboration. In fact, their system was designed to eliminate redundant ideas, which might screen out some elaborations. In effect, if the additional thought changed the core idea so little that the scorers considered it effectively the same idea, it would be eliminated. But if an elaboration was judged different enough that it passed the initial rater screening, the elaboration facet would affect the quality measures in two distinctly different ways. First, as an elaboration, the idea is at least somewhat related to a previous idea and so would at least not be rated as highly in terms of originality. Yet at the same time, these elaborations could be expected to increase the feasibility of the original idea as they add substance to it. These expected effects could be represented as shown in Figure 1.

Propositions 2, 3 and 4 dealt with each participant’s perceptions of satisfaction, production blocking, and evaluation apprehension. Therefore, the unit of analysis for these questions was the individual participant. A questionnaire was administered to participants at the end of their respective sessions to provide data on each of these research questions, and the specific questions were drawn from Gallupe et al. (1992).

Table 1 provides the details for all of the measurements in this study.

Figure 1
Relationship Between
Session Quality Measures



Analysis of Results

Table 2 summarizes the overall quality assessment for the sessions to determine if Proposition 1 was supported by the session results.

These descriptive statistics show that paired participants outperformed (in magnitude) unpaired participants in every measure of session quality for the sessions conducted, and the independent samples t-tests show that the difference was statistically significant in terms of the overall session quality (refer Figure 2).

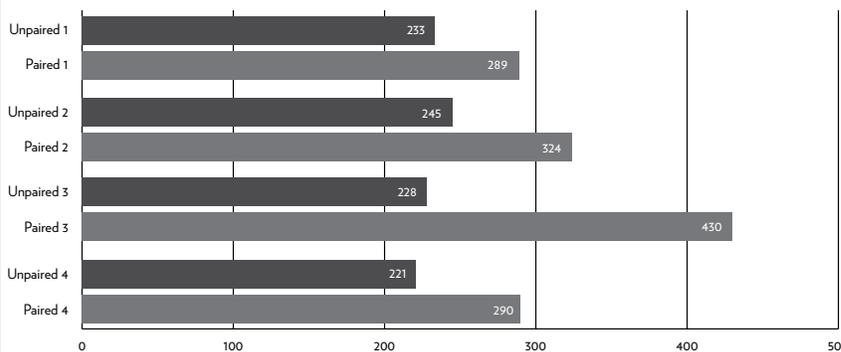
In addition to this striking difference between the two groups, in all but one case the paired groups also had lower elaboration coefficients. As pointed out earlier, the elaboration coefficient is an important indicator of session quality because it reflects the degree to which participants continued to refine a single core idea. For example, when brainstorming on the question “how could we improve the parking situation on campus,” suppose one participant contributed the idea “expand the parking garage.” When another participant contributes “Yes, the city code allows up to seven floors and we only have three, so we can add four more levels,” that would be an example of an elaboration. As such, elaboration is the act of improving an existing idea. Refinements like this can boost the quality of an idea, as indicated in Figure 1 earlier. At the same time, elaboration measurement also helps gauge the “newness” of subsequent contributions, which is important because oftentimes overall

Table 2
Session Quality Results

Group	Session Quality*	Elaboration Index	High-Quality Ideas
Unpaired 1	233	0.33	10
Unpaired 2	245	0.39	10
Unpaired 3	228	0.28	13
Unpaired 4	221	0.26	14
Paired 1	289	0.09	13
Paired 2	324	0.30	23
Paired 3	430	0.24	10
Paired 4	290	0.22	13

* Session quality statistically significant with $p = .029$
 Elaboration index not statistically significant with $p = .343$
 High-Quality Ideas not statistically significant with $p = .686$
 * Significance = $p < 0.05$

Figure 2
Plotting Overall Session Quality



session quality depends on gathering multiple good ideas. In this vein, the higher elaboration coefficients from the unpaired sessions indicate an overall lower percentage of new ideas from those sessions.

The counts of “high-quality” ideas proved to be a less telling measure than expected. The literature from paired programming studies had reported higher degrees of dialogue between paired partners than amongst a group of unpaired participants. This observation led to an expectation that the dialogue could result in more “polished” ideas on the initial input. Our study results did

not bear out that expectation.

Nevertheless, from a descriptive statistics standpoint, the paired groups clearly outperformed the unpaired groups. Turning to an inferential analysis of the session quality data, the unit of analysis for Proposition 1 was session results. With only eight total sessions, four in each treatment, nonparametric analysis was the only alternative. Using the Mann-Whitney test, the difference between overall session quality results for the two treatments was statistically significant, with p of .029. Neither the elaboration index nor the count of high-quality ideas proved to be statistically

Table 3
Survey Questions and Results

	Unpaired Groups	Paired Groups
Research Question 2: Satisfaction		
Were you satisfied with the process used today? Would you advocate this process for others to use to generate ideas?	4.02	4.07
Research Question 3: Production Blocking		
Could you express your ideas immediately as you thought of them? Were you able to express all of the ideas that occurred to you? Did you have to wait to express ideas?	1.95	1.66
Research Question 4: Evaluation Apprehension		
Did you feel at ease entering your ideas into the computer system? Did you feel apprehension about entering your ideas into the system? Did you feel comfortable entering ideas into the system?	1.75	1.83
Scoring: 5-point Likert scale; "1" indicates "strongly disagree" and "5" indicates "strongly agree."		
Bold = higher magnitude		

significant. However, based on both the descriptive statistics and inferential analysis, the paired treatment produced higher session quality results than the traditional unpaired treatment.

Propositions 2 - 4 dealt with participant perceptions of the process and were measured via a paper survey administered at the end of each session. Table 3 shows each question within each measured construct along with the overall measurement results.

As Dennis and Reinicke (2004) anticipated, the paired groups scored slightly higher on their satisfaction with the session, though this difference was not statistically significant with a p -value = .783 for an independent samples t -test with 72 subjects. As mentioned earlier, past experience has shown that groups only continue to use GSS when they are satisfied with the process and results. These results suggest that the change in configuration will not detract from group satisfaction. The evalua-

tion apprehension ratings were slightly higher for the paired configuration, though again this difference was not statistically significant with a p -value of .588. This change is not unexpected, since the configuration directly exposed the ideas of the participants to their session partner. Interestingly, the paired group scored more favorably on the production-blocking construct, indicating that they felt less impact in this area than unpaired participants. The difference was statistically significant ($p = 0.041$). This was an unexpected result as the literature and intuition suggests that participants would feel blocked to some degree by sharing a single input system with their partner.

Conclusions

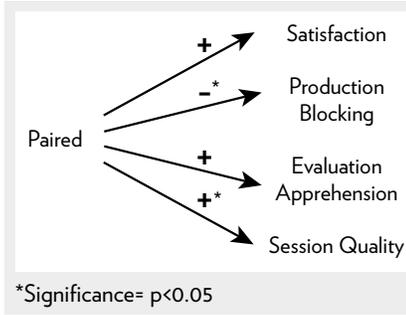
The study results support the proposition that the quality of inputs in paired-participant sessions is higher than the quality of traditional facilitated sessions at a statistically significant level. The

social comparison effect noted by Harkins et al. (1987) could explain some of this increase, though the magnitude of the increase leads us to suspect other factors may also be contributing. This conclusion will require further study. Our second proposition anticipated an increase in participant satisfaction but was not supported at a statistically significant level. However, post-intervention survey results did indicate a slight increase in participants' overall satisfaction. At this point, the results are reassuring that the pairing technique can be used without negative consequences, and further study may both solidify the finding of an increase and lead to better understanding of the underlying factors which contributed to that increase.

Surprisingly, the proposition that participants would report stronger effects of production blocking was not supported. In fact, participants in the paired session reported a statistically significant lower production blocking effect. This result was completely counter-intuitive, since two participants were sharing a single keyboard for idea entry versus the individual-participant configuration where every participant has a dedicated keyboard. Possible explanations for this result could be that participants felt that they were getting access to more ideas through the combined interaction with their partner and the GSS, that participants were simply more satisfied and reported favorably on this construct as a result of that overall satisfaction, or perhaps participants were reflecting the fact that this paired configuration gave them less of a chance to "social loaf" and so put forth their "best effort" in generating ideas jointly. And finally, participants did report slightly higher levels of evaluation apprehension as anticipated in Proposition 4, though these results were not statistically significant. Figure 3 summarizes the assessment of the propositions attendant to this research question.

Taken together the outcomes of the study suggest that pairing participants can potentially improve the quality of the ideation session results without serious negative consequences.

Figure 3
Model Summary



Limitations

This study suffers from a weakness common to many studies conducted in university environments; the groups were formed from a convenient student population. This leaves unanswered the question of whether the study results would hold for professional business settings. However, many researchers have argued that student subjects are a good reflection of professionals and should not be by itself considered a major threat to external validity (Liyanarachchi and Milne 2005; Sitkin et al. 1995). Furthermore, while the number of samples of the individual perceptions used to assess Propositions 2 through 4 is reasonable for an exploratory study, the number of groups available for assessing Proposition 1 is quite small. As such, the results of this study would have to be considered preliminary and more samples are needed to substantiate these findings.

Research Implications

An obvious next step in building scientific knowledge relating to the paired-ideation phenomenon would be to conduct more extensive tests to solidify the initial results indicated by our research. If the paired-ideation phenomenon holds up under more rigorous testing, another step would be to begin to solidify the theoretical basis for why pairing affects session quality. This step is particularly relevant in terms of identifying why paired participants felt less of a production blocking effect, which seems to be completely counter-

intuitive. Extending this idea of applying paired participants to group problems, another area to explore would be to examine if pairing participants may yield different results when used against different types of problems, which could lead to findings that there may be certain classes of problems that are more amenable to paired-participant solutions. Potentially, this might lead to combining different collaboration activities into a full-blown multi-step collaboration session tailored to exploit the benefits of paired-participants. Finally, another area of research that could be explored is the conception that pairing participants may increase satisfaction by attending to other group interaction needs.

Practical Implications

From a practical standpoint, these results suggest that a facilitator can pair participants at workstations with an increase in quality and no significant negative consequences. In fact, participants even reported slightly higher satisfaction ratings. Using this technique could then allow the facilitator to get more people through facilitated sessions with less equipment and in less time. For example, assume that a facilitator has the task of getting 100 people through facilitated ideation sessions and has ten workstations available for the task. Under a traditional configuration, this means the facilitator would have to conduct ten sessions. But if one could pair participants the number of sessions needed could be cut in half – saving time and getting the organization the results they need much faster.

Notes

1. Nominal group ideation refers to the technique of allowing each participant to brainstorm individually and then combining their individual inputs to form the nominal group result (Taylor, Berry, and Block 1958).

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