

AN EXPLORATION OF GROUP MEMBER SATISFACTION

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ABSTRACT

This paper reports results from an empirical, field-based exploration of the components of group member satisfaction. Items included in the instrument were identified via literature review. Additionally, a group brainstorming session with supervisory and middle management level employees of a large high technology firm was used to supplement items identified from the literature. The resulting instrument, with a focus on both within-meeting as well as pre- and post-meeting aspects of group work, was administered to a convenience sample of 166 respondents from the high technology firm. Results of factor and reliability analyses are reported. This project is part of a program of research examining group member satisfaction from the psychological perspective of closure.

INTRODUCTION

Many researchers have emphasized the important role played by satisfaction in the group context. Maier (1970) notes the instrumentality of member satisfaction for decision adoption and implementation. In a key study, Van de Ven & Delbecq (1974) operationalized group effectiveness to include performance plus satisfaction. Despite its importance, however, the construct is not well understood. For this reason, group researchers have argued the need to measure satisfaction from a "zero base" (Hecht, 1978).

This research adopts a two-fold focus: (1) to examine the linkage between closure and group member satisfaction, and (2) to identify and measure underlying factors or components of group member satisfaction when multiple meetings over time are involved. Existing instruments (e.g., Gouran, 1973) focus on predictors of satisfaction within meetings. While such a focus is important, researchers and developers have emphasized the need to support activities that precede and follow meetings (e.g.,

Wagner & Nagasundaram, 1988). Knowing which pre- and post-meeting activities to support so that group member satisfaction is enhanced will help suggest guidelines for the design of pre-, post- and within-meeting support features. These features may be part of the process intervention and/or of the GDSS.

GROUP MEMBER SATISFACTION

While group performance, consensus, and group member satisfaction are considered to be critical variables in assessments of group work (Hackman, 1990), satisfaction is usually studied as a dependent variable in studies whose primary focus is on another variable (Hecht, 1978). The use of single-item scales to measure a complex construct like satisfaction has hindered understanding. While few will argue the research need to study satisfaction, it is surprising that "research has done little to adequately define, explain, or measure the concept in the group context" (Keyton, 1991, p.205). Hecht (1978) goes as far as to suggest that "researchers would do well to construct group (member) satisfaction measures from a zero base. Items should be constructed from respondents' perceptions and observational studies and tested and factor analyzed, and reliability and validity information generated" (p.360).

Extant instruments focus on the communicative aspects of satisfaction (for e.g., Gouran, 1973; Hecht, 1978; Wall, Galanes & Love, 1987). However, when multiple meetings are involved, much more than free and open communication between group members may have to be supported. Demands placed on the group by the need to coordinate, communicate, and manage member roles, task assignments, commitments and information may be expected to affect task accomplishment and perceptions thereof in ongoing group work. As a reflection of the need to support such demands, project management functions are being incorporated into groupware to augment messaging and conferencing functions. Instruments with an exclusive focus on the communicative components of satisfaction within meetings arguably cannot capture all the other facets, and concomitant demands, of ongoing group work.

This research is the first to focus both on within and pre- and post-meeting components of satisfaction. Ongoing group work is beginning to be addressed in the GDSS literature, with one recent paper (Satzinger & Olfman, 1992) reporting that between-meeting support was

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CPR/4/93/MO, USA

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perceived as critical by respondents. More research is needed to understand perceptions of what needs to be supported within and across meetings and why. We advance the notion that group members' need for closure (defined below) may be one of the motivations underlying their perceptions of what needs to be supported in order for them to feel that the group task was accomplished to their satisfaction.

CLOSURE AND SATISFACTION

According to the Random House Dictionary of the English Language (Second Edition, 1987), closure refers to "a sense of psychological certainty or completeness". From a motivational perspective, the need for closure may predispose a human subject to prefer coherence and certainty over indeterminacy. Kruglanski (1989) and his associates have examined the need for closure from within the framework of a motivational theory of knowledge and cognition.

Closure, or cognitive closure, according to Kruglanski and Freund (1983) "is defined as the possession of definite answer to a question, as opposed to confusion or ambiguity". The need for closure may be specific or non-specific, but in either case it represents an impetus to gain "assured knowledge that affords predictability and a base for action" (Kruglanski, 1989, p. 14). The need for closure may arise from a variety of possible motives and in a variety of situational contexts (Kruglanski, 1989).

In a group context, the need for closure may be reflected in group members' motivation to collectively develop a genuine "social reality" (Festinger, 1950, p.272) or a consistent representation of the problem they are faced with. Such a motivation may prompt the group to attempt to resolve differences so that "authentic agreement" may result. The push toward consensus in the group may be similar to an "individual's need for personal closure in his or her own cognitive system, that is, for intrapersonal consistency among the individual's cognition giving rise to a sense of coherent knowledge or subjective reality" (Kruglanski & Webster, 1991, p. 223).

In addition to the cognitive aspects of closure, there is some evidence of a linkage between closure and certain process-related characteristics of the social environment. Activity sequences that are complete may facilitate closure (Maier, 1965). Predictability of activity sequences may also be important. Group task strategies may facilitate coordination of group effort and the determination of task progress, and help members generate expectations about when and how these activity sequences will end (see Losada et al., 1990, for a study of groupware use that promoted

group task effectiveness by supporting such expectations by members).

The literature reviewed thus far does not discuss satisfaction in relation to closure. Although Hagen and Burch (1985) study the relationship, they define closure in a somewhat cursory manner as group task accomplishment. They found that perception of closure on group task and agreement with closure on task direction were positively related to satisfaction. However, the factors behind closure were not explored, nor was closure defined explicitly or specifically. Furthermore, the psychometric properties of the instrument used to measure satisfaction were not discussed.

Comparing interacting, nominal (i.e., groups using the nominal group technique, or NGT) and delphi groups, Van de Ven and Delbecq (1974) found NGT groups to have attained high closure (based on perceptual data elicited from group members), while delphi and interacting group members attained "closure with detachment" (p.619) and low closure respectively. Again, closure is defined implicitly (as task accomplishment), not explicitly.

Notably, NGT groups also reported being significantly more satisfied relative to interacting and delphi groups (Van de Ven & Delbecq, 1974). Satisfaction was operationalized to include perceptions of both process and quality of the group's performance. While this result appears to suggest a linkage between satisfaction and closure as defined by the authors, Van de Ven and Delbecq do not make this connection.

Many researchers have reported a linkage between group task accomplishment and group member satisfaction. Heslin and Dunphy (1960) reported that groups scoring low on perceived task accomplishment or goal attainment tended to report low group member satisfaction. Marquis, Guetzkow & Heyns (1951) found satisfaction to be higher in groups that reported "We got a lot accomplished". Groups that completed a larger percentage of the agenda were more satisfied than groups that did not.

Other studies have identified process-related factors of task accomplishment as predictors of group member satisfaction. Hrycenko and Minton (1974) suggest that member satisfaction with the task-performance procedure chosen may contribute to overall satisfaction. The process dimension is implicit in Collins and Guetzkow's (1964) observation that perception of movement toward the task goal may be positively related to satisfaction. Preparing and adhering to the meeting agenda and keeping the problem in focus during the meeting have also been cited as factors (for e.g., in Kriesberg, 1950) promoting satisfaction.

Two trends are discernible from the literatures briefly reviewed above: (1) the motivational underpinnings of closure as a personal need to attain a state of psychological certainty or completeness, and (2) the possible link between closure, defined as perceived task accomplishment, and satisfaction. However, it is not clear what the components of perceived task accomplishment are, nor is it clear how closure, perceived task accomplishment and group member satisfaction may be related. We believe that the motivational perspective on closure provides a key to integrate the two trends. In other words, the need for closure may help explain why task accomplishment promotes group member satisfaction. The instrument reported in this paper marks the first step in testing the validity and utility of such an integration.

Kruglanski and his associates manipulate the need for closure as an **independent** variable. For example, Kruglanski, Peri and Zakai (1991) varied the need (high vs. low) for closure by manipulating the cost (high vs. low) to the subject of judgmental invalidity on the stimulus task. Our research explores closure as a **dependent** variable. While prior group research has addressed closure as an outcome measure, the construct is seldom explicitly defined. Nor is it clear what the components of closure might be.

Roles: The training literature (e.g., Parker, 1990) emphasizes the importance of clear role expectations and task assignments for effective group work. In addition to roles being well-defined, confidence that members will carry out assigned tasks often characterizes effective teams.

A role is a set of expectations and requirements about behavior for a position in a social setting (Rizzo, House & Lirtzman, 1978). Correspondingly, role ambiguity is high when clarity of behavioral requirements and predictability of behavioral outcomes are low. Rizzo et al., (1978) reported a strong relationship between high role ambiguity and reduced satisfaction among organizational respondents. In a group study, role ambiguity adversely affected task efficiency and significantly lowered satisfaction (Smith, 1957).

Despite these findings, however, extant measures of group member satisfaction do not examine role clarity. Well-defined roles feature "certainty about duties, authority, allocation of time, and relationship to others; the clarity and existence of guides, directives, policies, and the ability to predict sanctions as outcomes of behavior" (Rizzo et al., 1978, p.156). It is noteworthy that the motivational bases of closure - the need for firm knowledge, and for predictability about and control over outcomes (Kruglanski, 1989; Berscheid, Graziano, Monson & Dermer, 1976) - are similar to desiderata for and observed outcomes (in

Cummings et al., 1976) of well-defined roles. Closure, then, may be potentially useful in explaining the relationship between role clarity and satisfaction.

Goals: Group member satisfaction is positively related to progress toward attaining the goal (Heslin & Dunphy, 1964), goal attainment (Hamblin, 1958), and goal clarity (Anderson, 1975; Raven & Rietsma, 1957). Goals may also reduce role ambiguity (Latham & Locke, 1991).

However, the relationship between individual-level goals and group-level goals is unclear. While a positive relationship between goals and satisfaction has been reported (for e.g.,

Locke, 1976; Locke, Cartledge & Knerr, 1970), the literature has almost exclusively focused on individual-level goals; goal-setting at the group-level has largely been ignored (Larson & Shaumann, 1992).

Group studies of satisfaction and closure, defined as task accomplishment, do not clarify the term "task accomplishment" with reference to goal attainment (e.g., Hagen & Burch, 1985), and do not specify the nature of the link between individual-level goals and group-level goals. Consequently, the linkage between personal closure and group goal attainment is hazy.

While this research does not purport directly to test the relationship between goals and closure, and between roles and closure in the context of satisfaction, the instrument that was field-tested takes a first step in exploring these constructs. Do they define aspects of one factor, or are they separate and distinct factors? It is to these questions that we turn after the discussion immediately below of the development and administration of the instrument.

SCALE AND ITEM DEVELOPMENT

Scale and item development were done in three steps. First, the literatures on group decision-making, role ambiguity and goal setting were reviewed for predictors of satisfaction. Second, the work of Kruglanski (1989) and his associates on the cognitive and motivational bases of closure was examined for potential items.

The third step involved brainstorming by a group of 35 students enrolled in a class taught by the first researcher last Spring at a large high technology manufacturing firm. Thirty-four out of the 35 students were full-time employees of the firm.

Both technical and non-technical work backgrounds were represented in the student pool.

As part of the course the students had read, prior to the group brainstorming session, a paper by Van De Ven & Delbecq (1974), where the following observations (abbreviated here in the interests of space) occur:

Interacting groups: There is a tendency for meetings to conclude with high perceived lack of closure, low felt accomplishment, and low interest in future phases of problem solving.

Nominal Group Technique: NGT group meetings tend to conclude with a perceived sense of closure, task accomplishment, and interest in future phases of decision-making.

Delphi: The Delphi procedure tends to conclude with a moderate perceived sense of closure and accomplishment, but with detachment.

The class was asked to peruse the complete text of Ven de Ven and Delbecq's (1974) comments (which occur on pages 617-619 in the paper) before the brainstorming. In their comments, Van de Ven and Delbecq summarize responses to two questions by members of the 60 groups in their study: "In general, what did you like the most about the meeting/delphi you just participated in?", and "In general, what did you dislike the most about the meeting/ delphi you just participated in?". The authors conclude that, relative to interacting and delphi groups, the benefit provided by the nominal group technique (NGT) centered on balanced support for socio-emotional (process-related) as well as task-instrumental aspects of group problem solving.

The class was asked, based on their experience of meetings in their workplace, to orally brainstorm for 15-20 minutes on the meaning of the word "closure". Note that Van de Ven and Delbecq do not explicitly or specifically define the word closure anywhere in their paper; nor was closure explicitly discussed in class prior to the brainstorming session.

The labels "Task structure/support" and "Process structure /support", derived from Nunamaker, Dennis, Valacich, Vogel, and George (1991) were placed on the whiteboard as conceptual anchors for the brainstorming session. These labels reflect the process and task components of satisfaction (Van de Ven & Delbecq, 1974). The first researcher recorded the ideas on a whiteboard as they were suggested.

Items identified from the three steps above were used to develop the instrument. Two hypothetical scenarios adapted from Keyton (1991) were used to organize the items in the instrument. **Scenario 1** presented a task

involving multiple group meetings, while **Scenario 2** presented a task involving a single meeting. Each scenario was followed by the statement: "Indicate how important each of the items below would be to you if you wanted to feel satisfied that you, and your team, did a good job". Respondents responded to the items in the instrument in the context of this statement. Ten items followed Scenario 1, and 16 items followed Scenario 2. Space for open-ended responses was provided as part of both scenarios. All items were scored using 7-point Likert-type scales, with "v. important" (1) and "not v. important" (7) serving as anchors.

The 10 items in Scenario 1 focused on between meeting (that is pre- and post-meeting) factors. Examples of items include: "Relevant documents (e.g., the meeting agenda) available for you to review prior to every meeting", "Agenda items flagged as closed/open at end of each meeting", "Each meeting ends with a list of actionable items", "There are clear expectations about the roles played by each member", and "Measurable objectives/goals are set for each meeting".

The 16 items in Scenario 2 focused on within meeting factors. Examples of items include: "Team members have opportunity to build case for or against an idea or alternative", "Enough information is available on ideas/alternatives so that judgment is supported", "All ideas/alternatives are available for review so that members can see the full picture", and "What the team does during the meeting is tightly sequenced by the technology/facilitator".

The instrument was administered to a convenience sample of 166 respondents drawn from the supervisory and middle-management levels in a large U.S-based high-technology firm. Both technical and non-technical work backgrounds were represented in the sample. The firm supported a computer-based group decision support system (GDSS) in-house in a specially-equipped decision room that was open to employees to use. Almost all respondents had used the GDSS. All 166 instruments were returned completed, and were usable.

ANALYSIS AND RESULTS

Following the receipt of completed instruments (all of which were usable), several analyses were done to assess the construct validity and reliability of the items and scales. The minimum reliability level (Cronbach's alpha) for subscales was set at .70, after Nunnally's (1978) criterion for measures used in basic research.

As part of construct validation of the items, item-item and item-scale correlations were used to identify items for

deletion from the scale. Eight items were thus identified and dropped from the scale; two other items from Scenario 2 were dropped because several respondents indicated via written comments that the wording of the items was ambiguous.

Factor analysis, a necessary step in assessing construct validity (Kerlinger, 1978), was then performed on the 16 remaining items. Bartlett's test of sphericity was highly significant (.000), "suggesting that the intercorrelation matrix contained enough common variance to make factor analysis worth pursuing" (Doll & Torkzadeh, 1988, p. 265).

Given the exploratory nature of the investigation, all parameters were freely estimated in the exploratory factor runs using principal components analysis and varimax rotation. On the first run, a five-factor solution emerged when the eigenvalue cutoff of 1.0 was specified. The factors were labelled thus (with number of items within parentheses): task support (5), process support (within meeting) (2), process support (pre- and post-meeting) (4), goals and roles (3), and responsibilities (2). However, subscales composed of items loading on factors 4 ($\alpha = .63$) and 5 ($\alpha = .47$) failed the minimum reliability (Cronbach's α) criterion of .70.

Inspection of the five-factor pattern indicated that two items in factor 1 (task support) did not load cleanly; that is, these two items had loadings of .40 or above on one other factor. Further, these two items' loading on the primary factor was less than .70. These two items and the seven items that composed factors 4 and 5 were dropped. Further analyses were run with the nine items that remained.

Factor analysis (principal components analysis with varimax rotation, eigenvalue cutoff=1.0) on the nine items produced a three-factor solution; the three factors together accounted for a little over 68% of the variance. As Table 1 suggests, a simple and clean factor structure emerged; no item had a primary factor loading below .72, and the highest loading by any of the items on other than the target factor was .21. Loadings in excess of .71 are deemed excellent (Comrey, 1973); all nine items loaded in the excellent range (Table 1).

Researchers have pointed out that " (factor) components will not necessarily be more theoretically meaningful than any other linear combination of...variables" (Wilkinson, 1990, p.73), and have cautioned that factors should have face validity. That is, the items and their clusterings should be conceptually meaningful. Inspection of the factor structure (Table 1) reveals a conceptually meaningful clustering of items. Items that compose a factor all appear

to share a common focus, which is distinct from the focus indicated by items defining the other two factors.

Furthermore, the linkage conceptually between the items and the idea of closure, defined as "psychological certainty and completeness" (Random House Dictionary of the English Language, Second Edition, 1987), or as "assured knowledge that affords predictability and a base for action" (Kruglanski & Webster, 1992) is discernible (Table 2), as the discussion below argues.

(Factor 1) appear to stress procedural predictability. The item on the importance of agenda availability is consistent with prior research (e.g., Kriesberg, 1950); providing an agenda prior to the meeting should inform member expectations about the focus of the meeting.

The item "Agenda items flagged as closed/open at end of each meeting" is also consistent with prior research that found satisfaction to be higher in groups reporting "We got a lot accomplished", and in groups that completed a larger percentage of the agenda (Marquis, Guetzkow & Heyns, 1951). Flagging items as open would clarify what action needs to be taken, while flagging items as closed may inform the group's sense of movement toward the task goal, which has been reported as a predictor of satisfaction (Collins & Guetzkow, 1964).

The items "Hardcopy minutes..." and "Each member be kept informed..." relate to feedback, which Marston and Hecht (1988), for example, identify as a predictor of group member satisfaction. The need for feedback on the status of decision implementation was emphasized by several respondents in their open-ended comments. Arguably, feedback would be critical in informing the group's sense of movement toward the goal as well.

The items under within meeting process support (Factor 2) focus on task focus and well-organized meeting procedures. The role of task focus in enhancing member satisfaction has been noted by many researchers (e.g., Kriesberg, 1950). Tightly sequencing group activity during the meeting should contribute to a sense of orderly progression toward the meeting goal.

Two of the three items under task support (Factor 3) emphasize completeness ("full picture") and availability of enough information to support judgment (presumably so that the decision-maker's sense of certainty about the environment is enhanced). Providing the opportunity to argue for or against an idea may also enhance member's sense of "assured knowledge" to the extent that the group arrived at a decision after issues were thoroughly aired.

It is interesting that, in the original five factor solution, factors 4 and 5 comprised items that focused on goals and

roles and responsibilities respectively. The literatures on goal-setting and role clarity were reviewed for potential predictors of satisfaction (as discussed in the appropriate sections above). While factors 4 and 5 were dropped owing to the low reliability of the scales, the fact that these items constituted well-defined factors suggests that they warrant further study in the context of closure and satisfaction.

In addition to convergent validity, items in psychometric instruments should also possess discriminant validity. Discriminant validity is "tested for each item by counting the number of times it correlates more highly with an item of another variable (factor) than with items of its own theoretical variable" (Doll & Torkzadeh, 1988, p.267). Inspection of the correlation matrix for the nine variables indicated no violations (Table 3), suggesting that the items possessed discriminant validity.

All three sub-scales exceeded the minimum reliability (Cronbach's alpha) cutoff of .70 set for the study; however, the reliability of the two-item "Process support (within meeting)" factor just exceeded the lower bound of the cutoff. Furthermore, factors of less than three items should be regarded with caution as they may be unstable (Mulaik, 1972).

The corrected item-total correlation was examined for each of the three sub-scales to assess the internal consistency of the measures. One item in the pre- and post-meeting process support scale (Factor 1) and one item in the within meeting process support (Factor 2) had a correlation of .50 with the sub-scale. All the other items correlated with their respective sub-scales at or above .55.

Examination of qualitative information from the returned surveys was instructive. Several comments discussed the critical need for feedback on decisions taken: "Have never seen action taken by management as a result of ...session". Others focused on the need for an agenda: "...No real agenda, and no immediate action plan". Several noted the importance of within-meeting process structure: "In both sessions...not enough time was allotted to fully use each phase of the process...the process was rushed to give the impression of not being well-organized". Others felt the GDSS was not "really suited for complex problems". Several respondents stressed the need for meeting minutes ("some kind of summation of the meeting"), the need to maintain task focus during sessions, and the requirement that team members be held accountable for completing action items as critical for satisfactory task accomplishment.

DISCUSSION AND CONCLUSION

An instrument to explore components of group member satisfaction was developed and field-tested. Two kinds of group tasks were used as stimulus via hypothetical scenarios, the first involving multiple meetings and the second involving a single meeting. The results suggest that three factors contribute to perceived closure: (1) process support (pre-and post-meeting), (2) process support (within meeting) and (3) task support. These three factors, comprising nine items, together explained 68% of the total variance.

These results are interesting and potentially important because they suggest a link between the motivationally-based need for closure and group member satisfaction. It is notable that two of the three factors that emerged are process-related. Kruglanski (1989) suggests that the possession of "assured knowledge", as opposed to ambiguity and confusion, promotes perceived closure in an individual. Our results suggest that, in addition to cognitive certainty and completeness, predictability arising from organized procedures (within and across meetings) may also contribute to perceived closure.

The chief limitation of this work is that respondents were asked to respond to hypothetical scenarios. The scenarios that were used were adapted from Keyton (1991). While scenarios obviously cannot capture situation-specific aspects of group work which may color responses, they have been used successfully to capture global attributes of satisfaction (Keyton, 1991). The instrument described here took a first step at identifying certain global predictors of satisfaction from the perspective of closure. Future research could examine the contribution of situation-specific predictors of satisfaction from the same perspective.

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ROTATED LOADINGS			
	1	2	3
S1Q6	0.778		
S1Q1	0.771		
S1Q2	0.725		
S1Q7	0.722		
S2Q14		0.870	
S2Q1		0.863	
S2Q9			0.854
S2Q11			0.820
S2Q8			0.809
* rotated loadings less than .22 are blank			
VARIANCE EXPLAINED BY ROTATED COMPONENTS			
	1	2	3
	2.331	1.632	2.157
PERCENT OF TOTAL VARIANCE EXPLAINED			
	1	2	3
	25.903	18.129	23.971

Table 1

Factor 1 (Process Support: Pre- and Post-meeting)

- S1Q6 Hardcopy minutes and other meeting outputs are available to each member at the end of each meeting
- S1Q2 Agenda items flagged as closed/open at each meeting (closed=action taken; open=action to be taken)
- S1Q1 Relevant documents (e.g., meeting agenda) available for you to review prior to every meeting
- S1Q7 Each member be kept informed of whether decisions taken at meetings were/are being implemented

Factor 2 (Process Support: Within-meeting)

- S2Q14 The technology/facilitator controls task focus
- S2Q1 What the team does during the meeting is tightly sequenced by the technology/facilitator

Factor 3 (Task Support)

- S2Q8 Team members have opportunity to build case either for or against an idea or alternative
- S2Q9 Enough information is available on ideas or alternatives so that judgment is supported
- S2Q11 All ideas/alternatives are available for review so that members can see the full picture

Table 2

PEARSON CORRELATION MATRIX

	S1Q6	S1Q1	S1Q2	S1Q7	S2Q14	S2Q1	S2Q9	S2Q11	S2Q8
S1Q6	1.000								
S1Q1	0.430	1.000							
S1Q2	0.425	0.577	1.000						
S1Q7	0.461	0.431	0.330	1.000					
S2Q14	0.037	0.054	0.134	-0.089	1.000				
S2Q1	0.157	0.092	0.101	-0.046	0.559	1.000			
S2Q9	0.125	0.247	0.236	0.239	-0.073	-0.107	1.000		
S2Q11	0.175	0.260	0.239	0.168	-0.003	0.039	0.558	1.000	
S2Q8	0.180	0.276	0.222	0.329	-0.100	-0.172	0.621	0.530	1.000

VARIABLE (ITEM) MEAN STANDARD DEVIATION

S1Q1	2.0599	1.1807
S1Q2	2.1317	1.1645
S1Q6	2.9461	1.5610
S1Q7	2.2335	1.1562
S2Q1	3.7186	1.7071
S2Q8	1.7844	0.9257
S2Q9	1.6946	0.8692
S2Q11	1.7485	0.8339
S2Q14	3.2934	1.7157

Table 3
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