

# Factors Affecting Response Quantity, Quality, and Speed for Questions Asked via Social Network Status Messages

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## Abstract

Social networking tools enable people to easily ask questions of large groups of personal acquaintances, but the effectiveness of doing so depends in part on how the question is phrased. In this paper we present a study in which 282 participants posted variants of the same question as their status message on Facebook. We analyze the quantity, quality, and speed of the responses each variant received. We find that by ending an information need with a question mark, explicitly scoping the audience, and being succinct, a person can increase the likelihood of quickly receiving many high-quality answers.

## Introduction

In addition to using status messages to describe one’s current status, many social network users use their status messages to ask questions of their networks (Morris et al. 2010). The questions people ask can range from simple:

*Can anyone recommend a babysitter in Maui?*

To quite involved:

*I think we’re going to go snorkeling while we’re in Maui, but we can’t bring the kids along for that. So we’re looking for a good babysitter recommendation near Kaanapali, preferably with lifeguard experience.*

Question-based status updates serve many purposes, including creating social awareness, encouraging the asker to reflect on a current information need, building social ties, and, of course, finding answers. For example, the request for a babysitter in Maui both helps the asker find a babysitter and lets people know that there is a planned trip to Hawaii. Valuable replies might include babysitter recommendations, but could also include well wishes for a safe trip or an invitation to catch up while in Maui.

Social psychology research suggests that how people pose their requests to others influences the responses they receive. For example, a study of people waiting in line to

make photocopies revealed that those in line were more likely to let someone cut in front of them if the request to do so included a meaningless justification (“because I need to make copies”) (Langer et al. 1978).

Researchers have also explored what factors might influence how people respond to others online. Burke et al. (2007) studied Usenet groups to see how post phrasing correlated with response likelihood, and observed that messages that made requests were likely to get more responses than those that did not. Liu et al. (2008) used machine learning to predict satisfaction with answers received on a Q&A site, and found important factors included the asker’s length of membership and the question topic. However, the relationships that have been observed online between questions and responses merely represent correlations.

In this paper, we present the results of a unique, controlled study that shows that the phrasing of questions posed to one’s social network directly influences the online responses received. Rather than merely looking at existing behavior, we control the questions asked and look at the quantity, quality, and speed of answers received.

## Methodology

We asked 282 people (97 female, median age=34) to post a variant of the question, “Should I watch E.T.?” as their Facebook status message (see Figure 1 for an example). All



Figure 1. An example of a question asked in our study via a social network status update and the responses received.

Punctuation	Sentences	Scoping	Example	Number posted
Question	One	None	Should I watch E.T.?	26
		Anyone	Does anyone think I should watch E.T.?	26
		Movie buff	Do my movie buff friends think I should watch E.T.?	27
	Two	None	Taking it easy. Should I watch E.T.?	18
		Anyone	Taking it easy. Does anyone think I should watch E.T.?	26
		Movie buff	Taking it easy. Do my movie buff friends think I should watch E.T.?	20
Statement	One	None	I wonder if I should watch E.T.	24
		Anyone	I wonder if anyone thinks I should watch E.T.	27
		Movie buff	I wonder if my movie buff friends think I should watch E.T.	23
	Two	None	Taking it easy. I wonder if I should watch E.T.	21
		Anyone	Taking it easy. I wonder if anyone thinks I should watch E.T.	22
		Movie buff	Taking it easy. I wonder if my movie buff friends think I should watch E.T.	22

**Table 1. The different question phrasings studied, and the number of participants who posted each.**

participants were Microsoft employees, but their networks were largely comprised of people external to the company, indirectly engaging a broader demographic. We chose to have people ask for opinions about the popular science fiction film *E.T.* (Universal Studios, 1982) for several reasons. The question type (opinion) and topic (entertainment) were inspired by prior work by Morris et al. (2010) that found that subjective questions are a popular type of question asked of social networks, and that entertainment is a popular question topic. The specific movie *E.T.* was chosen due to its popularity across age groups and its innocuous nature, so the question would seem natural when posed by participants from a variety of backgrounds.

Participants were sent a calendar appointment containing the question text and instructions to post it verbatim as their Facebook status at the time specified by the appointment. Participants were required to have an existing Facebook account, and most (238, 84.4%) reported having had the account for over a year. The median network size was 215. We studied a single popular social networking service to avoid confounds due to variation among different services. Participants were asked to not reveal that the update was not genuine, to not comment on their status or on any of the responses received, and to not update their status for at least 24 hours after posting the study message. Facebook has a comment system that enables easy response tracking. Three days after posting the question, we asked participants to send a screenshot from Facebook containing the text of the replies they received (e.g., Figure 1). Participants also completed a short questionnaire asking about their social network and demographic information.

### Study Conditions

We studied phrasing by varying how the basic question (“Should I watch E.T.?”) was written along three axes: punctuation, the number of sentences, and scope (see Table 1 for specific phrasing). The axes were chosen based on findings from a prior survey of social network question-

asking (Morris et al. 2010), which revealed that questions asked via status messages naturally vary in these ways.

*Punctuation:* The basic question was phrased as a question (ending with a question mark) or as a statement (ending with a period), since Morris et al. (2010) found 18.5% of the questions in their sample were actually phrased as statements. Prior research in the offline world (Francik & Clark 1985) found that explicit requests are more successful than implicit ones. Our hypothesis was that stating the question explicitly as a clear question would help distinguish it from a more typical status update and increase the number of responses the question received.

*Number of Sentences:* The basic question was either one sentence long, or included a preceding sentence (“Taking it easy.”) to provide some additional information about why the asker was considering watching the movie. This condition was inspired by Morris et al.’s (2010) survey finding that 72% of questions contained only a single sentence, while the remainder typically used an additional sentence. Our hypothesis was that an additional sentence would increase the appearance that the question was a regular status update and hurt response metrics. Our goal in choosing the additional sentence was for it to be vague enough to be plausible for users having a variety of backgrounds.

*Scope:* The basic question provided no explicit scoping, but we tested variants that scoped the question to “anyone” or referred specifically to “my movie buff friends.” We selected these scoping variants since prior work observed that a surprising number of questions (21%) posted to social networks include the word “anyone” (Morris et al. 2010), and we wanted to explore what this content-less scoping, as well as more specific scoping, might do to the responses received. We hypothesized specific scoping would encourage responses by reminding users of the unique contributions they could bring to bear on the questions (Beenan et al. 2004; Karau & Williams 1993).

Each of the twelve phrasing variants was posted by anywhere from 18 to 27 participants (Table 1). Participants

			Count	Quantity		Quality			Speed
				Percent with response	Number of responses	Percent answered	Percent useful	Response length	Time to first response
<i>Phrasing</i>	Punctuation	Question	143	88.1%*	3.413	63.6%	80.4%*	56.930	1:25
		Statement	139	76.3%*	2.962	54.0%	63.3%*	53.979	1:30
	Sentences	One	153	88.2%*	3.681*	72.5%*	80.4%*	55.246	1:08
		Two	129	75.2%*	2.546*	42.6%*	62.0%*	56.048	1:55
	Scope	None	89	77.5%	2.623	53.9%	62.9%*	43.837*	1:37
		Anyone	95	83.2%	3.241	61.1%	73.7%	57.671*	1:20
Movie buff		98	85.7%	3.655*	61.2%	78.6%*	63.264*	1:27	

**Table 2. Response measures broken down by how the question was phrased. Significant differences are shaded ( $p < .05$ ) and indicated with a \* ( $p < .01$ ). For scope significance is compared with *None*; differences between *Anyone* and *Movie buff* were not significant.**

were randomly assigned a variant, with effort made to balance demographics across conditions. The distribution of participants to each variant was initially equal, but some participants dropped out; all analysis is based on the 282 participants that completed the entire study. Post-hoc analyses verified that the assignment of participants to condition resulted in approximately equal distributions of demographic and social network use traits across conditions.

By partitioning the question space evenly across each axis, we were able to explore the three overarching differences with a large number of participants (from 89 to 153). For example, each question can be phrased as a question or as a statement regardless of how it is scoped; 143 participants posted the question phrased as a question, and 139 participants posted the question phrased as a statement. See Table 2’s “Count” column for a summary of the total number of participants in each question-phrasing condition.

### Response Metrics

In our analysis, we compare the quantity, quality, and speed of the responses as a function of the phrasing. Significance between variants is calculated using two-tailed independent samples *t*-tests. ANOVA tests were performed first for dimensions having more than two variants, and significance for these cases is reported only when both the ANOVA and the follow-up *t*-tests were significant.

The measures of *response quantity* we present here are: the portion of questions that received responses (*percent with response*), and, on average, the *number of responses* that were received given the question was responded to.

We also explored several measures of *response quality*. *Response length* is one of the measures of quality we use. Longer responses can contain more information, and previous research (Harper et al. 2008) has shown response length is an indicator of response quality on Q&A sites. Given a question received at least one response, we look at the average length of the responses (in characters).

Responses were also manually coded along two quality dimensions. Coding was done using a grounded theory approach with a two-phase process that involved an initial

pass through all of the responses to develop a coding scheme of answer types, followed by a second pass to label each response. The first dimension, *percent answered*, coded whether the response contained a direct answer (e.g., “YESSS! One of my favorite movies of ALL time,” or, “Soooo boring. I vote no.”). The second, *percent useful*, coded whether the response provided potentially valuable information that might interest someone deciding whether to watch *E.T.*, regardless of whether the response actually answered the question. Examples of useful responses included facts about *E.T.* (“... Drew Barrymore’s first time in a movie...”) and suggestions of alternative films the asker might enjoy (“I’d suggest *Weird Science...*”).

To measure *response speed*, we studied the average *time to first response* for a question, given that at least one response was received. Times for questions and answers were captured in the screenshot participants sent us (e.g., Figure 1). Because response time distributes logarithmically, we use the log of the response time to keep long times from dominating; our findings, however, are consistent whether we use the log or not.

### Results

How the question was phrased strongly affected our response measures. Questions that were stated as a question, posed as a single sentence, and explicitly scoped received better responses. Table 2 summarizes our findings.

Questions phrased as a question received better responses than those phrased as a statement. A higher portion of questions with a question mark received responses (88.1% v. 76.3%,  $p < .01$ ), and those responses contained more answers and useful information. Questions phrased as statements may look more like regular status updates, and thus not be responded to as a question as often. This extends prior work from offline to online spaces; Francik and Clark (1985) found that explicitly phrased requests offline are more effective than implicit requests.

Questions phrased as a single sentence also received better responses than those that included the additional sen-

tence, “Taking it easy.” The differences in success metrics were almost all significantly influenced by the manipulation of the number of sentences ( $p < .01$ , except of speed, which was  $p < .05$ ). Two-sentence questions received fewer and slower responses, and were much less likely to receive a yes or no answer; only 42.6% of the two sentence questions received a direct answer, while 75.4% of the one sentence questions did.

Rather than providing additional motivation to respond, the additional sentence interfered with participant’s ability to get an answer. This may be because the extra sentence hid the fact that there was a question being asked, because participants’ friends were less likely to read the longer status update, or because of the specifics of the sentence we provided. We designed the additional sentence to be vague enough to seem plausible for a variety of participants; it is possible that a more personalized, user-specific sentence would not cause the detrimental effects we observed. Further study is needed to tease out the factors underlying the impact our additional sentence condition had on the response metrics.

Despite negatively impacting the quantity, quality, and speed of responses, the extra sentence did appear to provide some value. When the question was posed as two sentences, responses were more likely to include an alternative movie suggestion (13.4% v. 5.4%,  $p < .01$ ) than when the question was posed as a single sentence. The presence of the additional sentence also reduced requests for clarification. Only 33% of the longer questions received responses requesting clarifications, as compared with 49.6% of the shorter questions ( $p < .01$ ).

Scoping made a significant difference in the responses received, with explicitly scoped questions resulting in better responses. For example, asking “my movie buff friends” yielded more replies, more useful information, and longer replies (all  $p < .01$ ). However, the particulars of the scoping did not affect responses in significant ways. Scoping the question broadly to ask “anyone” resulted in comparable improvement to asking “my movie buff friends.”

The scoping, however, may also carry a penalty. While scoping may make people more likely to answer if they feel they have expertise, it may also make them less likely to answer if they do not. People who responded to “movie buff” questions sometimes excused themselves for not being a movie buff, saying, for example, “I don’t think I qualify to answer...but I would say you should.” One respondent even went as far as to ask someone else who did have the appropriate expertise: “Ron says ‘Yes, it’s a classic. It might seem dated, but it has lots of topical references and you get to see Drew Barrymore in her non-nude phase.’ (I don’t qualify to comment.)”

Our findings demonstrate that seemingly small changes to the questions people post to their social networks can result in significant changes in response quantity, quality,

and speed. Although the movie-related question we studied represents a very common question type and topic for social network status questions (Morris et al. 2010), it is unknown how our results will generalize to other question types and topics. Similarly, there is much that can be learned by studying other phrasing variants or other additional sentences. However, even by studying only a few such variations we were able to identify several factors that significantly influence social Q&A responses. We hope that our findings and methodology inspire follow-on studies to further understand the nuanced issues influencing Q&A exchanges on social networks.

## Conclusion

We presented a study in which 282 participants posted a specific question provided by us as their Facebook status message. By having a large number of people post carefully designed variants of a single question, we were able to understand how the three factors we manipulated (punctuation, number of sentences, and scoping) affected response quantity, quality, and speed. We found that phrasing a question well leads to better responses. Stating the information need as a question (as opposed to a statement), explicitly scoping the audience (even using the generic scoping “anyone”), and using only one sentence led to more, better, and faster responses. Understanding how to effectively get high-quality information from social networks has implications for individual users of social networking sites and those designing social search tools.

## References

- Beenan, G., Ling, K., Wang, X., Chang, K., Frankowski, D., Resnick, P., and Kraut, R.E. Using Social Psychology to Motivate Contributions to Online Communities. CSCW 2004, 212-221.
- Burke, M., Joyce, E., Kim, T., Anand, V., and Kraut, R. Introductions and Requests: Rhetorical Strategies That Elicit Response in Online Communities. *Communities & Technologies*, 2007.
- Francik, E. and Clark, H. How to Make Requests that Overcome Obstacles to Compliance. *Journal of Memory and Language*, 24 (1985), 560-568.
- Harper, F.M., Raban, D., Rafaeli, S., and Konstan, J.A. Predictors of Answer Quality in Online Q&A Sites. CHI 2008, 865-874.
- Karau, S., and Williams, K. Social Loafing: A Meta-Analytic Review and Theoretical Integration. *Journal of Personality and Social Psychology*, 65:1993.
- Langer, E., Blank, A., and Chanowitz, B. The Mindlessness of Ostensibly Thoughtful Action. *Journal of Personality and Social Psychology*, 36:1978, 635-642.
- Liu, Y., Bian, J., and Agichtein, E. Predicting Information Seeker Satisfaction in Community Question Answering. SIGIR 2008.
- Morris, M.R., Teevan, J., and Panovich, K. What Do People Ask Their Social Networks, and Why? A Survey Study of Status Message Q&A Behavior. CHI 2010.