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***Emerging Techniques of Respondent Engagement:
Leveraging Game and Social Mechanics for Mobile Application Research***

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Abstract

The growing usage of smartphone applications (or “apps”), particularly among young adults, has opened a new frontier for data collection. This emerging method of Computer-Assisted Self-Interviewing (CASI) offers new techniques to engage respondents on the mobile platform in response to the persistent challenge of respondent cooperation. In recent years, game mechanics have been used to draw on users’ intrinsic motivation to engage them in specific tasks. The tools of game mechanics, such as points, badges, levels, challenges and leaderboards are used to drive desired behaviors (i.e., “gamifying” the process but not necessarily turning the task completely into a “game”). The mechanics of “social sharing” such as comments, posting updates or “liking” the status of others are engaging features to connect the users within the app community and social networks such as Facebook. It is hypothesized that leveraging both game and social mechanics can maximize respondent engagement for longitudinal data collection. To measure the impact of these emerging techniques for engagement, we conducted a split sample research study contrasting two versions of an iOS app to collect media usage information. One version of the app was fully integrated with game and social mechanics from the start of the data collection period while the other version was initiated without these features adding the game and social mechanics later in phases. This research gathered learning on the effectiveness of these emerging techniques for respondent engagement and offered insights on whether data collection via smartphone app is a viable method for repeated measures especially with the hard-to-reach cohorts.

1.0 Introduction

According to the latest Pew Internet Project, 88% of American adults age 18 years or older own a cell phone and 46% own a smartphone, i.e., mobile phone that runs on the Android, Blackberry, iPhone, Palm or Windows platforms (Zickuhr & Smith, 2012). Young adults age 18-29 years continue to dominate the market for smartphone ownership regardless of income and education level. Furthermore, minority groups such as African-Americans and English-speaking Latinos are more likely to own a cell phone than Whites as well as using more of its capabilities (the smartphone ownership for these minority groups is comparable to the national average). For those with apps on their cell phone, they typically download apps for game (60%) followed by news/weather (52%), maps/navigation (51%), social networking (47%) and music (43%) (Purcell et al, 2010).

Considering the current trend of smartphone owners and app users, this opens new opportunities for survey researchers to leverage smartphone apps for data collection especially with young adults and ethnic minorities. Before initiating a research study using these new technologies, it is important to first understand respondent expectations for user experience related to form/function, reciprocity, gamification and social sharing (Link, 2011). Focusing on the latter two expectations, the ultimate objective of applying game and social mechanics for engagement is to drive the desired behavior for respondents to participate and comply with the survey task (without biasing their

response). This research paper will provide an overview of respondent engagement techniques experimented with the development of a smartphone app to collect media usage information. We will share insights and lessons learned on the benefits and potential implications of using game and social mechanics for engagement in long-term panel studies.

2.0 Background

Gamification is “the process of game thinking and game mechanics to engage users and solve problems” (Zichermann & Cunningham, 2011). Gamification dates back to at least the 1980s when airlines first started using “miles” as the foundation of their loyalty reward program in motivating flyers to earn miles on their airline then redeem these miles for membership benefits (Lewis, 2011).

The application of gamification techniques has proliferated in the recent years in the marketing industry and by extension to marketing research, though their objectives are quite different. Even though both disciplines seek to promote engagement for their respective needs, marketing uses gamification to keep consumers returning to a product or service, while marketing research is exploring its use to engage respondents to respond and comply fully with a survey task (Ewing, 2011). To address the need for respondent engagement, survey researchers often look to minimize “respondent burden” through survey length, difficulty of the task, time consideration, etc. In contrast, gamification seeks to engage respondents by involving them more with the survey task through game-like processes.

In the award-winning paper by Puleston & Sleep¹, they found that respondents provided more significant feedback for online surveys on ad recall when the survey task was transformed into a game framework (2011). Some examples of the game experiments included:

1. Transforming the survey task into a game by administering survey questions in a fictional framework (e.g., “What is your favorite meal?” is gamified to “Imagine you are on death row and have to choose your last meal.”);
2. Turning questions into mini-quests by applying imaginary purpose to the task (e.g., when asked about impression of an ad, the following scenario was given “Imagine you work for an advertising agency. One of your key client’s rival brands just released a new ad, and you are about to see a sneak preview before anyone else. You have to report back to the agency what you thought of it.”);
3. Adding competitive elements to the questions by challenging the respondents to answer a question within a timeframe (e.g., turning a basic question “Name all your favorite foods.” to “You have an opportunity to go to supermarket with an unlimited budget and buy all your favorite foods. The catch is, you only have two minutes.”
4. Rewarding points for predicting the most popular response by other respondents (e.g., asking them to predict how others would feel about a particular brand or situation) which respondents found it to be more fun to answer a predictive set of questions rather than a standard questions of collecting their own emotions.

¹ The Game Experiments by Puleston & Sleep was awarded Best Methodological Paper by ESOMAR Congress in 2011.

The results of these specific game experiments yielded richer data with increased word count for open-ended responses, greater variety of responses, more time spent on the survey task, etc. Despite these positive results, the experiment does raise the concern for potential response bias associated with these gamification techniques. Further research is needed to determine how these techniques may influence or change behaviors, attitudes or opinions being measured.

2.1 Game Mechanics

It is important to distinguish transforming the entire survey task into a game-like environment versus using game mechanics such as badges, leaderboards or points to reward achievement when respondents comply with the survey task. Depending on the approaches used to “gamify” the survey task, there are serious considerations for potential response bias and reliability of the data collected, i.e., whether respondents would respond to the survey items or tasks the same way without the gamified approach. While these engagement techniques can influence respondents to comply, but does it also influence respondents to bias their response in an effort to “win” or advance in the game? These considerations clearly demonstrate the need for further study on application of gamification techniques in survey research.

The term “game mechanics” is defined as the actions, behaviors and control mechanisms used to gamify an activity (Bunchball, 2011). The full extent of game mechanics can include challenges, leaderboards, virtual goods (i.e., non-material goods), gifts/charity, etc. in addition to the aforementioned mechanics to drive the desired behavior for achievement and subsequently engagement of the (survey) task. This research focused on badges, points and levels for respondent engagement techniques.

Foursquare (2012), an application to connect users on “what’s nearby, save money and unlock deals,” popularized the reward of badges to its users upon completion of a specific activity (such as checking into a specific establishment). Badges are virtual goods in the context of mobile applications and intended to be given for promoting the status of the users of a community. Furthermore, in order to maximize the value for achievement, the badges must be visible to others (thereby adding a social dimension).

There are five social psychological functions of badges which include goal setting, instruction, reputation, status/affirmation and group identification to consider for usage (Antin & Churchill, 2011). Badges used for the purpose of instruction can indoctrinate new users on specific function and help existing users to expand their understanding of different functions. By allowing the users to see a list of possible badges that can be earned, they can then understand the valued activities in return (e.g., if there is a tutorial of the key functions of the mobile app for users, then a badge can be awarded upon completion of the tutorial to promote better understanding for app users).

Points and levels are connected game mechanics to maximize sense of achievement. Like badges, points and levels drive status achievement but are better leveraged for goal setting especially for longer term activities (e.g., survey panel). According to Zichermann & Cunningham (2011), a point system can be designed for experience points, redeemable points, skill points, karma points and reputation points. For survey research, experience points (XP) can be most relevant by assigning XP to valued activities in order to align respondent behavior for long-term engagement. The XP system can also help set goals for specific milestone for long-term activities and allow users to have a fresh start during each milestone.

Levels are used to indicate progress and advance through achieving point thresholds. More importantly, other than a status indicator, levels should be meaningful and rewarded differently as users advance through the levels. Each level should offer users a different experience (e.g., access to special content or app features that other users may not be privileged with) so they are motivated to reach the next level. The number of levels should correspond to the duration of the activity so users are motivated to reach a reasonable number of levels according to the length of time they are expected to participate.

2.2 Social Mechanics

According to the Pew Internet Project, 65% of all Internet users access social networking sites (Facebook is by far most popular followed by Twitter, MySpace and LinkedIn), and 87% of Internet users under the age 30 use these social networking sites compared to just 29% for age 65 years or older (2012). The concept of social sharing online or within the app community may not necessarily appeal to everyone, therefore, the usage of this tool can be effective for the younger cohorts but may not be as effective with older cohorts (due to privacy concerns). For apps with social sharing features, it is important to allow users to opt out of these features in order to maximize engagement with targeted users but minimize break-offs with others due to privacy concerns.

The premise of using social mechanics for respondent engagement is to promote interaction with other app users as an additional source of motivation to comply with a task. The key tools used for social mechanics include sharing updates about themselves or their activities; and the function to “like” and comment the updates or postings others share. These features can allow users to build their “reputation” in these app communities and form relationships with other app users within a research panel (Cooke and Buckley, 2008). Given the limited literatures available on the effect of social mechanics with ongoing engagement, it is clearly an area that is worth further research.

This research study explored specific features of game and social mechanics that were deemed successful for engaging game players and adapted these techniques to encourage respondents to comply with the survey task of a long-term panel. We will cover the design of the game and social mechanics used for respondent engagement; evaluate the effectiveness of these mechanics by key demographic groups; share lessons learned on implementation of these techniques based on qualitative feedback and important considerations for future app research.

3.0 Method

We recruited a total of 250 employees through convenience sample across four major cities (Tampa, FL; New York, NY; Schaumburg, IL and San Francisco, CA) to participate in a pilot study of using an iOS application called *Whatcha Watchin’?* to collect media usage information on either iPhone or iPad devices. The study ran for six weeks from January 17, 2012 to February 27, 2012. Each participant was offered a \$50 contingent incentive to enter their TV viewing information in the application on their own iOS device. Of the 250 participants selected for the study, 100 were randomly designated into a “Full Feature App” condition which enabled all the app features for the duration of the 6-week data collection period and the remaining 150 participants were in the “Incremental Feature App” which upgraded with app features incrementally every two weeks (see Table 1 for study design).

3.1 Dual App Design: Full Feature App vs. Incremental Feature App

This study was designed to assess the effectiveness of the game mechanics (i.e., badges, points and levels) and social mechanics (i.e., social sharing of TV viewing information within the app and Facebook) used for respondent engagement. All participants were asked to enter their TV viewing information including program name/format, viewing device, viewing date/time, location of viewing, co-viewership, etc. For the participants provided with the incremental feature app, they were not presented with any of the game and social mechanics during the initial two weeks while the participants in the other condition were presented with the full features for the duration of the six-week study period.

Beginning week 3, the participants with the incremental feature app were prompted to update their iOS app for the integration of the game mechanics which included badges, points and levels. There were five possible badges participants could earn for the remaining study period (see Table 2). The badges were intended for instructional purposes to provide positive reinforcement for completion of specific high-value activities related to the survey task. For example, the Head Start Badge was presented when the participants completed their first full TV viewing login (i.e., provided responses to all the questions related to their TV viewing). In an effort not to bias their TV viewing behavior or falsely report their TV viewing information, the details of earning badges were not visible to the participants but the possible badges that can be earned were (i.e., any badges not yet earned is gray-out under “Your Status” section of the app).

The participants were also rewarded with points based on the high-value activities of the survey task such as accessing the app on a regular basis (but not based on volume of TV viewing entries), responding to the push notifications, earning badges, advancing to a higher level and completing trigger surveys (a short custom survey up to five questions triggered by a specific activity such as watching a specific TV program or measuring engagement upon earning a badge). There was also a great deal of consideration when designing the point system to minimize potential influence to participants’ TV viewing behavior or falsely reporting their TV viewing information to earn more points.

The last component of the game mechanics was the opportunity to advance to a different level based on the points rewarded. The number of points that could be earned was not visible to the participants until they were rewarded with the points for the high-value activities. This was intended to preserve the mystery element of the game design and encourage participants to engage throughout the study period. There were ten levels participants could advance to (starting from a “TV Viewer” to the highest level of a “Producer”) which are associated to the ranking of a TV production team in order to simulate a fictional game environment (see Table 3).

For the last two weeks of the study period, the participants with the incremental feature app were prompted again to update their iOS app for the integration of the social mechanics which allowed them to post their TV viewing information within the app community or their own Facebook wall. The participants were able to “like” or comment on any posting under “Your Social Feed” section of the app. Moreover, participants could also share their achievement when they earn badges or advance levels. These social sharing options were at the discretion of the participants, and they could choose to opt out of any of these features on a per-use basis.

3.2 Follow-up Study

A total of 222 participants recruited for the pilot subsequently downloaded the iOS app and registered for the study (90 out of 100 participants from the full feature app condition and 132 out of 150 participants from the incremental feature app condition). In an effort to gather in-depth insights on their user experience, a random selection of 22 participants was followed up for either one-on-one qualitative interviews or focus groups for 60-minutes. The rest of the pilot participants were sent an online survey to collect their user experience during the collection period.

4.0 Results

It is important to note on the outset that because the pilot used a non-probability sample, the results are not projectable to the broader population. The findings do, however, yield important insights on respondent engagement with game and social mechanics. Any references to “significant” differences in the Results section are used to highlight the key differences in attitudes and behaviors across the subgroups (using statistical significance testing) but, again, these results should not be construed as providing information generalizable to the broader population.

4.1 Game Mechanics: Badges

For the five possible badges that could be earned throughout the study period, the participants earned an average of 3.8 badges. Interestingly, participants age 40 years or older earned a greater average number of badges ($M=4.2$) than did those age 18-29 years ($M=4.0$) and age 30-39 years ($M=3.5$). The full feature app condition also earned a slightly higher average number of badges ($M=4.1$) than the incremental feature app condition ($M=3.7$). This latter finding may well be attributed to the shorter time period which the participants with the incremental feature app had compared to the other condition (4 weeks vs. 6 weeks).

The minimal differences on the average number of badges earned among the demographic characteristics are not unexpected given most of the badges can be easily earned if participants are compliant with their TV viewing entry (see Table 4). The ultimate goal of rewarding the badges is to reinforce positive behavior of the participants (i.e., ongoing compliance for entering the TV viewing information).

When asked about the participants’ reaction to the badges earned in the follow-up online survey, most participants were indifferent that they neither liked nor disliked the badges. In general, the younger cohort age 18-29 years loved/liked earning the badges almost twofold (54.3%) compared to the age 40 years or older cohort (27.6%). Likewise, Asian and Black participants (73.3% and 83.3% respectively) loved/liked receiving the badges far more than the White participants (39.4%) although the sample size is significantly smaller for both Asian and Black participants (see Table 5).

In assessment of participants’ engagement with the badges earned, most participants were also indifferent that the badges neither encouraged nor discouraged their participation. Women had a slightly more indifferent or negative attitude toward the effect of badges on their participant compared to the male participants (67.7% versus 49.2%). Conversely, 69.2% of the Hispanic participants were significantly more positive that the badges were either very or somewhat encouraging of their participation compared to the non-Hispanic participants (see Table 6).

4.2 Game Mechanics: Points & Levels

The points and levels can be earned throughout the study period as long as these features were enabled based on the conditions. Similar to the results to the badges, when asked about the participants' reaction to the points/levels earned in the online survey, most of the participants were indifferent that they neither liked nor disliked the points/levels (see Table 7). Though none of the results for points and levels were "significant" but it is consistent with the results observed from the badges which showed the younger cohort age 18-29 years and the ethnic participants loved/liked the points & levels the most and encouraged their participation (see Table 8).

4.3 Social Mechanics

The social mechanics designed for the whatcha Watchin'? app allowed the participants to do the following::

- Share TV viewing entry in the internal social feed within the app community as well as push to Facebook
- Share updates of badges earned or level advancement in the internal social feed and Facebook
- Like and comment on the postings in the internal social feed and view the number of likes and comments for each posting

Despite the significant app development effort to integrate the social mechanics for engagement, very few participants actually utilized the social sharing features. 19.4% "liked" at least one posting and 11.1% "commented" on at least one posting while 86.1% accessed the internal social feed mostly for reading the postings (see Table 9).

Not surprisingly, the younger cohorts as well as the ethnic minorities (i.e., Asian, Black and Hispanics) were more likely to use the internal social feed and its features than other participants. Women were also twice as likely to be active users of the social features (i.e., use these features every time they used the app or often) compared to men (see Table 10). With the exception of the gender differences for social engagement, these mechanics are most effective in terms of usage for the hard-to-reach cohorts related to age, race and Hispanic ethnicity.

5.0 Discussion

Given the considerable cost, time and effort spent on app design and development, these game and social mechanics should be considered for long-term panel research rather than point-in-time or one-off surveys. While traditional survey research methods focus on minimizing respondent burden such as reducing the time and effort required for the survey task, the engagement techniques used in this research are taking a different approach instead to further engage them with the data collection tool. There are promising results for engagement with the hard-to-reach cohorts but also challenges to effectively implement these techniques without influencing their behaviors as discussed below.

5.1 Game mechanics should drive competition and promote achievement

Consistent with the follow-up online survey results, most participants had mixed reviews about the badges based on the input gathered from the qualitative interviews. They felt the badges should be more meaningful, i.e., rewarding badges based on specific programs/genres watched or highlighting the significance of their TV viewing entry such as being the first viewer of the show within the app community. Some participants also expected more substantive reward upon earning the badge (though not necessarily

monetary incentive) such as offering a different experience compared to other participants who did not earn the badge. On the other hand, showing the gray-out badges they have yet to earn under “Your Status” did encourage them to participate so they can attempt to earn all the badges (though they would rather know what badges they could earn and how to earn them).

Even though the badges were intended to be instructional to reinforce positive behavior for specific survey tasks, the input gathered from the participants clearly indicated the badges also need to be meaningful to them otherwise earning these badges would be meaningless. Also, there were only five badges to earn for the duration of the data collection period (up to six weeks) and most participants earned most of these badges in the first couple of weeks once they became available, so it needs to be more evenly distributed throughout the data collection period for engagement. Some participants also desired to compete with others in earning these badges (especially with friends they can invite to participate) so they can share their status or achievement.

The game mechanics for points and levels were noticeably less effective with respondent engagement compared to the badges. Similar to the input about the badges, most participants wanted to learn more about how to earn points and advance to higher levels. Moreover, they wanted the points and levels to be presented on a leaderboard so they could see how they perform in comparison with other participants. A few participants also preferred to receive notification when they advance up a level rather than having to check their status on their own.

The development of the point system and levels was perhaps the most challenging aspect for the overall game design. The point system was scrutinized to ensure the points were not awarded in a way that would bias the TV viewing behavior yet there was also the competing interest to keep the mystery of how participants can earn points so they would go through a “discovery” process throughout the data collection period. Nonetheless, the participants felt disengaged with the points and levels because the lack of clarity on how to earn these points and absence of notification or reward once they advance to a higher level. It is apparent that the rules of the game must be clear to the participants in order to engage them as well as offering them a different experience once they advance to a higher level.

5.2 Social sharing is most effective for engagement when personal network is included in the app community

One of the primary reasons cited in the qualitative interviews for not using the internal social feed more often is the lack of familiarity with other participants. They were mostly interested in engaging with their own personal network so sharing in the internal social feed was not as meaningful to them. On the other hand, they felt the entries for the TV programs posted in the internal social feed did not influence their TV viewing behavior because they did not feel connected with these participants therefore they were not as interested with the programs others were watching. This is one of the major challenges of this research study: seeking a balance for the methodology to be unbiased while engaging respondents to these game or social features which are often in conflict with one another.

5.3 Game and social mechanics are most engaging for participants age 18-29 and ethnic minorities (i.e., Asian, Black and Hispanic)

Participants age 18-29 years as well as the ethnic minorities consistently reported more engaged with the game and social mechanics. They were more than twice as likely to love/like the badges, points/levels and use the social sharing features than the older or White/Non-Hispanic cohorts in some instances. Compared to the social mechanics, the game mechanics were better received by these cohorts and potentially will have greater impact on engagement given the social sharing features were not widely used by the participants.

In summary, there are two key considerations for survey researchers interested in using game or social mechanics for respondent engagement:

1. Evaluate the cost-benefit with integration of these mechanics, i.e., does the benefit of respondent engagement by employing these features outweigh the cost and time of app development involved for integration. Due to the scrutiny to ensure the points rewarded or the types of postings allowed to be shared within the internal social feed would not influence TV viewing behavior, there were fairly complex logic involved to implement these features which significantly increased development time and cost. It is recommended to carefully consider the features that would most engage the targeted group(s) for the survey and gather user feedback in advance to select the top ones that would make the most impact.
2. Analyze potential response bias of the game and social mechanics then determine whether the effect to the potential change of respondent behavior is significant. The irony is the effectiveness of these respondent engagement techniques tend to break the traditional survey research rules to remain unbiased, however, survey researchers should also examine the extent of the potential bias and understand how much can be tolerated for their research effort. Given the increasing popularity of game and social engagement with smartphone apps, the strict adherence to neutrality will likely need to be adapted in this digital era.

Further analyses will be conducted on survey performance by comparing the methodologies of TV viewing data collected from the paper TV viewing diary and electronic meter measurement with the Watcha Watchin'? app. Future application research will also expand to Android platform and the Web in order to maximize coverage of the sample members. Additionally, enhancements will be made to the game and social mechanics based on the lessons learned from this pilot to further improve respondent engagement of long-term panels.

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Table 1: Watcha Watchin'?: iPhone App Pilot: Study Design

Condition	Study Period	Sample Size	TV Viewing Collection	Game Mechanics	Social Mechanics
Incremental Feature App	Week 1-2	150	Enabled	Disabled	Disabled
	Week 3-4		Enabled	Enabled	Disabled
	Week 5-6		Enabled	Enabled	Enabled
Full Feature App	Week 1-6	100	Enabled	Enabled	Enabled

Table 2: Watcha Watchin'?: Game Mechanics: Badges

Badge	Message	Requirement
Head Start Badge	You received the head start badge for completing your first full TV viewing log-in!	Completion for first full TV viewing login (regardless of types of viewing)
Recall Badge	You received the recall badge for completing your first full past TV viewing log-in!	Completion for first full retrospective TV viewing login
Rebel Badge	You received the rebel badge for completing your first non-traditional (DVR/VCR, OnDemand or Online) TV	Completion for first full DVR/VCR or OnDemand or Online TV viewing login

	viewing log-in!	
Silver Cornerstone Society	We could not get the data without you! You received the silver cornerstone badge for completion of 5 days of TV viewing.	Completion of at least one viewing event on at least five out of the last seven days
Golden Cornerstone Society	We could not get the data without you! You received the golden cornerstone badge for completion of 10 days of TV viewing.	Completion of at least one viewing event on at least 10 out of the last 14 days

Table 3: Whatcha Watchin’? Game Mechanics: Levels

	Level	Description
0	TV Viewer	A TV watcher not involved in the TV industry.
1	Grip	The grips' responsibility is to build and maintain all the equipment that supports cameras.
2	Best Boy	The term Best Boy refers to the best electrician in the team led by the gaffer (chief lighting technician). Best Boys coordinate the team of lighting technicians, and deal with all the logistics and paperwork relating to the role.
3	Gaffer	A Gaffer in the motion picture industry is the head of the electrical department, responsible for the execution (and sometimes the design) of the lighting plan for a production.
4	Fixer	A Fixer provides logistical support, facilitates permits, custom, location, talent, crews, equipment, accommodation and transportation for filmmakers who wish to conduct filming abroad.
5	Story Assistant	The Story Assistant will refer to the lead editor on a particular show. They will assist in tracking, developing, and conveying the story of a reality show.
6	Editor	Film Editors assemble footage of feature films, television shows, documentaries, and industrials into a seamless end product.
7	Assistant Director (1st)	The First Assistant Director (AD) is the director's right hand person, taking responsibility for a number of important practicalities so that the director is free to concentrate on the creative process.
8	Director	The Director is the driving creative force in a film's production, and acts as the crucial link between the production, technical and creative teams. Directors are responsible for creatively translating the film's written script into actual images and sounds on the screen.
9	Show Runner	A Show Runner is a television industry term referring to the person who is responsible for the day-to-day operation of a television series (although such persons generally are credited as an executive producer).
10	Producer	A Producer sets the situation for the production of a television show or movie. A film Producer initiates, coordinates, supervises and controls all aspects of a production, from fundraising and hiring key personnel, to arranging for distributors. The Producer sees the project through to the end, from development to completion.

Table 4: Mean Number of Badges Earned by Demographic Characteristics

Respondent Characteristics	(n)	Mean Number Badges	Std. Dev.	Sig.
Total	205	3.8	1.36	--
Sex				.923
Male	101	3.9	1.44	
Female	101	3.9	1.23	
Age				.014
18-29	72	4.0	1.21	
30-39	79	3.5	1.48	
40+	50	4.2	1.20	
Race				.923
White	154	3.9	1.35	
Black	9	3.9	1.17	
Asian	33	3.8	1.29	
Hispanic				.086
Yes	21	3.4	1.56	
No	181	3.9	1.31	
Test Group				.039
Full	86	4.1	1.03	
Incremental	119	3.7	1.54	

Note: Based on number of badges (5 maximum) earned during data collection period.

Table 5: Respondent Reaction for Badges Earned by Demographic Characteristics

Respondent Characteristics	(n)	What did you think about receiving badges in the app?		
		Love / Liked	Neither / Disliked / Hated*	Sig.
Total	121	45.5	54.5	---
Sex				.425
Male	59	49.2	50.8	
Female	62	41.9	58.1	
Age				.066
18-29	46	54.3	45.7	
30-39	42	47.6	52.4	
40+	29	27.6	72.4	
Race				.007
White	94	39.4	60.6	
Black	6	83.3	16.7	
Asian	15	73.3	26.7	
Hispanic				.540
Yes	13	53.8	46.2	
No	107	44.9	55.1	
Test Group				.919
Full	50	46.0	54.0	
Incremental	71	45.1	54.9	

Table 6: Respondent Engagement on Badge & Participation by Demographic Characteristics

Respondent Characteristics	(n)	To what extent did the badges encourage your participation in the app?		
		Very/Somewhat Encouraging	Neither/Somewhat/Very Discouraging*	Sig.
Total	121	41.3	58.7	---
Sex				.037
Male	59	50.8	49.2	
Female	62	32.3	67.7	
Age				.202
18-29	46	47.8	52.2	
30-39	42	42.9	57.1	
40+	29	27.6	72.4	
Race				.224
White	94	37.2	62.8	
Black	6	50.0	50.0	
Asian	15	60.0	40.0	
Hispanic				.033
Yes	13	69.2	30.8	
No	107	38.3	61.7	
Test Group				.899
Full	50	42.0	58.0	
Incremental	71	40.8	59.2	

Table 7: Respondent Reaction for Points/Levels Earned by Demographic Characteristics

Respondent Characteristics	(n)	What did you think about receiving point/levels in the app?		Sig.
		Love / Liked	Neither / Disliked / Hated*	
Total	127	40.9	59.1	---
Sex				
Male	62	40.3	59.7	
Female	65	41.5	58.5	
Age				.274
18-29	50	48.0	52.0	
30-39	43	39.5	60.5	
40+	30	30.0	70.0	
Race				.327
White	99	37.4	62.6	
Black	6	50.0	50.0	
Asian	16	56.3	43.8	
Hispanic				.485
Yes	14	50.0	50.0	
No	112	40.2	29.8	
Test Group				.531
Full	52	44.2	55.8	
Incremental	75	38.7	61.3	

Table 8: Respondent Engagement on Points/Levels & Participation by Demographic Characteristics

Respondent Characteristics	(n)	To what extent did the points/levels encourage your participation in the app?		
		Very/Somewhat Encouraging	Neither/Somewhat/Very Discouraging	Sig.
Total	104	44.2	55.8	---
Sex				.727
Male	50	46.0	54.0	
Female	54	42.6	57.4	
Age				.834
18-29	40	47.5	52.5	
30-39	35	45.7	54.3	
40+	25	40.0	60.0	
Race				.368
White	80	40.0	60.0	
Black	5	60.0	40.0	
Asian	14	57.1	42.9	
Hispanic				.306
Yes	10	60.0	40.0	
No	93	43.0	57.0	
Test Group				.662
Full	45	46.7	53.3	
Incremental	59	42.4	57.6	

Table 9: Features of App Social Feed Used – SNS Users Only

Features Used	Percent*
Push Comments to Facebook	5.5
Recording Comments	11.1
Recording Likes	19.4
Reading Feed Entries	86.1

(n = 72) *Note: May sum to >100% as multiple entries allowed.

Question text: What features of the Social Feed did you use? (check all that apply)

Table 10: Use App Internal Social Feed by Demographic Characteristics

Respondent Characteristics	(n)	Did you use the Social Feed feature in the app?			
		Every Time / Often	Rarely	Never	Sig.
Total	127	23.6	33.1	43.3	---
Sex					.054
Male	62	16.1	30.6	53.2	
Female	65	30.8	35.4	33.8	
Age					.043
18-29	50	26.0	40.0	34.0	
30-39	43	30.2	25.6	44.2	
40+	30	6.7	30.0	63.3	
Race					.022
White	99	17.2	35.4	47.5	
Black	6	50.0	33.3	16.7	
Asian	16	50.0	18.8	31.3	
Hispanic					.196
Yes	14	42.9	28.6	28.5	
No	112	21.4	33.9	44.6	
Test Group					.161
Full	52	30.8	25.0	44.2	
Incremental	72	18.7	38.7	42.7	