Effects of Virtual Group Size on Conformity.

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Abstract

Conformity research in the past has relied on the use of confederates to examine conformity. Modern technology, however, has eliminated the need to involve confederates. Computers, and in particular, online social networks, can be used instead of live confederates with only the idea of other people being needed to pull off a conformity study. While the use of technology is nothing new, the use of social networking in conformity research is limited (Egebark & Ekström, 2011). The current study explores how this phenomenon can be applied to the online world. Twenty-eight Laurentian students were given informed consent and received bonus marks for participation at their Professors' discretion. All participants completed four tasks on a specially designed computer program created by Professor Stan Koren. Once complete, participants were given a full debriefing which explained the true nature of the study and offered to have their data removed if they wished. Results indicate conformity can happen even in the absence of other people, with minimal stimuli necessary to elicit a conforming response. Results also show informational (desire to be right) conformity dominates normative (being liked) conformity. Limitations, implications and future directions are discussed.

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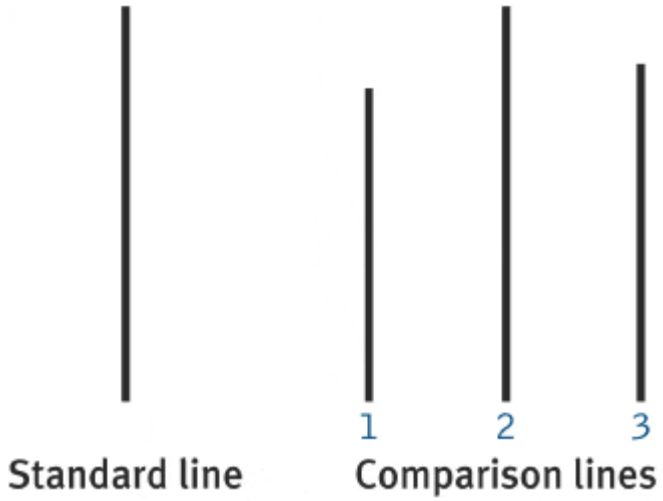
Effects of Virtual Group Size on Conformity.

Solomon Asch was one of the first people to study conformity. He was curious about the effects of group pressure on individuals. He set out to study this phenomenon. In his experiment participants were asked to take part in a simple line match (Asch, 1956). The line match is a task where participants are shown a diagram of a line and must pick the line that is the same size from a series of other lines (See Figure 1).

Figure 1



(Asch, 1956)

The task was designed to be simple, so that the correct answer could be easily seen (Asch, 1956). Of the eight people, seven were confederates and would sometimes give the incorrect answers. All answers were given out loud with the participant going second last (Asch, 1956). It was found that participants conformed to the group at a steady rate throughout the experiment (Asch, 1956).

Conformity is when people copy what other people are doing (Cialdini & Goldstein, 2004). There are two main types of conformity: normative and informational. Normative conformity is perhaps the most familiar, and it plays a part in our social lives every day. Normative conformity is best described as going along with the crowd and seeking the approval of others in hopes of being accepted (Cialdini & Goldstein, 2004). To gain the acceptance and approval of others, the easiest way is to get

them to like you. One quick way to do this is to show that you are part of their group. On the other hand, informational conformity is when individuals are driven by a desire to be correct (Cialdini & Goldstein, 2004). In this case people are conforming to others under the assumption that the majority knows something the individual does not. In other words, they're going along with the group not to be liked, but in order to be right (Cialdini & Goldstein, 2004). In situations where the answer or objective isn't clear people tend to rely on others more (Cialdini & Goldstein, 2004).

The thing about Asch's study is that confederates had to meet with the experimenter in advance and be trained because confederates were given very specific instructions on how to respond (Asch, 1956). For example confederates could not react with surprise or disbelief to what the participant said and had to remain neutral (Asch, 1956). They also could not interfere with the participant in any way (Asch, 1956). This could be quite time consuming because seven confederates had to be trained in this very specific way.

Richard Crutchfield created an electric device that could be used to simulate confederate responses, which was actually controlled by the experimenter (Crutchfield, 1953). This allowed him to test five people simultaneously instead of one. Each of these five subjects were lead to believe that the others were giving the answer, but in reality it was all done on this device (Crutchfield, 1953). While each participant believed that the others were answering the questions, really none of the participants' real answers were shown (Crutchfield, 1953). The participants saw what the experimenter wanted them to see by showing them on using this device (Crutchfield, 1953).

Participants would be asked some questions and they would indicate their choice by flipping a switch on the apparatus under A,B,C,D, or E. Participants were also able to see the answers of the 'other' (again the process is entirely controlled by the experimenter) people in the room with them (Crutchfield, 1953). Another important aspect of Crutchfield's study is that the order that individuals participated would vary. Sometimes the participant would go first other times they would go second,

and so on until they eventually became the last to go (Crutchfield, 1953).

The tasks of the study ranged from simple (matters of fact) to ambiguous. For the simple fact based questions (number sequences, standard mental tasks) conformity was at thirty percent, where the more ambiguous tasks were at seventy-nine percent conformity (Crutchfield, 1953). For comparison in the control group (where participants individually filled out the questions on a piece of paper without the apparatus) conformity was at zero percent.

Normative and Informational

As was previously discussed, there are two main types of conformity: normative and informational. A study done by Cambell and Fairey attempts to examine both (1989). It is hypothesized that the fraction size for informational conformity would be smaller, since the individual would be more focused on being right (Cambell & Fairey, 1989). For normative conformity, a larger fraction size is needed to influence an individual (Cambell & Fairey, 1989). The idea is that it will take more people to sway an individual when the answer is clearly wrong leading the individual to conform simply out of social pressure (Cambell & Fairey, 1989). In informational conformity, the answer is unknown to the individual, therefore it will take less people to cause influence, and the individual will conform out of their desire to be right (Cambell & Fairey, 1989).

Participants were put into groups of four and given a dot discrimination task. The task required participants to observe an images of dots on a microcomputer and guess how many dots there were (Cambell & Fairey, 1989). There were two images of dots shown and participants had to guess whether they were the same or not (Cambell & Fairey, 1989). The answerer ranged from 'definitely the same' to 'very different'. All ‘confederate’ responses were set to 'definitely the same'.

All participants went last and were cued by the computer (Cambell & Fairey, 1989). Before providing their answers participants were informed about the decisions of one another (small fraction) or of three other people (large fraction). The number of dots ranged from Small (4,7), Medium (12, 15,

18) , to Large (23, 26, 29). Responses were generated by a computer which served as an updated Crutchfield apparatus (Cambell & Fairey, 1989). The results back up the hypotheses and a main effect was found for fraction size.

Dytell questioned how past studies research the participants and whether or not they could see and had access to the tasks (1979). For her study she had participants make judgements about whether they would see a play or not, based on nothing but the tape recordings of what other people thought (Dytell, 1979). Dytell called this the 'black box' as participants knew nothing of the play and so their only knowledge came from these people who discussed the play. Participants were given the recordings and asked to rate how good they thought the play was (Dytell, 1979).

Also explored is what has been called the 'ratio' of agreement. In the past, conformity was done with a unanimous group and noticed that as soon as another person voiced a different option, conformity levels decreased (Dytell, 1979). Dytell wanted to see how not having a unanimous group consensus would affect participants. This is in order to better understand what makes conformity decrease once another individual speaks out against the group (Dytell, 1979). The theory is that it allows the participant to re-evaluate reality and therefore build their certainty of the correct answer (Dytell, 1979). The results show that a bigger ratio leads to greater conformity (Dytell, 1979).

In Rizzo's study participants were given a task to guess the number of beeps they heard. There were three levels of experimenter-designed responses: High cue, Low cue and Correct cue (Rizzo, 2010). High cue responses are when the experimenter-designated answer is larger than the actual number of beeps, for example if there were seven beeps the response would be higher than seven. The Low cue response is when the experimenter-designed answer is lower than the actual number of beeps. Lastly the Correct cue is when the experimenter-designed response match the actual number of beeps. The results indicate an interaction between the cue responses and group size (Rizzo, 2010).

Curtis and Desforges attempted to find out if choice availability would impact conformity (2013). Participants were asked to locate places on a map. Depending on the condition they were in they could have three, ten, or seventeen options (Curtis & Desforges, 2013). Their results indicate that conformity is more likely when there are fewer options. The reason for this is because with more options present, individuals are not as pressured to follow the group because there are more choices for them to choose from (Curtis & Desforges, 2013).

Social media

With the introduction of social media there has been some curiosity as to how conformity operates online. Egebark and Ekström decided to use Facebook as a basis for their study (2011). During a seven month period they had five Facebook account users update their profiles with 'neutral' updates. Theses updates would not elicit a strong response, for example “I love summer” would be used. The updates would either be liked by a friend, by one person or by three people (Egebark & Ekström, 2011). It was found that more people were likely to “like” updates that had been liked by a friend or by three other people (Egebark &Ekström, 2011).

There has also been some studies in relation to how online marketing uses the power of conformity for their own means. Word of mouth can be a very influential part of marketing because it allows companies to spread the word of their product without advertising (JungKun & Feinberg, 2010). Surveys find that virtual communities can be a great source of influence over people when determining what products to buy (JungKun & Feinberg, 2010).

CBC Marketplace explored how this can become a bad thing. Companies are getting wise to the fact that as more of the world goes online they have to adapt to this in order to survive (Greene, 2014). Ratings and reviews are the heart of the internet, so they need to have good reviews in order to make money (Greene, 2014). Where this gets problematic is that companies are hiring people to give them

good reviews. Companies can also buy Twitter followers and Facebook likes, two of the major things people online look for when deciding the worth of something (Greene, 2014).

Present study

Purpose

The current study hopes to take a familiar psychological and social concept and introduce it to the online world. Today, people often interact with each other online and so it is necessary to see how social phenomena function online. The goal is to see how conformity presents itself in online social networking.

Hypotheses

Hypothesis one Mean conformity will be higher in the 90/10 condition vs other ratios. Overall it is believed that participants will conform more when more people favour a particular answer. This has been seen in previous studies as explained above.

Hypothesis two: Mean conformity will be higher in informational conformity. This is because more people will conform within the product reviews, because, in theory, they are products that students would not be familiar with and so would rely on the knowledge of the group.

Hypothesis three 'Like' mean will be higher than "true/false" and "would buy". The thinking is that people can/will 'like' things even if they know the answer is wrong because there is no harm in just liking something. Answering a question wrong however would make the individual look foolish. In the case of the products, buying products would come with a financial cost but liking the product has no such cost. In short there is opinion (liking) which has no risk but the action involves some perceived risk. This would hopefully allow for the researcher to get a better sense of the different strengths of each type of conformity.

Ethical consideration

This study was approved by the psychological Ethics department at Laurentian university. All information regarding participants has been kept confidential and anonymous. Due to the nature of the study some deception was necessary. Participants were unaware that this was a conformity study; they were told the study was on 'Online Behaviour'. Afterwards participants were given a debriefing sheet (Appendix E)

Participants

28 Laurentian students were recruited for this study. There were no age or gender restrictions, all students were welcome. It should be noted though that it consisted of mostly females and few males. The age range is estimated to be between 20 and 30. Students were recruited from classes (mostly first year psychology and statistics) who then sent an email to the research if they were interested in participating. Posters were also put up at various points in the school to reach more of the student population.

Procedure

Participants signed the consent form (Appendix D and were asked to take a seat. Once seated, they would be logged into a laptop where they would be introduced to a program. This program was specially designed by Professor Stan Koren for this study. The program was designed to look like something someone would see on a social media website. Students were asked to follow the instructions provided on the program. In total there are thirty tasks, fifteen statements and fifteen product reviews. The statements were pilot tested to ensure they were easy to answer true or false questions.

There are several tasks the participants were to complete. The first was to vote on the answer to a question by clicking ‘like’ or ‘dislike’. This was followed by product reviews which the participant also voted if they liked or not. Afterwards the same questions appeared and the students answered true

or false. Lastly the products reappear and the participants were asked if they would be willing to buy the product or not. This experiment was only fifteen minutes long.

For each task there was a bar chart that would indicate how many people like or dislike (depending on the task). These are completely faked and no real people other than the participant were present. Each product and statements are given a set 'ratio' of people which represents the group size. The three ratios are 90/10, 75/25, and 55/45. Once the participants had completed the tasks, they were given a debriefing sheet with further details on the study. They were thanked and any questions were answered.

Results

All results were analyzed on SPSS version 22 on a PC laptop. Due to most of the correct statements falling in the 55/45 ratio the decision was made to have it absent in most of the analysis save for the main ANOVA so as to not negatively affect the results. Below is a table of the descriptive statistics for the Anova within-subjects- 55/45 ratio absent. The main ANOVA can be seen in Appendix F along with the other statistics.

Descriptive Statistics

Descriptive Statistics

	Mean	Std. Deviation	N
sl75	.1286	.23231	28
sl90	.2000	.30307	28
pl75	.5500	.20817	28
pl90	.6571	.22349	28
stf75	.0143	.05245	28
stf90	.0286	.07127	28
pwb75	.3571	.22678	28
pwb90	.4714	.23860	28

Note: sl=liking statements , pl=liking product , stf=answering true/false, pwb=buy/not buy product

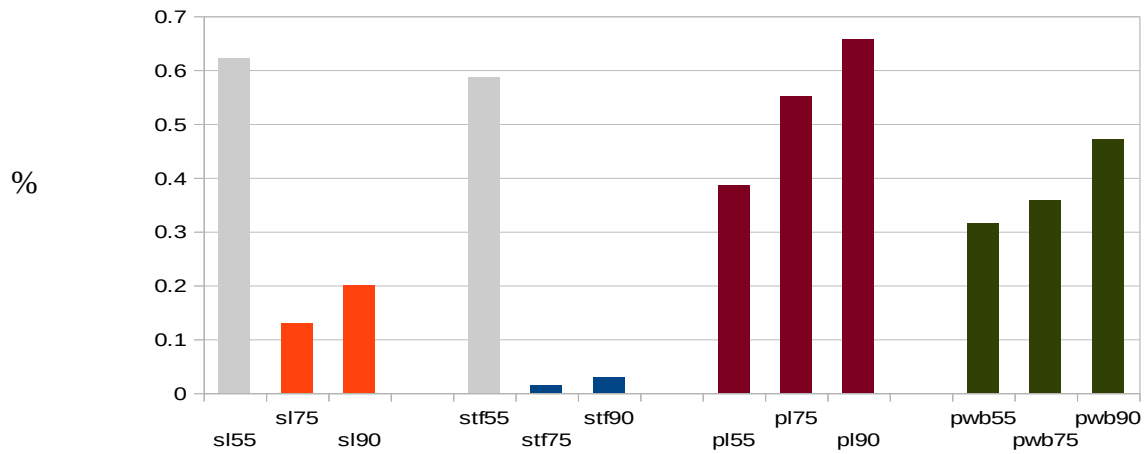
Hypotheses

Hypothesis One.

It was Hypothesized that 90/10 ratio ("group size") would have the highest mean of conformity. A within-subjects ANOVA using the statistics shown above was performed. Results using this ANOVA corroborate this hypothesis. $F(1,27)=17.3, p<.05$, eta= .39.

However, when looking at the graph below (Figure 2), it can be seen that this is not the case for the true or false trials (stf).

Figure 2
Results from all four trials



As shown in Figure 2, it suggests that there is an interaction where in regards to statements, the 90/10 ratio is only higher for the 'liking' task. This indicates that participants are aware of what the correct statements are and are not influenced to conform during the true/false task.

Hypothesis Two.

It was thought that informational conformity (products) would have a higher mean then normative conformity (statements). Past studies show that our desire to be correct can be a powerful drive to conform. The results support this finding $F(1,27)=86.9, p<.05$, eta=.76. This seems to imply that being seen as correct is more important than just being part of the group in order to fit in. In the

age where information is easily accessible it is interesting that relying on input from others is still a vital part of processing information.

Hypothesis Three.

Though it does not appear to come up in conformity research, weighing the risks of things is something people do daily. By including tasks that involve little risk and others that have some risk it was believed it would be possible to see when people would conform the most. “Liking” was thought to have no risk and overall would have a higher conforming rate. This was supported $F(1,27)=20.2$, $p<.05$, eta=.42.

Discussion

Inspired by how much social media and the internet has changed the world, this study took a well- known social phenomenon and gave it a modern twist. The results were expected but still no less surprising. It seems that people do not even need to be in the room for conformity to take place. The only thing participants had in the way of a social group were bar charts representing fictional people.

Another thing that was particularly interesting was how powerful informational conformity was. This is something that can have huge implications for marketing, as things like rating reviews and 'liking' continue to be popular. The internet makes it easy to reach people and share opinions about different things, including products. Marketers are already using this to their advantage and often fake their twitter followers (among other things) to attract more attention (Greene, 2014).

Reaction time was also looked at however it was a last minute addition. The results do show faster reaction time for the products over the statements however this is likely due to the length of the product reviews. In the future a researcher could keep all tasks the same length in order to get a more accurate result.

Although the third hypothesis was supported, due to a lack of past research it is hard to say for sure what this result means. It is something that could potentially be explored in future research.

Perhaps some tangible item like monopoly money could be used to add risk to certain tasks to see if it affects how much people conform.

Limitations

A major limitation to this study is order effects. The study was only fifteen minutes in length with the trials going in this order> liking statements, liking products, true/false, and buy/not buy. It was thought that this would be enough to limit the danger of order effects. However it is a possibility and is something a future researcher should consider. Another limitation is having all the correct statements fall into one ratio ("group size"). Researchers should also consider making sure correct statements are equally spread-out among trials. Other future avenues for research could be looking at gender differences or personality characteristics.

Conclusion

This study shows that despite the new technology available conformity has remained a powerful social force. If anything the internet has made it stronger and more influential. With the click of a button thousands of people can see what other people are doing online. People can influence each-other with out even being in the same room (or country). Marketers have already taken advantage of this and use this to sell their products. However, this is only one study, due to limited research it is hard to say just what is going on. It is hopeful that more studies will be done to explore the effects conformity has on online social media.

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Appendix A -1

Recruitment script

Hi, my name is Melanie and I'm doing my undergraduate thesis on Online behavior. My supervisor is Prof. Kozinski.

In my study participants will complete some tasks on an online program designed by prof. Koren. Some of the tasks include rating products and answering questions. The whole process should take only fifteen minutes.

If you're interested in taking part in this study please email me at ms_spreadbury@laurentian.ca

Any questions?

Appendix A -2

Recruitment poster

Hey you!

I know you're on Facebook during class. Want to put it to good use?
Why not take part in an online study and turn those likes into bonus points.

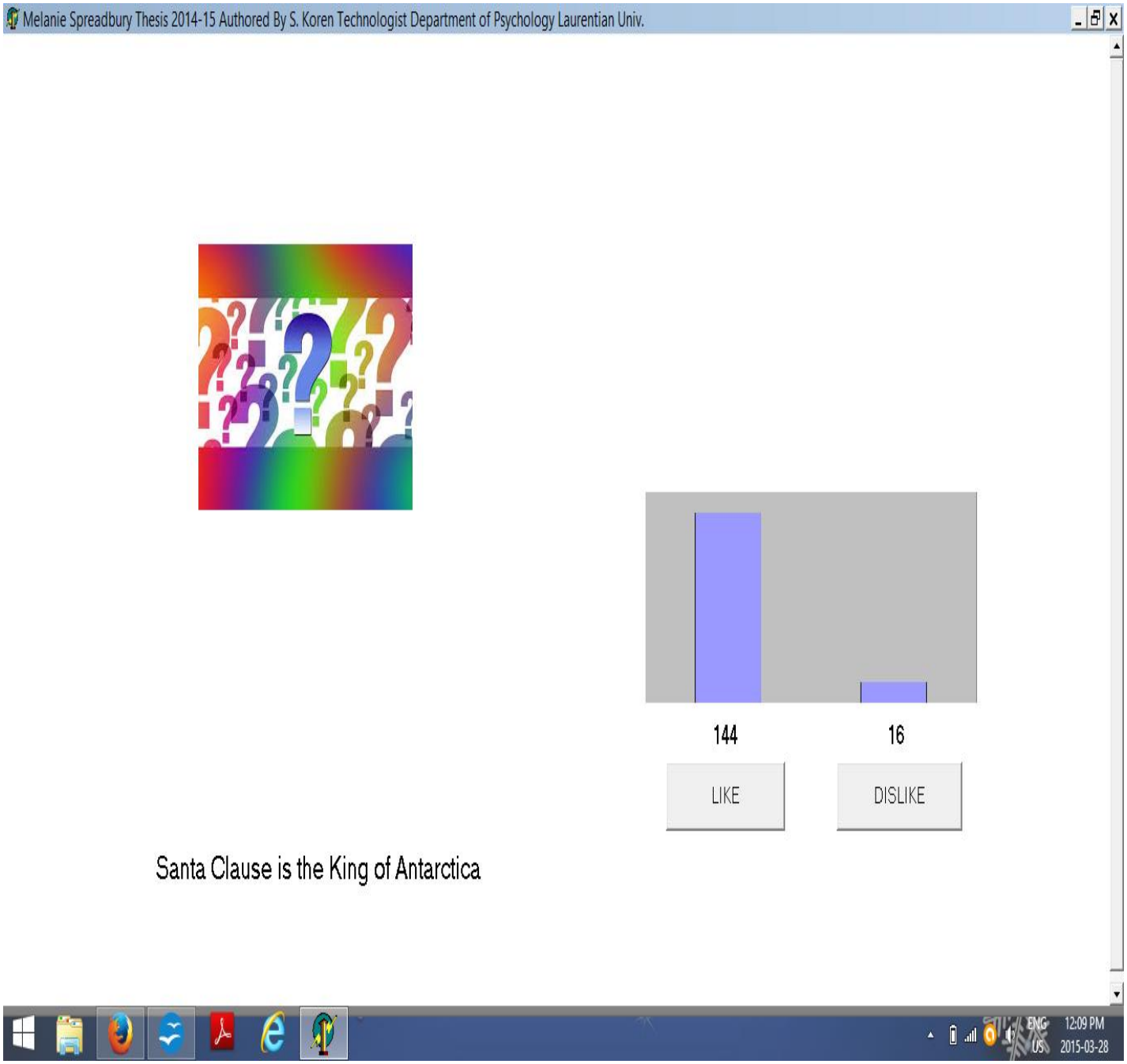
Study Title: Online Behavior
Researcher Name: Melanie Spreadbury
Researcher e-mail address: ms_spreadbury@lu.ca
Brief Description of study: Participants will be asked to rate reviews and rate statements as well as answer some true or false questions.
Time Required: 15 mins
Restrictions to participation: Everyone welcome

If you are interested in the study, please contact researcher. Also check with professors about bonus points for participation.
If you are unable to attend your scheduled appointment, please contact the researcher as soon as possible beforehand to reschedule.

This research study was approved
by the Psychology Department Research Ethics Board.
If you have any concerns regarding the ethics of this study,
please contact the Ethics Committee Chair.

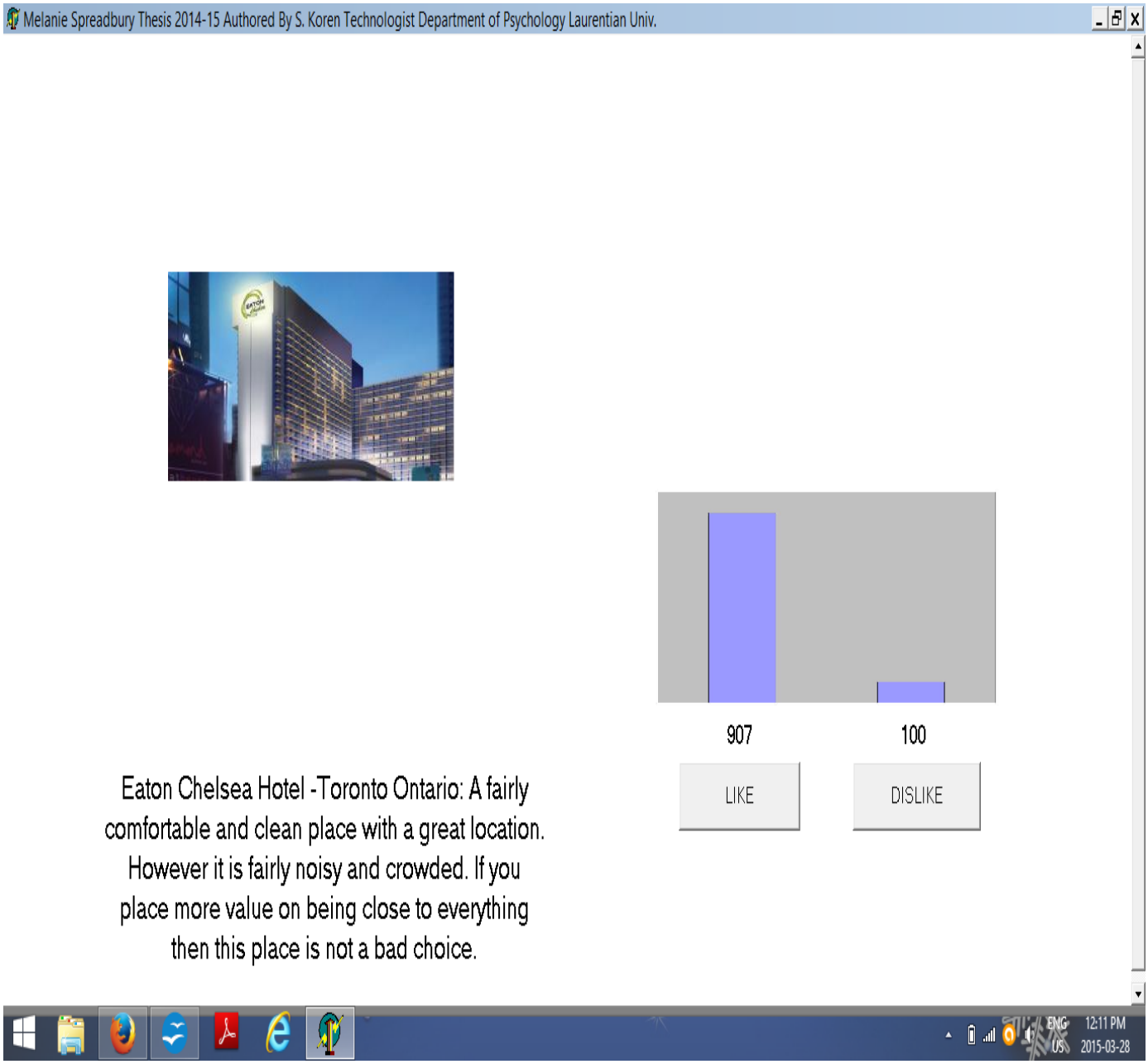
Appendix B-1

Screen shots of program: Sample of statement review



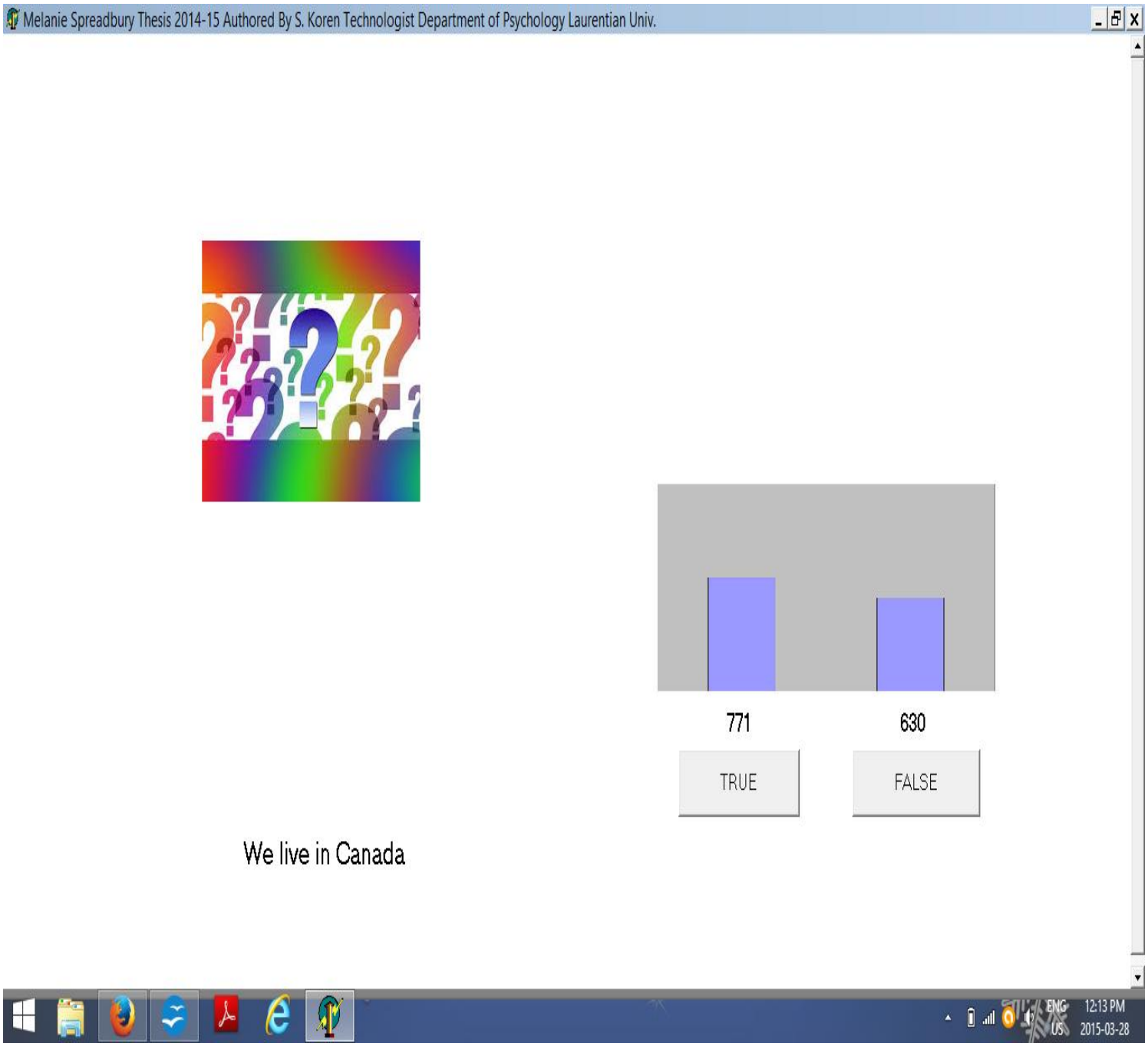
Appendix B-2

Sample of Product review



Appendix B-3

Sample of true/false Q's



Appendix B-4

Sample product buy/not buy

Appendix C-1

full list of statements/products

Social conformity questions:

1, Lockerby is a Canadian Province, 55 , 45

2, 2X2 is 8, 75 , 25

3, Santa Clause is the King of Antarctica, 90 , 10

4, We live in Canada, 55 , 45

5, We live on the planet mars, 75 , 25

6, 4+4 is 20, 90 , 10

7, Steven Harper is an Olympic swimmer, 55 , 45

8, 5+5 is 100, 75 ,25

9, Little Red Riding Hood is being stalked by the big bad chicken, 90 , 10

10, 1+1 is 2, 55 , 45

11, Adolf Hitler was king of Africa, 75 , 25

12, It's the year 1935, 90 , 10

13, Mixing the colours blue and yellow make green, 55,45

14, Oceans are filled with cupcakes, 75, 25

15, Christmas is on December 13, 90, 10

Informational conformity: Products

1, Snow Joe 324E: This snow blower does a pretty decent job of clearing the driveway and is quite powerful for a hand held device. It's a little hard control though, and the snow seems to blow in random directions., 55 , 45

2, Adega Restaurant Toronto: The seafood risotto was not worth the price. There was barely any lobster and the risotto was bland tasting. Other then the food everything else was quite nice. Very friendly and helpful waitstaff. The music and atmosphere was lovely, if only the food quality matched everything else., 75 , 25

Appendix C-2

Q's/products continued

3, Bungalow 354 Alcolquin. Large living space and mobility. This home offers a quiet and comfortable place to live. However the rooms are small and the building is expensive. If the price and tiny rooms don't bother you then this house might be an ok pick., 90 , 10

4, Samsung Chromebook: Fast and efficient However it does not seem to work with wireless printers. Also the screen is so small making it difficult to see. , 55 , 45

5, 2015 Chrysler 200: A safe car with all wheel drive however the gas mileage is not so great and the backseat is really cramped. If your looking for safety then this car is excellent, just don't use the backseat., 75 , 25

6, Disney port Orleans resort: Small and comfortable with a boat transport to downtown. But the food was terrible and the interior of the building looked liked plastic. It's a pretty ok price and if you plan on spending more time at the park then the hotel then it is probably worth it., 90 , 10

7, Toshiba 32L1400U TV: The TV isn't that bad. The picture and sound is reasonable quality. The down side is there is no channel preview and the remote control is awkward to use as it's so flimsy., 55 , 45

8, 4 Night Western Caribbean (Ft. Lauderdale Roundtrip): The ship itself was really nice and there was a lot to see and do. The service on the other hand, was not what one would expect. The waitstaff was rude and the food took forever., 75 , 25

9, Eaton Chelsea Hotel -Toronto, Ontario: A fairly comfortable and clean place with a great location. However it is fairly noisy and crowded. If you place more value on being close to everything then this place is not a bad choice., 90 , 10

10, Sultan Havberg: An affordable mattress that offers decent support. Also very light and easy to move. However it's very firm and can be uncomfortable., 55 , 45

11, Westjet: Service was good and the food was pretty tasty. The price was a bit more then I bargained for. I had to upgrade my seat because the current one offered no leg room. After paying an extra 42 dollars for the upgraded seat, it was a disappointment to find it was hardly much bigger then the seat I just left., 75 , 25

12, Toyota Prius 2014: A fuel efficient hybrid with lots of cargo space but is very noisy and has poor acceleration., 90 , 10

13, Condo 890 Paris street: The condo is great for first time home owners as it allows the freedom of owning a home but also the benefits of an apartment(not having to worry about maintenance). The problem is that like an apartment there is no privacy. The building it's self is pretty run down and a bit pricy., 55, 45

14, Samsung UN105S9 Curved 105-Inch 4K Ultra HD 120Hz 3D Smart LED TV: Nice picture and the tv is huge...so if you have room for it then you probably get a good picture. Only problem is that you will probably have to sell your kidneys and take out a mortgage to buy this thing., 75, 25

15, Garmin nüvi 2597LMT 5-Inch Bluetooth Portable Vehicle GPS: Very accurate and easy to use. Gives great and easy to follow directions. Only problem is the mispronunciation of some of the street names., 90, 10

Appendix D

Consent form

Online behaviour
Melanie Spreadbury
Laurentian University
Undergraduate Psychology Thesis

My name is Melanie, I'm an undergraduate Psychology student here at Laurentian. I am doing research for my undergraduate Thesis under the guidance of Prof. Kosinsky. The purpose of this study is to look at online behaviour.

The length of the study is roughly fifteen minutes. The participants will complete some tasks on a specially designed computer software (designed by Prof Koren).

The tasks include voting on answers to questions and voting on product reviews. Participants would indicate their answer by indicating like or dislike. Other tasks include answering true or false questions and indicating whether they would buy a certain product or not.
.

Participation in this research is completely voluntary. You may choose to withdraw at anytime with no penalty.

If you have any questions email me at ms_spreadbury@laurentian.ca
Or contact the Psych Ethics committee.

Signature: _____ Date: _____

Appendix E

Debriefing form

Debriefing sheet

The purpose of this study is to look at conformity. Conformity is a social phenomenon in which individuals go along with the majority. In this study the concept of conformity was taken to the online world in order to see how conformity works online.

There are two types of conformity this study was looking at. Social conformity is what typically comes to mind when people think of conformity. This is when individuals go along with the majority in order to be part of the group despite what they believe. For example, answering a question incorrectly because everyone else is. Informational conformity is when an individual conforms because they think the majority knows something they don't. For example an individual runs away because they see others running away. In this case the individual would not know why people are running but assume there is something dangerous and so would run as well.

This study has important implications for social media and online marketing. This study also serves to update current research by taking a well known social-psycological phenomenon and making it more reflective of current social trends.

If you have any concerns or questions please email me at : ms_spreadbury@laurentian.ca

Or contact the Psych Ethics committee.

A reminder that participation is voluntary and if you wish you may withdraw.

It is however asked that individuals refrain from discussing this study with others so as to not corrupt my results.

Thanks for your participation.

Appendix F

Statistics Output> Main Anova of all responses

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
RESP1	28	0	1	.14	.356
RESP2	28	0	1	.07	.262
RESP3	28	0	1	.36	.488
RESP4	28	0	1	.96	.189
RESP5	28	0	1	.14	.356
RESP6	28	0	1	.07	.262
RESP7	28	0	1	.14	.356
RESP8	28	0	1	.07	.262
RESP9	28	0	1	.29	.460
RESP10	28	0	1	.96	.189
RESP11	28	0	1	.07	.262
RESP12	28	0	1	.14	.356
RESP13	28	0	1	.89	.315
RESP14	28	0	1	.29	.460
RESP15	28	0	1	.14	.356
RESP16	28	0	1	.46	.508
RESP17	28	0	1	.64	.488
RESP18	28	0	1	.50	.509
RESP19	28	0	1	.18	.390
RESP20	28	0	1	.54	.508
RESP21	28	0	1	.50	.509
RESP22	28	0	1	.54	.508
RESP23	28	0	1	.36	.488
RESP24	28	0	1	.89	.315
RESP25	28	0	1	.36	.488
RESP26	28	0	1	.61	.497
RESP27	28	0	1	.57	.504
RESP28	28	0	1	.39	.497
RESP29	28	0	1	.61	.497
RESP30	28	0	1	.82	.390
RESP31	28	0	1	.04	.189
RESP32	28	0	0	.00	.000
RESP33	28	0	1	.07	.262
RESP34	28	0	1	.96	.189
RESP35	28	0	0	.00	.000

RESP36	28	0	0	.00	.000
RESP37	28	0	1	.04	.189
RESP38	28	0	0	.00	.000
RESP39	28	0	1	.04	.189
RESP40	28	1	1	1.00	.000
RESP41	28	0	1	.04	.189
RESP42	28	0	0	.00	.000
RESP43	28	0	1	.89	.315
RESP44	28	0	1	.04	.189
RESP45	28	0	1	.04	.189
RESP46	28	0	1	.25	.441
RESP47	28	0	1	.32	.476
RESP48	28	0	1	.21	.418
RESP49	28	0	1	.21	.418
RESP50	28	0	1	.32	.476
RESP51	28	0	1	.36	.488
RESP52	28	0	1	.46	.508
RESP53	28	0	1	.32	.476
RESP54	28	0	1	.68	.476
RESP55	28	0	1	.32	.476
RESP56	28	0	1	.43	.504
RESP57	28	0	1	.36	.488
RESP58	28	0	1	.32	.476
RESP59	28	0	1	.39	.497
RESP60	28	0	1	.75	.441
Valid N (listwise)	28				

Comment: likeact= review vs doing something(answering statement or indication whether would buy)

qp= statement vs product

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
likeact	Pillai's Trace	.403	18.217[b]	1.000	27.000	.000	.403
	Wilks' Lambda	.597	18.217[b]	1.000	27.000	.000	.403
	Hotelling's Trace	.675	18.217[b]	1.000	27.000	.000	.403
	Roy's Largest Root	.675	18.217[b]	1.000	27.000	.000	.403
qp	Pillai's Trace	.457	22.743[b]	1.000	27.000	.000	.457
	Wilks' Lambda	.543	22.743[b]	1.000	27.000	.000	.457

	Hotelling's Trace	.842	22.743[b]	1.000	27.000	.000	.457
	Roy's Largest Root	.842	22.743[b]	1.000	27.000	.000	.457
trial	Pillai's Trace	.646	10.966[b]	4.000	24.000	.000	.646
	Wilks' Lambda	.354	10.966[b]	4.000	24.000	.000	.646
	Hotelling's Trace	1.828	10.966[b]	4.000	24.000	.000	.646
	Roy's Largest Root	1.828	10.966[b]	4.000	24.000	.000	.646
ratio	Pillai's Trace	.761	41.373[b]	2.000	26.000	.000	.761
	Wilks' Lambda	.239	41.373[b]	2.000	26.000	.000	.761
	Hotelling's Trace	3.183	41.373[b]	2.000	26.000	.000	.761
	Roy's Largest Root	3.183	41.373[b]	2.000	26.000	.000	.761
likeact * qp	Pillai's Trace	.042	1.173[b]	1.000	27.000	.288	.042
	Wilks' Lambda	.958	1.173[b]	1.000	27.000	.288	.042
	Hotelling's Trace	.043	1.173[b]	1.000	27.000	.288	.042
	Roy's Largest Root	.043	1.173[b]	1.000	27.000	.288	.042
likeact * trial	Pillai's Trace	.362	3.400[b]	4.000	24.000	.024	.362
	Wilks' Lambda	.638	3.400[b]	4.000	24.000	.024	.362
	Hotelling's Trace	.567	3.400[b]	4.000	24.000	.024	.362
	Roy's Largest Root	.567	3.400[b]	4.000	24.000	.024	.362
qp * trial	Pillai's Trace	.733	16.480[b]	4.000	24.000	.000	.733
	Wilks' Lambda	.267	16.480[b]	4.000	24.000	.000	.733
	Hotelling's Trace	2.747	16.480[b]	4.000	24.000	.000	.733
	Roy's Largest Root	2.747	16.480[b]	4.000	24.000	.000	.733
likeact * qp * trial	Pillai's Trace	.152	1.074[b]	4.000	24.000	.391	.152
	Wilks' Lambda	.848	1.074[b]	4.000	24.000	.391	.152
	Hotelling's Trace	.179	1.074[b]	4.000	24.000	.391	.152

	Roy's Largest Root	.179	1.074[b]	4.000	24.000	.391	.152
likeact * ratio	Pillai's Trace	.224	3.754[b]	2.000	26.000	.037	.224
	Wilks' Lambda	.776	3.754[b]	2.000	26.000	.037	.224
	Hotelling's Trace	.289	3.754[b]	2.000	26.000	.037	.224
	Roy's Largest Root	.289	3.754[b]	2.000	26.000	.037	.224
qp * ratio	Pillai's Trace	.908	128.992[b]	2.000	26.000	.000	.908
	Wilks' Lambda	.092	128.992[b]	2.000	26.000	.000	.908
	Hotelling's Trace	9.922	128.992[b]	2.000	26.000	.000	.908
	Roy's Largest Root	9.922	128.992[b]	2.000	26.000	.000	.908
likeact * qp * ratio	Pillai's Trace	.042	.569[b]	2.000	26.000	.573	.042
	Wilks' Lambda	.958	.569[b]	2.000	26.000	.573	.042
	Hotelling's Trace	.044	.569[b]	2.000	26.000	.573	.042
	Roy's Largest Root	.044	.569[b]	2.000	26.000	.573	.042
trial * ratio	Pillai's Trace	.880	18.268[b]	8.000	20.000	.000	.880
	Wilks' Lambda	.120	18.268[b]	8.000	20.000	.000	.880
	Hotelling's Trace	7.307	18.268[b]	8.000	20.000	.000	.880
	Roy's Largest Root	7.307	18.268[b]	8.000	20.000	.000	.880
likeact * trial * ratio	Pillai's Trace	.405	1.705[b]	8.000	20.000	.159	.405
	Wilks' Lambda	.595	1.705[b]	8.000	20.000	.159	.405
	Hotelling's Trace	.682	1.705[b]	8.000	20.000	.159	.405
	Roy's Largest Root	.682	1.705[b]	8.000	20.000	.159	.405
qp * trial * ratio	Pillai's Trace	.877	17.781[b]	8.000	20.000	.000	.877
	Wilks' Lambda	.123	17.781[b]	8.000	20.000	.000	.877
	Hotelling's Trace	7.112	17.781[b]	8.000	20.000	.000	.877
	Roy's Largest Root	7.112	17.781[b]	8.000	20.000	.000	.877
likeact * qp * trial * ratio	Pillai's Trace	.199	.620[b]	8.000	20.000	.752	.199

	Wilks' Lambda	.801	.620[b]	8.000	20.000	.752	.199
	Hotelling's Trace	.248	.620[b]	8.000	20.000	.752	.199
	Roy's Largest Root	.248	.620[b]	8.000	20.000	.752	.199

Statistics> Anova with 55/45 ratio removed

Comment: sl=liking statements
pl=liking product
stf=awnsering true/false
pwb=buy/not buy product

Descriptive Statistics

	Mean	Std. Deviation	N
sl75	.1286	.23231	28
sl90	.2000	.30307	28
pl75	.5500	.20817	28
pl90	.6571	.22349	28
stf75	.0143	.05245	28
stf90	.0286	.07127	28
pwb75	.3571	.22678	28
pwb90	.4714	.23860	28

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
likeact	Pillai's Trace	.428	20.238[b]	1.000	27.000	.000	.428
	Wilks' Lambda	.572	20.238[b]	1.000	27.000	.000	.428
	Hotelling's Trace	.750	20.238[b]	1.000	27.000	.000	.428
	Roy's Largest Root	.750	20.238[b]	1.000	27.000	.000	.428
qp	Pillai's Trace	.763	86.945[b]	1.000	27.000	.000	.763
	Wilks' Lambda	.237	86.945[b]	1.000	27.000	.000	.763
	Hotelling's Trace	3.220	86.945[b]	1.000	27.000	.000	.763
	Roy's Largest Root	3.220	86.945[b]	1.000	27.000	.000	.763

ratio	Pillai's Trace	.391	17.316[b]	1.000	27.000	.000	.391
	Wilks' Lambda	.609	17.316[b]	1.000	27.000	.000	.391
	Hotelling's Trace	.641	17.316[b]	1.000	27.000	.000	.391
	Roy's Largest Root	.641	17.316[b]	1.000	27.000	.000	.391
likeact * qp	Pillai's Trace	.034	.953[b]	1.000	27.000	.338	.034
	Wilks' Lambda	.966	.953[b]	1.000	27.000	.338	.034
	Hotelling's Trace	.035	.953[b]	1.000	27.000	.338	.034
	Roy's Largest Root	.035	.953[b]	1.000	27.000	.338	.034
likeact * ratio	Pillai's Trace	.023	.628[b]	1.000	27.000	.435	.023
	Wilks' Lambda	.977	.628[b]	1.000	27.000	.435	.023
	Hotelling's Trace	.023	.628[b]	1.000	27.000	.435	.023
	Roy's Largest Root	.023	.628[b]	1.000	27.000	.435	.023
qp * ratio	Pillai's Trace	.123	3.779[b]	1.000	27.000	.062	.123
	Wilks' Lambda	.877	3.779[b]	1.000	27.000	.062	.123
	Hotelling's Trace	.140	3.779[b]	1.000	27.000	.062	.123
	Roy's Largest Root	.140	3.779[b]	1.000	27.000	.062	.123
likeact * qp * ratio	Pillai's Trace	.042	1.182[b]	1.000	27.000	.287	.042
	Wilks' Lambda	.958	1.182[b]	1.000	27.000	.287	.042
	Hotelling's Trace	.044	1.182[b]	1.000	27.000	.287	.042
	Roy's Largest Root	.044	1.182[b]	1.000	27.000	.287	.042

Statistics>Anova of the statement trials(55/45 ratio removed)

Descriptive Statistics

	Mean	Std. Deviation	N
sl75	.1286	.23231	28
sl90	.2000	.30307	28
stf75	.0143	.05245	28
stf90	.0286	.07127	28

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
likeact	Pillai's Trace	.255	9.247[b]	1.000	27.000	.005	.255
	Wilks' Lambda	.745	9.247[b]	1.000	27.000	.005	.255
	Hotelling's Trace	.342	9.247[b]	1.000	27.000	.005	.255
	Roy's Largest Root	.342	9.247[b]	1.000	27.000	.005	.255
ratio	Pillai's Trace	.214	7.364[b]	1.000	27.000	.011	.214
	Wilks' Lambda	.786	7.364[b]	1.000	27.000	.011	.214
	Hotelling's Trace	.273	7.364[b]	1.000	27.000	.011	.214
	Roy's Largest Root	.273	7.364[b]	1.000	27.000	.011	.214
likeact * ratio	Pillai's Trace	.190	6.353[b]	1.000	27.000	.018	.190
	Wilks' Lambda	.810	6.353[b]	1.000	27.000	.018	.190
	Hotelling's Trace	.235	6.353[b]	1.000	27.000	.018	.190
	Roy's Largest Root	.235	6.353[b]	1.000	27.000	.018	.190

Statistics> Anova of all the product trials

Descriptive Statistics

	Mean	Std. Deviation	N
pl55	.3857	.26065	28
pl75	.5500	.20817	28
pl90	.6571	.22349	28
pwb55	.3143	.26347	28
pwb75	.3571	.22678	28
pwb90	.4714	.23860	28

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
likeact	Pillai's Trace	.364	15.479[b]	1.000	27.000	.001	.364
	Wilks' Lambda	.636	15.479[b]	1.000	27.000	.001	.364
	Hotelling's Trace	.573	15.479[b]	1.000	27.000	.001	.364
	Roy's Largest Root	.573	15.479[b]	1.000	27.000	.001	.364
ratio	Pillai's Trace	.514	13.736[b]	2.000	26.000	.000	.514
	Wilks' Lambda	.486	13.736[b]	2.000	26.000	.000	.514
	Hotelling's Trace	1.057	13.736[b]	2.000	26.000	.000	.514
	Roy's Largest Root	1.057	13.736[b]	2.000	26.000	.000	.514
likeact * ratio	Pillai's Trace	.131	1.959[b]	2.000	26.000	.161	.131
	Wilks' Lambda	.869	1.959[b]	2.000	26.000	.161	.131
	Hotelling's Trace	.151	1.959[b]	2.000	26.000	.161	.131
	Roy's Largest Root	.151	1.959[b]	2.000	26.000	.161	.131

Statistics> reaction time anova

Within-Subjects Factors

Measure: MEASURE_1

likeact	qp	Trial	ratio	Dependent Variable
1	1	1	1	RT1
			2	RT2
			3	RT3
		2	1	RT4
			2	RT5
			3	RT6
		3	1	RT7
			2	RT8
			3	RT9
		4	1	RT10
			2	RT11
			3	RT12
		5	1	RT13
			2	RT14
			3	RT15
	2	1	1	RT16
			2	RT17
			3	RT18
		2	1	RT19
			2	RT20
			3	RT21
		3	1	RT22
			2	RT23
			3	RT24
		4	1	RT25
			2	RT26
			3	RT27
		5	1	RT28
			2	RT29
			3	RT30
2	1	1	1	RT31
			2	RT32
			3	RT33

	2	1	RT34
		2	RT35
		3	RT36
	3	1	RT37
		2	RT38
		3	RT39
	4	1	RT40
		2	RT41
		3	RT42
	5	1	RT43
		2	RT44
		3	RT45
2	1	1	RT46
		2	RT47
		3	RT48
	2	1	RT49
		2	RT50
		3	RT51
	3	1	RT52
		2	RT53
		3	RT54
	4	1	RT55
		2	RT56
		3	RT57
	5	1	RT58
		2	RT59
		3	RT60

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
likeact	Pillai's Trace	.901	246.913[b]	1.000	27.000	.000
	Wilks' Lambda	.099	246.913[b]	1.000	27.000	.000
	Hotelling's Trace	9.145	246.913[b]	1.000	27.000	.000
	Roy's Largest Root	9.145	246.913[b]	1.000	27.000	.000
qp	Pillai's Trace	.866	174.099[b]	1.000	27.000	.000
	Wilks' Lambda	.134	174.099[b]	1.000	27.000	.000

	Hotelling's Trace	6.448	174.099[b]	1.000	27.000	.000
	Roy's Largest Root	6.448	174.099[b]	1.000	27.000	.000
trial	Pillai's Trace	.788	22.264[b]	4.000	24.000	.000
	Wilks' Lambda	.212	22.264[b]	4.000	24.000	.000
	Hotelling's Trace	3.711	22.264[b]	4.000	24.000	.000
	Roy's Largest Root	3.711	22.264[b]	4.000	24.000	.000
ratio	Pillai's Trace	.183	2.904[b]	2.000	26.000	.073
	Wilks' Lambda	.817	2.904[b]	2.000	26.000	.073
	Hotelling's Trace	.223	2.904[b]	2.000	26.000	.073
	Roy's Largest Root	.223	2.904[b]	2.000	26.000	.073
likeact * qp	Pillai's Trace	.777	94.055[b]	1.000	27.000	.000
	Wilks' Lambda	.223	94.055[b]	1.000	27.000	.000
	Hotelling's Trace	3.484	94.055[b]	1.000	27.000	.000
	Roy's Largest Root	3.484	94.055[b]	1.000	27.000	.000
likeact * trial	Pillai's Trace	.744	17.460[b]	4.000	24.000	.000
	Wilks' Lambda	.256	17.460[b]	4.000	24.000	.000
	Hotelling's Trace	2.910	17.460[b]	4.000	24.000	.000
	Roy's Largest Root	2.910	17.460[b]	4.000	24.000	.000
qp * trial	Pillai's Trace	.150	1.061[b]	4.000	24.000	.397
	Wilks' Lambda	.850	1.061[b]	4.000	24.000	.397
	Hotelling's Trace	.177	1.061[b]	4.000	24.000	.397
	Roy's Largest Root	.177	1.061[b]	4.000	24.000	.397
likeact * qp * trial	Pillai's Trace	.168	1.208[b]	4.000	24.000	.333
	Wilks' Lambda	.832	1.208[b]	4.000	24.000	.333
	Hotelling's Trace	.201	1.208[b]	4.000	24.000	.333
	Roy's Largest Root	.201	1.208[b]	4.000	24.000	.333
likeact * ratio	Pillai's Trace	.140	2.116[b]	2.000	26.000	.141
	Wilks' Lambda	.860	2.116[b]	2.000	26.000	.141
	Hotelling's Trace	.163	2.116[b]	2.000	26.000	.141
	Roy's Largest Root	.163	2.116[b]	2.000	26.000	.141
qp * ratio	Pillai's Trace	.446	10.446[b]	2.000	26.000	.000
	Wilks' Lambda	.554	10.446[b]	2.000	26.000	.000
	Hotelling's Trace	.804	10.446[b]	2.000	26.000	.000
	Roy's Largest Root	.804	10.446[b]	2.000	26.000	.000
likeact * qp * ratio	Pillai's Trace	.220	3.660[b]	2.000	26.000	.040
	Wilks' Lambda	.780	3.660[b]	2.000	26.000	.040
	Hotelling's Trace	.282	3.660[b]	2.000	26.000	.040
	Roy's Largest Root	.282	3.660[b]	2.000	26.000	.040

trial * ratio	Pillai's Trace	.887	19.581[b]	8.000	20.000	.000
	Wilks' Lambda	.113	19.581[b]	8.000	20.000	.000
	Hotelling's Trace	7.832	19.581[b]	8.000	20.000	.000
	Roy's Largest Root	7.832	19.581[b]	8.000	20.000	.000
likeact * trial * ratio	Pillai's Trace	.827	11.932[b]	8.000	20.000	.000
	Wilks' Lambda	.173	11.932[b]	8.000	20.000	.000
	Hotelling's Trace	4.773	11.932[b]	8.000	20.000	.000
	Roy's Largest Root	4.773	11.932[b]	8.000	20.000	.000
qp * trial * ratio	Pillai's Trace	.664	4.948[b]	8.000	20.000	.002
	Wilks' Lambda	.336	4.948[b]	8.000	20.000	.002
	Hotelling's Trace	1.979	4.948[b]	8.000	20.000	.002
	Roy's Largest Root	1.979	4.948[b]	8.000	20.000	.002
likeact * qp * trial * ratio	Pillai's Trace	.711	6.159[b]	8.000	20.000	.000
	Wilks' Lambda	.289	6.159[b]	8.000	20.000	.000
	Hotelling's Trace	2.464	6.159[b]	8.000	20.000	.000
	Roy's Largest Root	2.464	6.159[b]	8.000	20.000	.000

a. Design: Intercept

Within Subjects Design: likeact + qp + trial + ratio + likeact * qp + likeact * trial + qp * trial + likeact * qp * trial + likeact * ratio + qp * ratio + likeact * qp * ratio + trial * ratio + likeact * trial * ratio + qp * trial * ratio + likeact * qp * trial * ratio

b. Exact statistic

Statistics> post hoc(paired t) tests:Statements

T1:

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	sl75	.1286	28	.23231	.04390
	sl90	.2000	28	.30307	.05727
Pair 2	stf75	.0143	28	.05245	.00991
	stf90	.0286	28	.07127	.01347

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	sl75 - sl90	-.07143	.13569	.02564	-.12404	-.01881	-2.785	27	.010
Pair 2	stf75 - stf90	-.01429	.05245	.00991	-.03462	.00605	-1.441	27	0.16

T2

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	sl75	.1286	28	.23231	.04390
	stf75	.0143	28	.05245	.00991
Pair 2	sl90	.2000	28	.30307	.05727
	stf90	.0286	28	.07127	.01347
Pair 3	stf90	.0286	28	.07127	.01347
	sl75	.1286	28	.23231	.04390
Pair 4	sl90	.2000	28	.30307	.05727
	stf75	.0143	28	.05245	.00991

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	sl75 - stf75	.11429	.22724	.04295	.02617	.20240	2.661	27	.013
Pair 2	sl90 - stf90	.17143	.28134	.05317	.06234	.28052	3.224	27	.003
Pair 3	stf90 - sl75	-.10000	.22111	.04179	-.18574	-.01426	-2.393	27	.024
Pair 4	sl90 - stf75	.18571	.29779	.05628	.07024	.30118	3.300	27	.003

Statistics> post hoc(paired t) tests:Products

T1

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	pl55	.3857	28	.26065	.04926
	pwb55	.3143	28	.26347	.04979
Pair 2	pl75	.5500	28	.20817	.03934
	pwb75	.3571	28	.22678	.04286
Pair 3	pl90	.6571	28	.22349	.04224
	pwb90	.4714	28	.23860	.04509

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	pl55 - pwb55	.07143	.30895	.05839	-.04837	.19123	1.223	27	.232

Pair 2	pl75 - pwb75	.19286	.29556	.05586	.07825	.30746	3.453	27	.002
Pair 3	pl90 - pwb90	.18571	.22396	.04232	.09887	.27256	4.388	27	.000

T2

Comment: Prod55= (pl55+pwb55)/2, prod75=(pl75+pwn75)/2, prod90=(pl90+pwb90)/2

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	prod55	.3500	28	.21170	.04001
	prod75	.4536	28	.15982	.03020
Pair 2	prod55	.3500	28	.21170	.04001
	prod90	.5643	28	.20224	.03822
Pair 3	prod90	.5643	28	.20224	.03822
	prod75	.4536	28	.15982	.03020

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	prod55 - prod75	-.10357	.20454	.03866	-.18289	-.02426	-2.679	27	.012
Pair 2	prod55 - prod90	-.21429	.21725	.04106	-.29852	-.13005	-5.219	27	.000
Pair 3	prod90 - prod75	.11071	.17071	.03226	.04452	.17691	3.432	27	.002