An Examination of the Effect of Prior Experience, Age, and Gender in Non-Food Blending Predictions

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Abstract: Ever since the invention of the electric blender in 1922[1], mankind has been fascinated with the possibility of putting non-food items into it to see what happens. In this experiment, balls made of different materials and of different sizes were put into a blender and observers were asked to predict whether the ball would be destroyed, left partially intact, or emerge mostly unscathed. This study is an examination of whether age, gender, or prior experience with blending non-food items will lead to a greater predictive ability for future blends.

Introduction:

Blending things has resulted in a number of popular YouTube channels[2]. Prior to this time, it has been unclear whether or not people can effectively predict what will happen to an item in a blender. This is the problem I have attempted to solve here.

The Stratford Landing Elementary School had a STEAM (Science, Technology, Engineering, Art, Math) night on the evening of November 8, 2018. As my interest in science is well-known in this school community, I was asked to provide an activity that could be enjoyed by the community and lead to a greater appreciation of the scientific method. Because everybody likes seeing things destroyed in a blender, I decided that I'd use this as an excuse to blend a bunch of stuff. By asking visitors to the booth whether they think an item will be blendable[3], I believed that I could convince observers that I was doing some sort of scientific discovery. It worked! Plus I got data.

Methodology:

Balls made of various items (plastic, foam, and so forth) were blended in a Hamilton-Beach Wave Station Express blender for 15 seconds[4]. Before each of these blends, participants were given a data collection sheet in which they had to indicate whether they had seen non-food items blended in the past, what they thought would happen in this blending, whether or not their guess was correct, their age, and their gender. When completed, these forms were placed in the empty blender box for safekeeping. Each participant filled out a new form for each blend. This went on every five minutes between 7 pm and 8 pm.

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[1] http://www.ideafinder.com/history/inventions/blender.htm
[2] "Will it Blend?", YouTube, https://www.youtube.com/channel/UCnFP0IU4gpnmcLnVzDLUtfw
[3] The term "blendable" is cited in many places online as being a real word. So there.
[4] It was the cheapest blender available on Amazon that had a halfway decent rating.

Experimental data:

In this experiment there were 181 responses, though only 164 of them were usable for various reasons. The mean age of the respondents was 20, with a median age of 10. There were 77 male respondents and 79 female respondents, with 8 respondents declining to report their gender. Of the respondents, 85 had previously seen non-food items blended, while 79 had only seen food blended in the past.

Effect of prior blending experience:

The following information was collected regarding the experience each participant had with blending non-food items. Relevant data:

	Blending experience	No blending experience
Sample size	84	79
Correct guesses about blending result	36	36
Percent of participants guessing correctly	43%	46%

When data from the prior blending and non-prior blending populations were examined using Fisher's Exact Test for statistical significance, it was found that the blending and non-blending groups had a P-value of 0.8877. In order for there to be a statistically significant difference between these populations, the P value would need to be less than 0.05. Because of this we can state that these data do not indicate that prior blending experience has any effect on future blend predictions.

Effect of gender:

The following information was collected regarding the gender of each participant:

	Male	Female
Sample size	77	78
Correct guesses about blending result	32	35
Percent of participants guessing correctly	42	45

When Fisher's Exact Test was used to examine these data for significance, a P-value of 0.8839. These data show no statistical significance in guessing accuracy between male and female participants.

Effect of age:

The following information was collected regarding the age of each participant:

	5-15 y.o.	16+ y.o.
Sample size	95	43
Correct guesses about blending result	41	16
Percent of participants guessing correctly	43%	37%

When Fisher's Exact Test was used to examine these data for significance, a P-value of 0.7736. These data demonstrate that age and blending predictive ability are not correlated in this experiment.

Data inconsistencies

In the survey forms given out, not all respondents gave all of the requested information regarding their age, gender, or whether they'd seen non-food blendings occur. For example, a subject may report that they had not seen non-food items blended and that they were female, but declined to indicate their age. In this case, the information obtained by the subject regarding

experience with blending and gender may be used but the information obtained regarding age cannot be used.

Possible sources of error

There were a number of issues that came up during the collection and analysis of the data, though most of these were easy to correct. Some of these sources of error include the following:

- Young children may not be familiar with the meaning of the word "gender." Though most of the responses to this were "female/male" or "boy/girl", there were a number of cases where the response was something like "Sally" or "Timmy." In the future, a checkbox will be employed rather than a free response question.
- Middle-aged women sometimes wished to conceal their ages. In cases such as this, responses in the box for "age" was answered with "40+" or "you don't want to know." In the future, we will rewrite the form to indicate that 1) "Anonymous" means that we won't know which responses correspond to which participant; and 2) Nobody cares how old they are. Interestingly, the only other group to give unexpected answers to this question were very young children, who would indicate that they were "5.5" years old, presumably because they wanted to emphasize that they were older than they looked.
- Anecdotally, it seemed that middle-aged men were more likely to decline to participate in this experiment than others. The reason for this is unknown, but it was observed that they usually wore nice suits.

Conclusions

In this experiment we tested to see whether gender, age, or prior experience with blending non-food items gave people better predictive abilities about future the outcome of future blends. When the data were examined, no statistically-significant correlation was found to suggest that people with different amounts of blending experience or people in different demographic groups can make these predictions more accurately than others.