Helpfulness of the genders—a student project

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The definition of *help* means to "*save, rescue, contribute to, facilitate, promote, to be useful* ...*" In fact, the definition of help is so complex that it demands about three quarters of a column in the Webster's dictionary. Perhaps, this explains why researchers have spent considerable time studying various aspects of helping behaviors. During the year of 2004, a pre-med student in the school of general studies at Columbia University, Elizabeth Rosner, and a group of her fellow students at Columbia seek to further our understanding of the latent complexities behind people's helping behavior, as they fulfilled a required data collection project for their introductory statistics course. More specifically, they were curious to find out: who are we more willing to help, people of the same sex or people of the opposite sex? Whether people are aware of their gender bias? Or whether their overt helping behavior contradicts the way people believe they would behave given the identical situation in hypothetical terms?

> **The "Helping Behavior" project**
>
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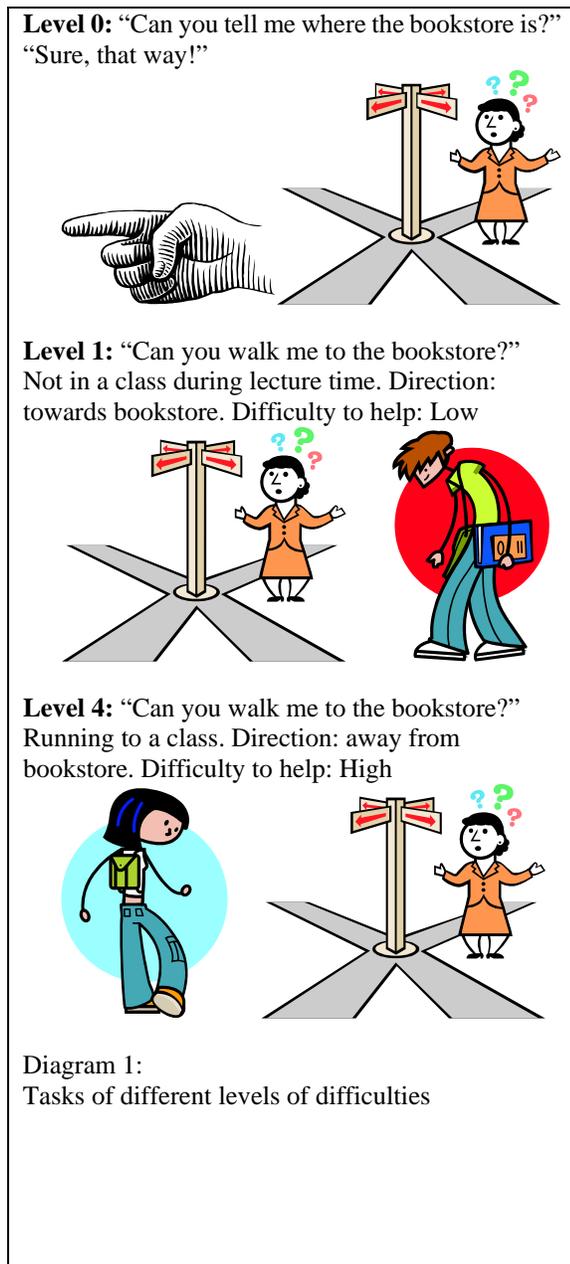>
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Such a topic is not foreign to researchers in psychology. In the past, researchers like (Dabbs and Latane, 1975) measured helping behavior by dropping pennies in an elevator and recording whether or not subjects pick them up. According to their findings, overall, men are more likely to help a stranger in need than women. Similar studies conducted, complied with their results (e.g. Bryan and Test, 1967; Ehlert et al., 1973; Gaertner and Bickman, 1971;. Graf and Riddle, 1972; Latane, 1970; Morgan, 1973; Penner et al., 1973; Piliavin and Piliavin, 1972; Piliavin et al., 1969; Pomazal and Clore, 1973; Simon, 1971; Werner, 1974; Wispe and Freshly, 1971).

A smart original design. In spring 2004, Elizabeth Rosner and Rachel Rowe are both enrolled in the pre-calculus introductory statistics class of Professor Tian Zheng. Several weeks into the

semester, they start discussion on ideas for the required data collection project of this course. As a pre-med student who will pursue a degree in psychiatry, Elizabeth is very interested in doing a psychological experiment. They quickly identify helping behavior as a potential direction. After meeting with their instructor, Professor Zheng, they decide to conduct an experiment to examine if Dabbs and Latane's findings are still valid, and to further explore aspects of helping behavior. Tasks of five levels of difficulty are designed to better operationally define actual helping behavior.

Level 0: "Can you tell me where the bookstore is?" "Sure, that way!"

Level 1: "Can you walk me to the bookstore?" Not in a class during lecture time. Direction: towards bookstore. Difficulty to help: Low

Level 4: "Can you walk me to the bookstore?" Running to a class. Direction: away from bookstore. Difficulty to help: High

Diagram 1:
Tasks of different levels of difficulties

The effortless task (level 0) asks the subject to give the experimenter directions to a well known location (the bookstore). The remaining levels 1-4 (difficulty increases as the levels increase) involve a second follow up question in which the experimenter asks the same subject to walk the experimenter to the bookstore. The class schedule grid is used to help decide whether a subject is likely to be in a rush or not. Elizabeth and Rachel define that a subject is not in a rush when walking on campus during lecture time. In task level one, the experimenter approaches a subject who is not in a rush and who is walking in the direction of the bookstore. In task level two, the experimenter approaches a subject who is in a rush and walking in the direction of the bookstore. In task level three, the experimenter approaches a subject who is not in a rush and walking away from the bookstore. And finally, in task level four, the experimenter approaches a subject who is in a rush and walking away from the bookstore.

Statistical data analysis (see Table 2) using chi-square tests on association indicates that in fact, there is a significant association between gender difference and helping behavior, such that people are more likely to help a stranger of the opposite sex (P-value = 0.016). A survey (asking people to imagine the experimental scenarios) is used to further examine whether people are consciously aware of their gender biases. And the results reveal that men are consciously aware of their sexual biases while women are not.
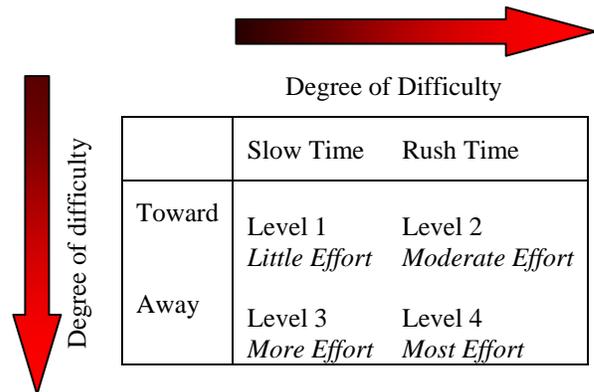
Degree of Difficulty

	Slow Time	Rush Time
Toward	Level 1 *Little Effort*	Level 2 *Moderate Effort*
Away	Level 3 *More Effort*	Level 4 *Most Effort*

Degree of difficulty

Table 1: Tasks of different levels of difficulties

Experiment results from Spring 2004

"Who are more helpful, men or women?"

Level 0: give direction to the bookstore

	Yes (Help)	No (No help)
Female subject	41	9
Male subject	37	13

Chi2=0.9324, P-value=0.334

Levels 1-4 combined

	Yes (Help)	No (No help)
Female subject	21	29
Male subject	21	29

Chi2=0, P-value=1

"Are we more likely to help people of the opposite sex?"

Level 0: give direction to the bookstore

	Yes (Help)	No (No help)
Same sex	34	16
Opposite sex	44	6

Chi2=5.8275, P-value=**0.0158**

Levels 1-4 combined

	Yes (Help)	No (No help)
Same sex	16	34
Opposite sex	26	24

Chi2=4.105, P-value=**0.043**

More specifically, level 4

	Yes (Help)	No (No help)
Same sex	0	14
Opposite sex	5	9

Chi2=6.087, P-value=**0.0136**

Survey results from Spring 2004

"After giving directions, if the person asked you to walk them to the location, would you help him/her?"

"… if you are NOT IN A RUSH?"

Men	
More likely to help females than males	18
More likely to help males than females	2
Equally likely	4
Equally unlikely	1
Women	
More likely to help females than males	11
More likely to help males than females	4
Equally likely	9
Equally unlikely	1

"… if you are IN A RUSH?"

Men	
More likely to help females than males	12
More likely to help males than females	1
Equally likely	3
Equally unlikely	9
Women	
More likely to help females than males	4
More likely to help males than females	2
Equally likely	6
Equally unlikely	13

Table 2: results from Fall 2004.

Do it again and do it right. Due to the small number of experimenters in the original spring 2004 study (one male—a friend of Rachel's, and one female), the validity of these results are questioned when Elizabeth goes to see Professor Andrew Gelman in the Department of Statistics and Professor David Krantz in the Department of Psychology at Columbia. For example, what if one of the experimenters was particularly attractive or particularly unattractive? Also, what if the experimenters could have subconsciously behaved more flirtatiously to subjects of the opposite sex? Considering these possible biases in the original design that may have occurred in the spring of 2004, Elizabeth decides to re-do this project. This time, she is not doing it for any course credit.

A second and more elaborate study is conducted in the fall of 2004 with assistance from Professor Martin Lindquist who is teaching the introductory statistics course for this semester. The new study replicates the design of the spring 2004 study, except for that it involves 18 experimenters and 380 subjects. This increase in experimenters averages out the effect of experimenter biases. For example, the results reveal that in general, there is no significant difference in helping tendency by sex. In other words, unlike the findings of Dabbs and Latane, both males and females seem to be equally as likely to help a stranger in need.

Similar to the spring 2004 study, the fall 2004 team, closely advised by Elizabeth, conduct a field experiment designed to discover people's actual helping behavior, as well as a survey designed to identify people's beliefs regarding their own helping behavior. The population studied consists of people on the Morningside campus of Columbia University. Separate random samples from the populations are used for the experiment and the survey. A total of 18 experimenters carried out the experiments, 13 women and five men.

For the field experiment, the experimenters are grouped into nine pairs. Five of the nine groups have both a male and a female on their team, while the remaining four groups have two females on each team. For half of the groups a male pretends to be a stranger in need, and for half of the groups a female pretends to be a stranger in need. Each experimenter approaches random individuals and asks them if they know where the Columbia bookstore is (level 0). Next, they ask the same subject to walk them to the Columbia bookstore (levels one through four depending on the direction that the subject is walking and whether or not the subject is in a rush). Five male and five female experimenters approaches a total of 248 subjects.

The extended experimental design implements several measures that are intended to control for variables that may affect the outcomes. Each experimenter has to interview an equal number of both male and female subjects (13 men and 13 women). Also, each experimenter is instructed to use two locations on campus. The purpose of varying the location is to ensure that a random representation of the population is sampled. Also, each experimenter interviews six people during a time when students are typically on campus going from one class to another, termed "rush time," and six subjects are interviewed per experimenter, during a time when students are typically in class and thus people on campus are not in a rush to get to class, termed as "non- rush time". And finally, each experimenter approaches subjects walking both toward and away from the location of interest. Such control ensures that each experimenter interviews the same number of subjects at each task level. In summary, at the first location, each experimenter interviews three men and three women walking toward the bookstore and three men and three women walking away from the bookstore. At the second location, they interview 12 more people in the same fashion, all the while, controlling for the time of the day.

> The study design "… *ensures that each experimenter interviews a same number of subjects at each task level.*"

> During the survey, "*the subjects are asked to answer the questions following the survey scenario in the way they believe they would behave if actually presented with the scenario.*"

The survey is implemented with the same sampling design and asks the respondents to imagine their behavior given the field experiment scenarios described on paper. A total of 132 surveys were handed out to 66 men and 66 women. Four different surveys are implemented, describing the four different task scenarios. The four different scenarios include: toward the bookstore/rush, toward the bookstore/non- rush, away from the bookstore/rush, away from the bookstore/non-rush. The subjects are asked to answer the questions following the survey scenario in the way they believe they would behave if actually presented with the scenario. The questions include: Question number one: If a man comes up to you and asks for directions to the Columbia bookstore, how likely or unlikely is it that you will give him directions? Question number two: After receiving directions, he is still confused about how to get to the bookstore; he then asks if you could walk him there. How likely or unlikely is it that you will walk him to the Columbia bookstore? The following two questions are identical except the sex of the person is changed to female. Subjects are instructed to circle one of four choices from very likely to very

unlikely. Compared to the spring 2004 survey, this survey is much larger and more informative.

Findings from the extended study. During the data analysis (of the combined data collected; see Table 3), the first general topic of study is concerned with which sex (in general) is more helpful. Given both sexes receive identical treatment, this research question can be restated as whether a higher

> "… *the tendency of helping the opposite sex becomes more notable when the task is either extremely easy or extremely difficult to comply with.*"

percentage of men or women subjects agree to both requests. The levels 1-4 combined table reveals that regardless of sex, the probability that a woman will help a stranger in need is estimated as 37.6%. The probability that a man will help a stranger in need is estimated as 37.1%. This is not a significant difference. Therefore, it is concluded that in general, there is no significant difference in the tendency that a man or a woman helps a stranger in need. Interestingly, the data also show that, in general, females and males receive about the same amount of help (37.1% versus 36.9%).

The second and more specific topic of study is whether people are more or less likely to help a stranger of the opposite sex. If people are more willing to help the opposite sex, one should expect a relationship between gender difference and helping behavior. The data analysis finds that the tendency of helping the opposite sex becomes more notable when the task is either extremely easy or extremely difficult to comply with. A simple Chi-square test of association reveals that, for the level-zero task, men were significantly more likely to give help to women than to men, and women were significantly more likely to give help to men than to women. Likewise, for the level four task (the most difficulty task), a similar pattern of gender specific helping behavior is also found, whereas, for tasks at levels one, two, and three, there is no significant association between gender difference and helping behavior.

As for the survey, it seems that for all scenarios it is not sex that people believe would influence their actions rather, the degree of difficulty or effort required by the task.

It should be noted, however, that for both men and women, an increased willingness to help a stranger of the opposite sex is observed consistently under all scenarios (levels 1-4). Naturally, it has also been observed, both men and women regardless of sex dramatically decrease their willingness to help when the degree of difficulty increases.

"Who are more helpful, men or women?"

Level 0: give direction to the bookstore

	Yes (Help)	No (No help)
Female subject	153	20
Male subject	153	22

Ch2=0.0837, P-value=0.7723

Levels 1-4 combined

	Yes (Help)	No (No help)
Female subject	65	108
Male subject	65	110

Chi2=0.0069, P-value=0.934

"Are we more likely to help people of the opposite sex?"

Level 0: give direction to the bookstore

	Yes (Help)	No (No help)
Same sex	145	30
Opposite sex	161	12

Chi2=8.5397, P-value=**0.0035**

Levels 1-4 combined

	Yes (Help)	No (No help)
Same sex	57	118
Opposite sex	73	100

Chi2=3.4441, P-value=0.0635

More specifically, level 4

	Yes (Help)	No (No help)
Same sex	6	37
Opposite sex	14	30

Ch2=3.9204, P-value=**0.048**

"After giving directions, if the person asked you to walk them to the location, would you help him/her?"

"… if you are NOT IN A RUSH and walking TOWARDS that location?"

Men

More likely to help females than males	0
More likely to help males than females	0
Equally likely	2
Equally unlikely	3

Women

More likely to help females than males	0
More likely to help males than females	0
Equally likely	3
Equally unlikely	2

"… if you are IN A RUSH but walking TOWARDS that location?"

Men

More likely to help females than males	6
More likely to help males than females	1
Equally likely	7
Equally unlikely	6

Women

More likely to help females than males	6
More likely to help males than females	1
Equally likely	7
Equally unlikely	6

"… if you are NOT IN A RUSH but walking AWAY from that location?"

Men

More likely to help females than males	2
More likely to help males than females	0
Equally likely	8
Equally unlikely	5

Women

More likely to help females than males	3
More likely to help males than females	0
Equally likely	2
Equally unlikely	10

"… if you are IN A RUSH and walking away from that location?"

Men

More likely to help females than males	6
More likely to help males than females	0
Equally likely	7
Equally unlikely	12

Women

More likely to help females than males	3
More likely to help males than females	2
Equally likely	5
Equally unlikely	15

Table 3: results from combined data from Spring 2004 and Fall 2004.

"One possible reason for this pattern of behavior lies not in people's increased willingness to help a person of the opposite gender but, in people's apparent unwillingness to deny help when a level of convenience is present."

Understanding the patterns in the data. The two scenarios with notable association between sex and helping behavior are interestingly, the two extremes on the level scale of difficulty. What makes level zero simple to comply with, and level four challenging? The answer lies in how much the subject is required to invest into the designated task? As for level zero (asking for directions to the bookstore), completing the task requires the subject to devote a small amount of time/energy, in what is often a 30 second encounter. Contrastingly, for level four (subject in a rush, walking away from the bookstore), the subject is required to invest a large amount of time/energy into the encounter in order to complete the task. Why then, do two opposite degrees of difficulty generate a similar pattern of results?

Elizabeth is the one that is mostly interested in the implication of the results. She spent many office hours with Tian (her professor from the very intro stats class that has led to this one-year endeavor) and more reading hours in the library. She thinks she has found a possible explanation.

In the case of level zero, (it has been determined) that the subject is mandated a simple task that requires very little investment. It follows that the possible benefits of this mixed sex encounter must outweigh the potential loss. In this case the loss is virtually momentary, yet the potential for gain is consequential.

In the case of level four, the subject is mandated a difficult task that requires a large amount of investment. It follows that subjects are not willing to commit to such an investment unless they foresee possible benefits from the encounter. Perhaps, in a same sex scenario, the benefits of helping a stranger in need do not outweigh the cost. However, if it is a mixed sex experience, the possibility for benefits may equal or exceed the cost to the subject.

Interestingly, the cases where gender did not affect helping behavior were for tasks at levels one, two, and three. All of these levels have one thing in common: some degree of convenience for the subject. Degree of convenience is what separates these levels from the most difficult task level four, which does demonstrate an association. All three of these levels allow the subject the ability to comply with the request. Whether the subject is not in a rush and therefore has the element of time on their side, or the subject is already heading in the direction of the bookstore and has little reason to deny the request, the subject *can* without a doubt help the stranger in need. And, the

results indicate that subjects do in fact, help regardless of sex under these conditions. When some level of convenience is present, one can speculate that the unwillingness to deny help has a greater effect on the subject's behaviors than the willingness to help an opposite sex for one's own benefit. If the unwillingness to deny help is not sex-biased, the sex-biased pattern caused by the willingness to help an opposite sex will be diluted when some level of convenience is present. This may have explained why less association between the helping behavior and gender is observed for tasks at levels one, two and three.

Understanding whether helping behavior decisions are made on a conscious or unconscious level brings us to the second half of the project—the survey. Analysis of the survey indicates that people, both men and women, identify the degree of difficulty as the determining factor in their willingness to help a stranger in need. Except for the slight (non- significant) increase in people's conscious willingness to help the opposite sex, most people disregard the influence of sexual bias on overt behavior. This brings us to conclude that people's biases regarding sex, act mainly on the subconscious level.

There is power in stats, even intro stats. Looking at the current helping behavior study done by intro stats students and comparing it to past studies, we conclude that the degree of difficulty, and people's willingness to help, do in fact, go hand in hand. It seems that people may consider both their lose and the possibilities for gain when actually making the decision to help a stranger in need. By controlling variables, this student project isolates and identifies people's "gain" to be acquaintance with a stranger from the opposite sex. Interestingly, the survey results reveal that people neglect to identify sex as a possible gain and therefore, incorrectly isolate degree of difficulty as the only determining factor in one's desire to help a stranger in need. In doing both the field experiment and the survey, we see that people's reality versus their perception of reality can differ greatly.

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