

# Analysis: Self-Deception Study

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1. How strong is the support for a causal relation in this study? You will be asked to support your answer by providing at least two potential alternative explanations for the results. For each of these alternative explanations, indicate which threat to internal validity is involved.

The support for a causal relationship in this study is moderately strong. The following are two potential alternative explanations for the observed outcomes:

1. Physical Appearance

Several research studies have established that an individual's physical appearance - a complex concoction of facial symmetry, body image, perceived attractiveness, the presence/absence of a disability, dress sense among others - has a strong impact on the perception of his/her abilities among other individuals.

A physically attractive person may well be a good judge of his/her own abilities in the very narrow sense by which it is measured in the study (i.e.: difference between estimated and actual scores for an assignment) and yet, may be ranked as performing better than his/her abilities by his/her peers purely based on the individual's physical appearance. In other words, the presence of, and the degree of peer perception, bears little to no correlation to the individual's degree of self-deception.

**Threat to internal validity:** Selection

Since students were included in the study based merely on their consent to be a part of the study (along with the fact that they belonged to one of the tutorials) it is open to a potential selection bias as it related to the physical appearances of the students who were part of the study.

2. Inaccurate/Ambiguous Measurement of Self-Deception

In the study, self-deception is measured as the difference between estimated and actual scores on an upcoming assignment. Although it has not been explicitly stated, the subject matter of the assignment can be surmised to be related to either Psychology or Anthropology given that all the participants in the study were either Psychology or Anthropology students. Effectively, the individual's assessment of their ability to perform on a very specific test is being interpreted as a measure of their self-deception. Whereas the assessment of an individual's ability by a peer (used to interpret peer-deception) arguably takes into account many intangibles such as the peer's perception of an individual's physical appearance, body language among others.

It can be argued that while the peer deception measure rightly takes into account the various characteristics that contribute to it, the self-deception measure itself is prone to inaccuracies on account of it being based on a very narrow set of characteristics.

To clarify, an individual's knowledge of the subject matter of the assignment may be strong enough for him/her to estimate a higher score. However, the same individual may project outwardly cues that suggest a lower self-confidence for reasons that have to do with individual's personality and his/her intellectual ability. Introversion is a classic personality trait that fits this category. An introverted person with a high intellect may very well come across as having a high value for self-deception while being assessed a much lower value based on peer-deception. And in fact, the opposite can be argued for an extroverted person with a low intellect.

In the case of introverted subjects, the second test conducted 6 weeks into the study is likely to not yield very different outcomes since by their very nature introverts are not highly interactive in group settings.

**Threat to internal validity:** Low Construct Validity

2. How would you investigate the authors' hypothesis if you could design a study from scratch? You can choose any of the designs discussed in module 3. You will be asked to indicate what design and what variables you would use, and in general terms how you would operationalize your variable. Indicate how your choices would resolve some of the methodological issues you raised in the previous question

Below are the details of the study I would use to investigate the author's hypothesis:

**Design:** Correlational design with pre-test and post-test. This can be construed to be a special case of a cohort design since measurements are taken from among a group of subjects who share several characteristics over multiple, albeit restricted to a very small number of, points in time.

**Variables Measured:**

- Self-Deception – defined as a below:

$$D_{self} = (E_{self-est} - mean(E_{self-act})) + f(L_{self-est})$$

Where:

$D_{self}$	Measure of self-deception
$E_{self-est}$	Self-efficacy estimate for a given task
$E_{self-act}$	Actual efficacy of the individual as measured for a given task
$L_{self-est}$	Overall Likeability score as assessed by the individual for himself/herself

Above, self-deception is defined as the aggregate of the differences in an individual's perception of his/her own efficacy (in performing a given task) as well as differences in the individual's perception of his/her likeability with the individual's actual efficacy and likeability.

Depending on the task given, differences in self-efficacy can be very accurately measured. Taking the mean of multiple efficacy measurements for the same task (as performed by the individual) ensures that the value obtained is much closer to the actual efficacy of the individual (for that task) as opposed if only a single measurement was taken. The deception in one's efficacy then simply becomes a difference between estimated and actual efficacy measurements for that task.

Likeability itself, being a very subjective property, can only be estimated. It is not possible to obtain an absolute objective measure of likeability of an individual. As a result, deception in one's likeability cannot be computed similar to that of efficacy. And yet, it can be successfully argued that such deception exists, and contributes in very significant ways in how other individuals perceive us. Given this, some function of an individual's likeability estimate –  $f(L_{self-est})$  – contributes to that individual's measure of self-deception. Such a function can be arrived at by modeling the data obtained through the study.

- Peer-Deception – defined as below:

$$D_{peer}(i) = median ((E_{peer-est}(i) - mean(E_{self-act}(i))) + g(L_{peer-est}(i)))$$

Where:

$D_{peer}(i)$	Measure of the peer-deception for individual $i$ NOTE: This takes into account the peer-deception measures of all peers of individual $i$ within a given study group.
$E_{peer-est}(i)$	Efficacy (for a given task) for individual $i$ , as estimated by the individual's peer
$E_{self-act}(i)$	Actual efficacy of the individual $i$ , as measured for a given task
$L_{peer-est}(i)$	Likeability score for individual $i$ , as assessed by the individual's peer

As before, peer-deception for an individual (i.e.: deception concerning an individual as experienced by a single peer) is defined as an aggregate of the differences in peer's perception of the individual's efficacy and likeability with the actual efficacy and likeability of the individual.

And for reasons explained earlier, some function of the peer's likeability estimate –  $g(L_{self-est}(i))$  – for a given individual  $i$ , is used as a contributing factor towards the peer-deception score for the individual. Such a function can be arrived at by modeling the data obtained through the study.

And finally, the overall measure of the peer-deception for an individual is taken to be median of the peer-deception measures as obtained from each of the peers of the individual within a study group.

### **Operationalizing the Variables:**

I would operationalize the measurement of likeability and efficacy through the use of standard questionnaires for the same. These questionnaires allow a score, typically between 1 and 10, to be assigned based on answers to a series of questions related to the property being measured. As an example, consider the Reysen Likability Scale: <http://www.midss.org/content/reysen-likability-scale> .

I would modify these questionnaires as appropriate for both self and peer assessment, as well as to suit the needs of the study itself. For example, a questionnaire on the self-efficacy estimate given the task of completing a specific online jigsaw puzzle within a maximum of 10 minutes, the questions would have the individual rate himself/herself based on what percentage of the puzzle they think they can complete within the allotted time.

### **Study Setup:**

Below are some aspects (i.e.: it is not exhaustive) of the setup that I would use for the study:

1. A participant pool of students is picked randomly from the undergraduate student body of a university (irrespective of line of study – arts/humanities/engineering etc and specialization), and subjected to a survey intended to collect information on age, gender, socio-economic status and potentially even cognitive skills.
2. 4 study groups, with 6 students each, is created by random assignment of students from the participant pool to the study group such that:
  - a. All students in the study share similar characteristics as pertaining to age, socio-economic status and potentially even cognitive skills.
  - b. Each study group has an equal number of male and female students
3. Each student in the study is subject to a self-assessment of likeability – this is the pre-test
4. Each student in the study is also subject to the following:
  - a. A self-assessment of efficacy for a specific task (e.g.: completing an online jigsaw puzzle)
  - b. Actual efficacy measurements based on multiple attempts at executing a specific task

E.g.: 3 attempts at completing 3 different online jigsaw puzzles, one attempt per puzzle within the allotted time per attempt. NOTE: each puzzle is of the same difficulty level on average and contains the same number of puzzle pieces

NOTE: it is also possible to subject each student to the above assessment for a series of different types of tasks requiring different cognitive skills – e.g.: solving a jigsaw puzzle, a math skills task, a reading comprehension task.

5. All students in each study group is subject to the same activity (e.g.: watching a short film), albeit in an isolated fashion, followed by brief one-on-one interactions discussing the activity with other students belonging to the same study group. Essentially, every student in a study group will have 5 such interactions, one each with a different student belonging to the same study group. To further clarify, each student will have completed the activity prior to the start of any of their interactions.

All one-on-one interactions will be via an online chat sessions – i.e.: students will not get to see or hear each other. Further, students will identify themselves with fake names so as to prevent any interactions between the students prior to the study from interfering with the study.

NOTE: This step can be repeated at a different point in time ( $x$  number of weeks later) by retaining the same study groups but with the following modifications:

- a. Changing the fake names for half the number of students in each group
- b. Changing the activity

Doing so may help bolster the data gathered in support of/or against the hypothesis and can further help understand the effects of prior interaction on peer-deception.

6. At the end of all of their one-on-one interactions each student in the study will asked for the following:
  - a. To rank all students in their study group in terms of their perceived likability based on this interaction  
NOTE: Here the students may simply be asked to rank the interactions based on how much they enjoyed interacting with the other person. This ranking may then be interpreted as a ranking based on likability.
  - b. To rank all students in their study group in terms of their perceived efficacy based on this interaction  
NOTE: Here the students may be asked to rank others, in order of their preference, if they were allowed to have a partner in completing a specific task in a competitive setting. The task(s) may be the same task(s) as completed by the students in step (4) or different ones, albeit closely related those in step (4). This ranking may then be interpreted as a ranking based on efficacy.
7. Finally, each student in the study will be subject to another self-assessment of likeability – this is the post-test.

## Resolutions to Methodological Issues

- Physical Appearance – the effect of physical appearance of the subjects on the outcome, pointed out earlier as a possible alternative cause, is resolved in the above study setup by restricting all interactions between participants to online chat sessions.
- Inaccurate/Ambiguous Measurement of Self-Deception – this is resolved by measuring self-deception in terms of self-efficacy but also in likeability. Please see the explanation provided for self-deception under the section '*Variables Measured*' for more information.