

Supplementary Materials S2: Manipulation Materials

1. Growth Mindset Manipulation.

After completing baseline surveys the students in this group were informed that they will complete a short activity. The subjects will then be informed that research shows you can grow your intellectual ability (activity crafted from Road to Success, 2010; Blackwell et al., 2007). After the reading, the students will complete writing exercises that included being asked to think of things they had learned to do well, and to recall how practice and effort had been the key to attaining mastery. Exact instructions were as follows:

1.1. *Are people born smart, or can people get smarter through hard work and practice?*

What students do can make a big difference in school performance.

The idea that intelligence can be changed is important to consider for how students learn.

But what does scientific research say about learning and intelligence?

1.2. *What Research Shows*

Research shows that with practice on tasks of mental ability, measures of fluid intelligence have been shown to improve (Jaeggi et al, 2011). Thus, scientific research continues to provide support for the idea that intelligence is a malleable ability (Flynn, 1984; Cury et al., 2008). Moreover, with effort and practice on mentally demanding tasks, one's intellectual ability is likely to improve.

1. Based on what you read in the brief summary of scientific research on learning and intelligence, please reflect on a time that you excelled while learning to do an academic task. Specifically, reflect on an academic task that you feel you were able to do well. Write at least 3 sentences describing this experience.

2. Why do you feel that practice and effort helped improve your performance on this particular academic task

3. Why do you feel that you were able to master this particular task?

4. How did you feel about your intellectual ability after that particular experience?

2. Fixed mindset manipulation.

After completing baseline surveys students in this group were informed that they will complete a short activity. The subjects will then be informed that research shows that that people have a certain amount of intellectual ability and there is little evidence that it can or does change very much over time (activity crafted from Road to Success, 2010; Blackwell et al., 2007). After reading the subjects will complete writing exercises that include being asked to think of things they had difficulty learning to do well and to recall how even with practice and effort they did not feel that they mastered the task. Exact instructions were as follows:

2.1. *Are people born smart, or can people get smarter through hard work and practice?*

What students do can make a big difference in school performance.

The idea that intelligence cannot be changed is important to consider for how students learn.

But what does scientific research say about learning and intelligence?

2.3. *What Research Shows*

Research shows that even with practice on tasks of mental ability, measures of fluid intelligence do not improve very much, if at all (Redick et al., 2012). Thus, scientific research continues to provide support for the idea that intelligence is a fixed ability (Herrnstein & Murray, 1994; Jensen, 1969). Moreover, with effort and practice on mentally demanding tasks, one's intellectual ability is unlikely to change very much.

1. Based on what you read in the brief summary of scientific research on learning and intelligence, please reflect on a time that you had difficulty learning to do an academic task. Specifically, reflect on an academic task that you feel you were unable to do well. Write at least 3 sentences describing this experience.

2. Why do you feel that practice and effort did not help to improve your performance on this particular academic task?

3. Why do you feel that you did not master this particular task?

4. How did you feel about your intellectual ability after that particular experience?

3. Stereotype threat manipulation (for original experiment only).

The subjects in the stereotype threat manipulation group are informed that the (the next task they will complete) OSPAN task is indicative of “quantitative capacity” ability. Moreover, subjects were informed that this capacity was indicative of ability and then instructed to complete a gender identification survey (manipulation crafted from Schmader & Johns, 2008), which consisted of a single question asking participants to indicate their gender. Exact instructions were as follows:

The following task is similar to the previous memory task you completed. The first part is on the computer and the second part will be in paper and pencil form. The next task however, is a reliable measure of “quantitative capacity. Quantitative capacity is the ability to solve complex mathematical equations while trying to process multiple pieces of information related to the problem-solving task. Research has shown that performance on the following quantitative task is highly predictive of performance on tests of intelligence. It is important that you do your best because your performance on this test will be used to help establish norms for different groups. On the piece of paper in beside your computer please indicate your gender before we begin (participant’s sex).

Subjects in the control condition will be informed that the next task (the OSPAN) is a measure of working memory capacity and will be given a brief explanation of what working memory is (manipulation crafted from Schmader & Johns, 2008). Exact instructions were as follows:

The following task is similar to the previous memory task you completed. The first part is on the computer and the second part will be paper and pencil form. The next task however, is a reliable measure of working memory capacity. Working memory capacity is the ability to hold different pieces of information simultaneously while trying to process one specific piece of other information. It is important that you do your very best so that we get an accurate assessment of your working memory capacity.