

# Preservice Teachers' Preferred Definitions of Intelligence and Related Demographics

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## EDUCATOR PREPARATION INSTITUTION (EPI)

Arnie Duncan, then Secretary of Education, said that most of the 1,450 institutions of education are “doing a mediocre job of preparing teachers for the realities of the 21st century classroom” (2009). Federal regulations in 2015 for EPI's, included greater accountability for teacher preparation.

This provided unprecedented attention to the federal expectations and EPI accountability of preservice teachers. With focus being put on preservice teachers, this implies that the beliefs and preparedness of preservice teacher is of value.

## PRESERVICE TEACHERS

Preservice teachers, with inservice teachers, become part of the education process for effective teaching. Preservice teachers are involved and responsible for student learning. They are trained in classroom routines, planning, and organization. In training effective teachers, the role of implicit beliefs that a preservice teacher holds regarding the nature of intelligence is salient. It has been revealed that educators influence students' views about intelligence (Jonsson & Beach, 2010).

A link was found between implicit beliefs of intelligence and scientific theories of intelligence for inservice teachers (Jonsson et al., 2012) and also preservice teachers (Jonsson & Beach, 2010). And beliefs of intelligence are developed from messages from individuals of authority (Elliot & Dweck, 2005, Hadley, 2017).

## PROBLEM AND PURPOSE

Educators generally believe student's success stems from inborn ability (Dweck, 2007). A study finds preservice teacher beliefs are difficult to alter (Pajeres, 1992). However, preservice teachers' implicit beliefs have been shown to be changed (Jonsson & Beach, 2010).

Understanding preservice teachers' implicit beliefs of intelligence can improve preparation programs, bring awareness to inservice teachers who mentor preservice teachers the benefits of adopting a growth mindset and inform school administrators with ideas for professional development.

## RESEARCH QUESTIONS

(1) What are preservice teachers' implicit beliefs of intelligence (2) Do preservice teachers' definitions of intelligence relate to their implicit beliefs of intelligence; (3) Is there a relationship between preservice teachers' demographic information (age, gender, educational level, academic domain and educational psychology enrollment) and their implicit beliefs of intelligence.

## METHODOLOGY

A quantitative, non-experimental, descriptive, correlational and cross-sectional survey was used to explore how preservice teacher's implicit beliefs of intelligence and the knowledge about the definitions of intelligence have a relationship.

Using an on-line service, participants (n=262) with less than two years of teaching experience were surveyed from midwestern states. The survey included the Theory of Intelligence Scale (Dweck 2000), demographics and a preferred definition of intelligence item.

Definition Options:

“Intelligence is made of heredity and environment”, an entity belief definition.

“Intelligence is made up of many styles of learning”, is neither an entity or incremental view of intelligence.

“Intelligence is made up of three types of thinking” is neither an entity or incremental view of intelligence.

“Intelligence is something that is inside all humans and can be developed”, an incremental view of intelligence.

## THEORY OF INTELLIGENCE SCALE

The results of the analysis found that the majority of preservice teachers sampled hold an incremental belief of intelligence (50.8%), with a little over a third (34.7%) hold a mixed view of intelligence and less than twenty percent hold an entity view of intelligence (14.5%).

Implicit Beliefs of Intelligence Items: percentage, mean and standard deviation (Items 1, 2, 4 and 6 rated 1 (strongly agree) to 7 (strongly disagree). Items 3, 5, 7 and 8 are 1 (strongly disagree) to 7 (strongly agree).

Item	1	2	3	4	5	6	7	?	SD
Everyone has a certain amount of intelligence and they really can't do much to change it.	6.5	17.6	11.5	10.3	29.8	13.4	11.1	4.24	1.78
Everyone's intelligence is something about them that they can't change very much.	4.2	14.9	11.8	10.7	29.8	18.3	10.3	4.43	1.69
No matter who someone is, they can significantly change their intelligence level.	1.1	4.2	12.2	14.1	35.9	22.9	9.5	4.86	1.34
To be honest, people can't really change how intelligent they are.	1.9	9.5	12.2	11.8	32.4	19.8	12.2	4.72	1.55
People can always substantially change how intelligent they are.	1.1	4.2	12.2	20.2	35.5	16.4	10.3	4.75	1.33
Everyone can learn new things, but they can't really change their basic intelligence.	5.7	15.3	18.7	20.6	23.3	9.5	6.9	3.97	1.59
No matter how much intelligence someone has, they can always change it quite a bit.	1.5	3.8	15.3	17.2	35.1	16.4	10.7	4.73	1.38
People can change even their basic intelligent level considerably.	1.9	4.6	13.0	22.1	29.0	19.5	9.9	4.70	1.40

## RESULTS

Non-parametric Chi Square test for three categories demonstrated a significant preference ( $X^2 = 52.198$ ,  $df = 3$ ,  $sig = 0.000$ ).

- 43.9% preferred “Intelligence is made up of different styles of learning”
- 21 % preferred “Intelligence is something that is inside all humans and can be developed”
- 20.2 % preferred “Intelligence is made up of three types of thinking, critical thinking, creative thinking and analytical thinking”
- 14.8% preferred “Intelligence made up of heredity and environment”

Definitions can be ranked according to incremental beliefs. The regression results indicate a significant predictor role of implicit beliefs of intelligence [ $R = .421$ ,  $R^2 = .177$ ,  $F(1, 260) = 55.893$ ,  $sig. = .000$ ], 17.7% explanation of variance by the implicit beliefs of intelligence, the predictor.

Regression results indicate two demographic variables significantly predict implicit beliefs [ $R = .328$ ,  $R^2 = .108$ ,  $R^2 adj. = .079$ ,  $F(8, 253) = 3.810$ ,  $sig. = .000$ ]. Age and gender of preservice teacher will predict implicit beliefs of intelligence.

## DISCUSSION

Preservice teachers from Midwestern States of America are more likely to endorse an incremental view of intelligence. The most preferred definition was “Intelligence is made up of many styles of learning.” (43.9%) with the second most “Intelligence is something that is inside all humans and can be developed.” (21%). Each definition of intelligence is associated with an implicit belief of intelligence and can be ranked in a hierarchy relative to incremental beliefs. The most salient of the definitions is “Intelligence is something that is inside all humans and can be developed.” Age and gender (female) are the only predictor variables related with preservice teachers' implicit beliefs of intelligence.

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