

## **A User's Guide:**

Evolution Attitudes and Literacy Survey (EALS) and  
Evolution Attitudes and Literacy Survey-Short Form (EALS-SF)

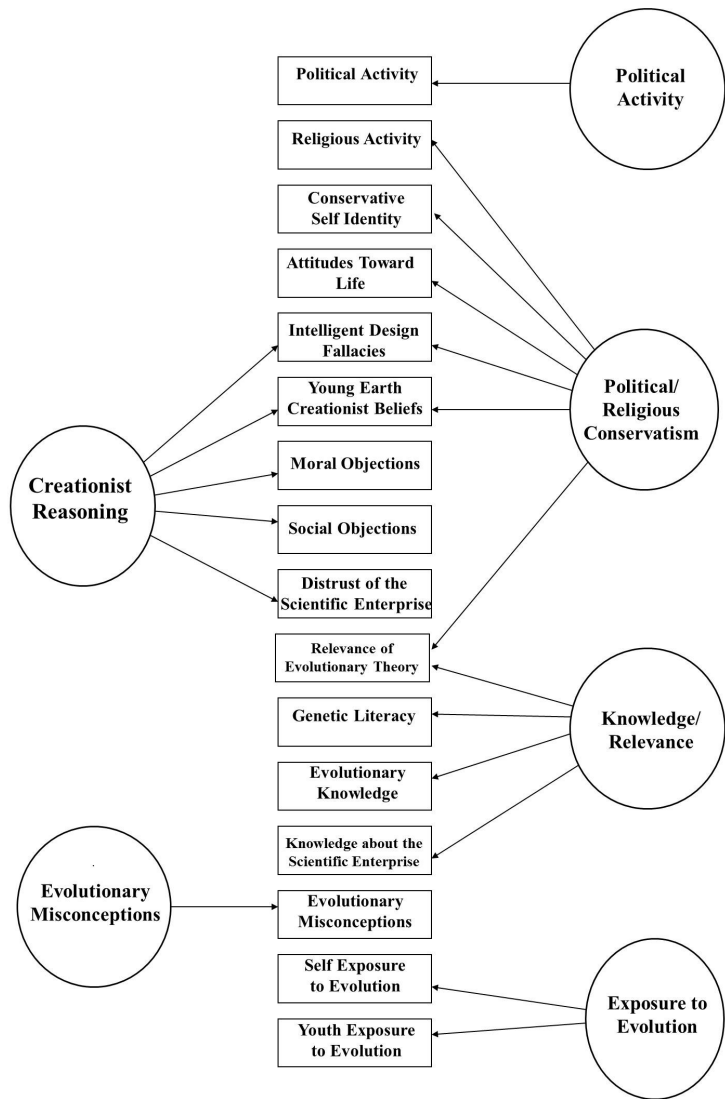
Pat Hawley & Stephen Short

The University of Kansas

### **----- SHORT FORM ITEMS -----**

This guide is a draft of a 'white paper' developed by the authors. Please direct comments and questions to Pat Hawley.

Correspondence concerning this guide should be addressed to Patricia H. Hawley, Department of Psychology, University of Kansas, 1415 Jayhawk Blvd, Lawrence, KS 66045. Telephone : 785-864-9818, Fax 785-864-5696, E-mail: phawley@ku.edu or Stephen D. Short, Department of Psychology, University of Kansas, 1415 Jayhawk Blvd, Lawrence, KS 66045. Telephone : 785-864-9118, E-mail: sdshort@ku.edu.



**Figure 1. Hierarchical Structure of the EALS and EALS-SF**

Hawley & ... Draft 7-15-13

Thus, in ANOVA/regression analyses the following subscales define each higher order factor:

**Political Activity**

- Political Activity

**Political/Religious Conservatism**

- Religious Activity
- Conservative Self Identity
- Attitudes Towards Life

**Creationist Reasoning**

- Intelligent Design Fallacies
- Young-Earth Creationism
- Moral Objections
- Social Objections
- Distrust of the Scientific Enterprise

**Knowledge/Relevance**

- Relevance of Evolutionary Theory
- Genetic Literacy
- Evolutionary Knowledge
- Knowledge About the Scientific Enterprise

**Evolutionary Misconceptions**

- Evolutionary Misconceptions

**Exposure to Evolution**

- Self Exposure to Evolution
- Youth Exposure to Evolution

**Citation:** Short, S. D., & Hawley, P. H. (2012). Evolutionary Attitudes and Literacy Survey (EALS): Development and Validation of a Short Form. *Evolution: Education and Outreach*, 5(3), 419-428.

Table 2

*Evolutionary Attitudes and Literacy Survey Short Form (EALS-SF) Constructs and Scale Items*

Lower-Order Construct	Higher-Order Construct	Items	Scale Metric
Political Activity	Political Activity		
		To what degree are you political?	I
		To what degree do your political views influence your daily life?	II
		To what degree do your political views influence your decisions?	II
Religious Activity	Religious Conservatism		
		To what degree are you religious?	II
		To what degree does religion impact your daily life?	II
		To what degree does your religion influence your decisions?	II
		Religion is especially important to me because it answers many of my questions about the meaning of life. <sup>A</sup>	III
Conservative Self Identity	Religious Conservatism		
		To what degree are you conservative?	I
		In general, how do you self identify politically? <sup>B</sup>	IV
		In general how liberal/conservative are you on Economic issues (welfare, taxation, free market policies, etc)? <sup>C</sup>	V
Attitudes Toward Life <sup>D</sup>	Religious Conservatism		
		Life begins at conception.	VI
		After conception, a developing human is only a cluster of cells, and it makes no sense to discuss its moral condition. ( <b>R</b> )	VI
		All stages of human life- embryo, fetus, child, adult- should have the same legal	VI

		protections.	
Intelligent Design Fallacies	Religious Conservatism & Creationist Reasoning		
		There is scientific evidence that humans were created by a supreme being or intelligent designer.	VI
		There is no evidence that humans evolved from other animals.	VI
		There are no transitional fossils (remains of life forms that illustrate an evolutionary transition).	VI
		Complex biological systems cannot come about by slight successive modifications (i.e., they are irreducibly complex).	VI
		Evolution is a theory in crisis.	VI
		Natural selection cannot create complex structures; It is like a tornado blowing through a junkyard and creating a 747.	VI
Young Earth Creationist Beliefs	Religious Conservatism & Creationist Reasoning		
		I read the bible literally.	VI
		The Earth isn't old enough for evolution to have taken place.	VI
		There was a time when humans and dinosaurs lived on earth together.	VI
		Present animal diversity can be explained by the Great Flood.	VI
		Adam and Eve of Genesis are our universal ancestors of the entire human race.	VI
		All modern species of land vertebrates are descended from those original animals on the ark.	VI
Moral Objections	Creationist Reasoning		
		People who accept evolution as fact are immoral.	VI
		If you accept evolution, you really can't believe in God.	VI
		Darwinism strips meaning from our lives.	VI
Social Objections	Creationist Reasoning		
		The theory of evolution has contributed to racism.	VI
		The theory of evolution has contributed to sexism.	VI
		The theory of evolution has contributed to genocide (the deliberate killing of a group based on nationality, race, politics, or culture).	VI

Distrust of the Scientific Enterprise	Creationist Reasoning		
		Contemporary methods of determining the age of fossils and rocks are untrustworthy. <sup>E</sup>	VI
		The data used to support evolution is untrustworthy.	VI
		The available data are ambiguous as to whether evolution actually occurs. <sup>G</sup>	VI
Relevance of Evolutionary Theory	Religious Conservatism & Knowledge/Relevance		
		Evolutionary theory is highly relevant for biology.	VI
		The theory of evolution helps us understand human origins.	VI
		Evolutionary theory is highly relevant for the social sciences (e.g., anthropology, psychology, sociology).	VI
		Evolutionary theory is highly relevant for the humanities (e.g., history, literature, philosophy).	VI
		Evolutionary theory is relevant to our everyday lives.	VI
Genetic Literacy	Knowledge/Relevance		VI
		Humans share a majority of their genes with chimpanzees. <sup>D</sup>	VI
		Humans share more than half of their genes with mice. <sup>D</sup>	VI
		Humans have somewhat less than half of the DNA in common with chimpanzees. <sup>D</sup> ( R )	VI
		Mutations are never beneficial. <sup>D</sup> ( R )	VI
Evolutionary Knowledge	Knowledge/Relevance		
		In most populations, more offspring are born than can survive.	VI
		Mutations can be passed down to the next generation.	VI
		Increased genetic variability makes a population more resistant to extinction.	VI
		The more recently species share a common ancestor, the more closely related they are.	VI
		Mutations occur all the time.	VI
Misconceptions about Evolution	Evolutionary Misconceptions		

		Characteristics acquired during the lifetime of an organism are passed down to that individual's off spring.	VI
		Evolution means progression towards perfection.	VI
		Evolution is a linear progression from primitive to advanced species.	VI
Knowledge about the Scientific Enterprise	Knowledge/Relevance		
		For scientific evidence to be deemed adequate, it must be reproducible by others.	VI
		Scientific ideas can be tested and supported by feelings and beliefs. ( R)	VI
		Scientific explanations can be supernatural. ( R)	VI
		Good theories give rise to testable predictions.	VI
Self Exposure to Evolution	Exposure to Evolution		
		I've watched evolution related videos on the web (e.g., Ted.com, YouTube).	VII
		I read science magazines featuring evolution (e.g., Discover, National Geographic, Nature).	VII
		I've watched nature shows that discussed evolution (e.g., PBS/Nova, Discovery, National Geographic)	VII
Youth Exposure to Evolution	Exposure to Evolution		
		I have visited natural history museums on field trips or with family.	VII
		As a child, I attended science and nature camps (e.g., Outdoor Ed Lab, local nature centers or zoos).	VII
		How much training in evolution did you receive in high school?	VIII

*Note.*

For scale metric I = seven point Likert scale ranging from 1 (Not at all) to 7 (Very)

II = seven point Likert scale ranging from 1 (Not at all) to 7 (Very much)

III = seven point Likert scale ranging from 1 (Not at all True) to 7 (Totally True) with the midpoint 4 (Moderately True)

IV = eight point Likert scale with 1 (Strong Democrat), 2 (Democrat), 3 (Independent Leaning Democrat), 4 (Independent) 5 (Independent Leaning Republican) 6 (Republican), 7 (Strong Republican), or the option "N/A or Other"

V = eight point Likert scale with 1 (Very Liberal), 2 (Liberal), 3 (Slightly Liberal), 4 (Moderate) 5 (Slightly Conservative) 6 (Conservative), 7 (Very Conservative), or the option “Don’t Know”

VI = seven point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree) with the midpoint 4 (Neither Agree nor Disagree).

VII = five point Likert scale with 1 (Never), 3 (Occasionally), 5 (Frequently)

VIII = five point Likert scale with 1 (None) 2 (One or Two) 3 (Three or Four) 4 (Five or Six) 5 (Seven or More)

<sup>A</sup> See also Dudley and Cruise (1990) <sup>B</sup> cf., ANES 2009 <sup>C</sup> From Carney et al. (2008) <sup>D</sup> From Miller et al. (2006)

<sup>E</sup> See also Ingram and Nelson (2006) <sup>F</sup> Item was drawn from R. Deaner (personal communication, January 20, 2009)

<sup>G</sup> See also Rutledge and Sadler (2007) **(R) Reverse coded item**

Hawley & Short Draft 7-15-13