

Correlation between the Knowledge of Snakes and the Snake Fear

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ABSTRACT— *The question addressed in the current study is to what extent factual knowledge of snakes may influence the fear of snake in humans. Academy of Fine Arts students, mean age 18, of both sexes were asked to fulfill two pencil-and-paper questionnaires (Q) consisted of 21 statements referring to the fear of snake (Q-1) and of 28 false statements about snake anatomy and behavior (Q-2). Experimental subjects were asked to agree or disagree with each statement given in Q. All tests were scored according to standardized procedures and the data were entered into an SPSS file for further analysis. Data obtained revealed positive correlation between positive answers (“agree”) in Q-1 and Q-2. Considerably weak but positive correlation was found between negative answers (“do not agree”) in Q-1 and Q-2. Presumably people having superficial (if any) knowledge of snake anatomy and behavior are more afraid of snakes as compared to those possessing correct information about snake biology. The data obtained suggest proper factual knowledge to help reduce the snake fear.*

Keywords— snake, fear, knowledge

1. INTRODUCTION

Among common specific fears and phobias of human beings is fear of insects, spiders and snakes - the evolutionary developed reaction directed towards survival threats (Ohman, 2006; DeLoache and LoBue, 2009; Jankowitsch, 2009; Soares and Esteves, 2013). The question addressed in the current study is to what extent education level, in particular factual knowledge of snakes, may influence the fear of snake. Fear of life - threatening creatures is common in children and adults irrespective of their age and gender (Muris, et al., 2001; Merckelblach, Murice, 2001), although female are found more likely than men to have fear of spiders and snakes (Fredricson 1996; Arrindell et al., 2003; Rackison, 2009). According to so-called non-associative viewpoint, common human fears such as fear of snakes and spiders, as well as fear of strangers, water or heights does not require learning and several species (including human beings) show fear without any experience of encountering the danger (Poulton and Menzies, 2002). Preparedness theory (Seligman, 1971) suggests humans to have a phylogenetically based predisposition to rapidly acquire fears of objects that may once have posed a threat to humans throughout the evolution. Human infants are predisposed to associate the sight of a moving snake with the sound of a fearful voice (DeLoache and LeBlou, 2009) and children aged 3-5 years more quickly detect snakes as a fear-relevant stimulus hidden among non-threatening stimuli on a touch screen (LoBue and DeLoache, 2008) – the facts pointing to the innate predisposition of humans to rapidly learn to associate snakes with fear. There may be social learning as well. Lab monkeys found to not show initial fear responses to snakes, were easily able to learn fear of snakes through observations of live and videotaped wild monkeys demonstrating fear responses to not only live, but toy snakes (Cook and Mineka, 1990). People learn fear through social means such as reading or listening to negative information (Davey et al., 2003), observing reactions of others to particular stimuli (Mineka and Zimbarg, 2006, Field 2006,). Fear acquired indirectly through social observation, with no personal experience of the aversive event, engages similar neural mechanisms as fear conditioning and indirectly attained fears may be as powerful as fears originating from direct experiences (Olsson et al., 2007). Myths usually show snakes to be harmful creatures and are rarely based on their actual natural history. Horrible stories told by “eyewitnesses” in nearly every village, fears passing down from parents to children are likely the source of most myths in different human cultures (Ocepec, 2001; Stanley, 2008; Muntil T., 2011; personal observation of authors of the current article in Georgia, not published). Stanley (2008) suggests that myths perpetuated by ignorance can be dispelled through education. While it seems reasonable suggesting education to help in reducing socially and evolutionary acquired fear of threatening animals (Prokop and Tunnicliffe, 2008; 2010, Kellert, 1996), few experimental studies (Morgan, 1992; Prokop et al., 2009b, 2010; Tomazic, 2011) addressed this issue with respect of snake fear.

2. MATERIAL AND METHODS

Total of 100 students of the Academy of Fine Arts (71 subjects), Ilia State University (10 subjects) and Technical University (19 subjects), mean age 18, of both sexes (73 females and 27 males), have been recruited as experimental subjects. They were asked to fulfill two pencil-and-paper questionnaires. The first questionnaire (Q-1) consisted of 21 statements referring to the negative attitudes to the snake (For example: “Even if I risk being late to significant appointment, I never cross a field to shorten my way, if there may be snakes”, “I don’t like watching snakes in the zoo”, “I would not wear the belt, made of the snake’s skin”). Second questionnaire (Q-2), consisted of 28 false statements about snake anatomy and behavior (For example: “Snake’s skin is wet”, “Anaconda may reach 30 meters in the length”, “Cobra can swallow large animals, such as deer or wild pig”, “Going swimming, snake leaves poison on the stones at the river bank). Experimental subjects were asked to agree or disagree with each statement given in both Q-1 as well as Q-2. Positive responses (“agree”) to the Q-1 statements were considered pointing to the fear of snake, while positive responses (“agree”) to the Q-2 statements were believed to point to the lack of factual knowledge of snake anatomy and behavior. Negative responses (“disagree”) to Q-1 and Q-2 statements were believed to point to the absence of fear of snakes and presence of factual knowledge of snake anatomy and behavior respectively. All tests were scored according to standardized procedures and the data were entered into an SPSS file for further analysis.

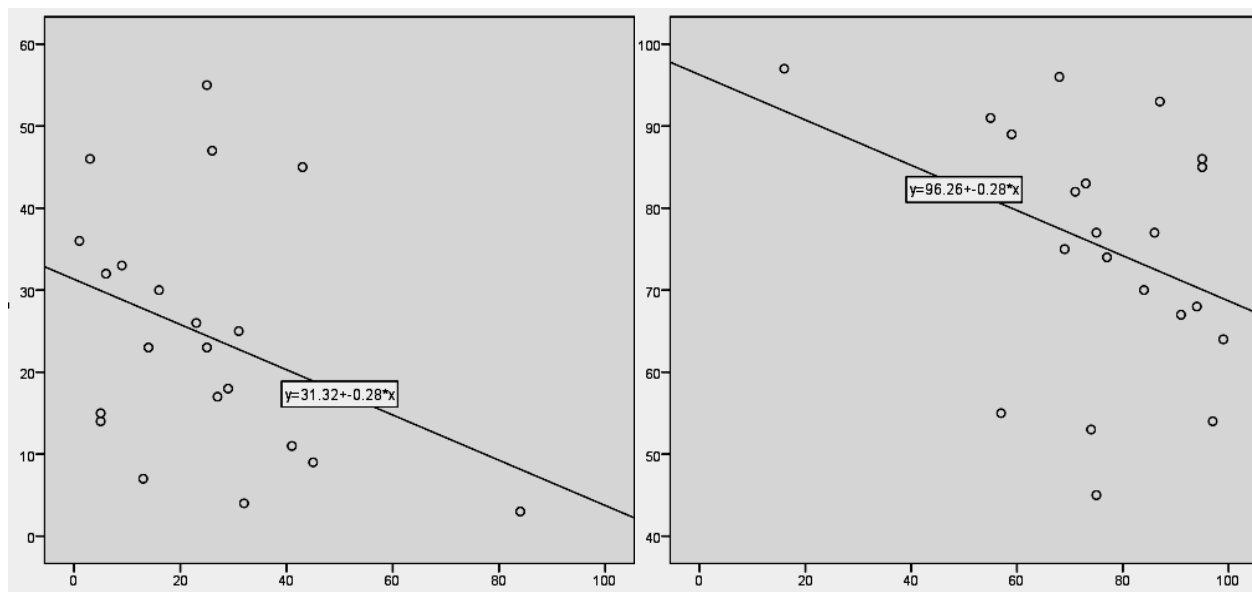
3. RESULTS AND DISCUSSION

Results obtained are presented in the Table 1.

Q-1, Cronbach’s alpha - 0.907		Q-2, Cronbach’s alpha- 0.955	
agree	do not agree	agree	do not agree
519	1581	584	2216

Table 1. Total number of positive (“agree”) and negative (“do not agree”) responses to the Q-1 and Q-2 statements.

As it is shown in the Table 1, 519 positive and 1581 negative answers were registered in response to Q-1 statements, while 584 positive and 2216 negative answers were registered in response to Q-2 statements. Mathematical processing revealed positive correlation between “agree” in Q-1 and “agree” in Q-2. Weaker, but positive correlation was found between “do not agree” in Q-1 and “do not agree” in Q-2 (Graph 1).



Graph 1. Correlation between “agree” in Q-1 and Q-2 (on the left, $y = 31.32 \pm 0.28 * x$, R^2 linear = 0.124) and “do not agree” in Q-1 and Q-2 (on the right, $y = 96.26 \pm 0.28 * x$, R^2 linear = 0.124). Q-1: vertical line, Q-2: horizontal line.

The level of snake fear was proved correlating positively with the level of ignorance of snakes. Results obtained may be interpreted in favor of factual knowledge of snakes as a factor, reducing the fear of these animals. Females are believed to experience the greater fear of animals than males (Fredricson 1996; Arrindell et al., 2003; Rackison, 2009). Unfortunately, relatively small number of male experimental subjects in the current study did not allow to conduct gender related analysis of the data obtained. We would like to stress the problem of snake fear in the light of human health-care and protection of wild nature as well. On the one hand, snake fear as a stressogenic factor may have serious psychological and physiological impact on stress victim (Öhman, 2000; Bishop, 2007; McClure et al., 2007; Hayashi,

2009; Shin and Liberzon, 2010). On the other hand, fear may induce aggression against the source of the fear (Blanchard, 1981, 1984, Baron and Richardson, 2004; Archer, 2009). People often kill snakes, destroy their nest, crash eggs – the cruelty dangerous for snake survival in the area, inhabited by humans (Ellerbeck, 2011). The overall goal of finding a way to reduce snake fear in humans is protection of people from snake fear-induced stress as well as protection of snakes from snake fear-induced human aggression. We agree with the opinion (Prokop et al., 2009b, Tomazic, 2011) that as compared to direct physical contact with live snakes (for example visiting zoos) factual knowledge might be less efficient in reducing snake fear and improving the attitudes of humans toward these animals. Direct exposure to live snakes is considered effective method of cognitive therapeutic desensitization of snake-phobic persons (Bandura et al., 1968). At the same time, data obtained in the current study, as well as recent reports on the effectiveness of teaching in the classrooms (Mantil, 2011) and efficacy of combination of education with other approaches (Australian Reptile Forum, 2010, Allen, 2010) in reducing snake fear are encouraging to further investigation of the role of factual knowledge in reducing the fear of snake in humans.

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