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Attitudes to statistics and affective expressions in use of graphs developed by primary school teachers

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This study aims to investigate the attitudes towards statistics and affective expressions in use of graphs developed by primary school teachers. The study participants will be 206 primary school teacher of Pernambuco - Brazil. The approach of this investigation is based on a mixed methodology of data collection and analysis, composed of three complementary datasets: questionnaires, attitude scale and interviews. For the quantitative analysis, we will use one-dimensional parametric and non-parametric methods and factorial analysis. To do the analysis of the teachers’ interpretation will be used the content analysis.

Keywords: Attitudes towards statistics, affective expressions, primary school teachers.

INTRODUCTION

The conceptualization of attitude is investigated by increasingly number of studies in education field (Gleitman, Fridlund, & Reisberg, 2011). For example, in mathematics education and statistics education, studies investigate the close relationship between negative attitudes and low academic performance. According to Gal, Ginsburg, and Shau (1997), the main concerned is to analyse the relationships between affectivity and learning in these two areas from the study of students’ attitudes. However, attitude towards statistics scales usually disregard affective expressions that may emerge during the interpretation of statistical data.

Evans (2000) argues that when people interpret graphs, they can express pleasurable and/or painful feelings related to previous experiences of their lives. Authors such as Monteiro and Ainley (2010) suggest that statistical literacy is comprised of these affective elements. Others authors argue that the previous experiences and feelings about the topics related to the data can also be a negative influence during the process of interpretation (Cooper & Dunne, 2000).

The aim of this study is to investigate the relationships between attitudes, statistical knowledge of primary school teacher and their interpretation of graphs. We also intend to investigate which elements might influence the mobilization of teachers’ affective expressions during their selection of graphs to work in classrooms.

METHODOLOGY

The study will be conducted with teachers of municipal schools in the Metropolitan Region of Recife - Pernambuco, Brazil, with a sample of 209 teachers. The methodological approach is mixed, with questionnaires, Likert Attitude scale and interviews. The study will be composed of three complementary datasets: questionnaires, attitude scale and interviews. The questionnaire items will be related to individual information’s and graphical knowledge. The attitude scale will have a 4-point Likert format scale, with 10 positive statements and 10 negative, developed and validated by Cazorla and colleagues (1999).

Based on the results, we will select 20 teachers who have more negative attitude towards statistics; and 20 teachers who have more positive attitudes towards statistics. In the third stage, semi-structured individual interviews will be held with those 40 selected teachers. They will discuss data represented by graphs which present data about relevant topics as well as usual and unusual representations published in the media.
For data analysis, we will use SPSS and NVivo. The statistical analyses with SPSS will be useful to identify possible differences and similarities between the situations presented in order to emerge affective expressions from participants’ interpretations. The NVivo will be utilised in the analysis of qualitative data from interviews with participants.

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