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Development of an abbreviated Personal Globe Inventory using item response theory: The PGI-Short

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ABSTRACT

The responses of 2813 individuals to the Personal Globe Inventory (Tracey, 2002) were examined with the goal of developing a shorter, yet valid version of the scale using item response theory to guide the process. A random sample of 1000 individuals was used to select the best items and then the remaining 1813 were used as a validation sample to examine psychometric properties. For items to be included in the shortened form, the option characteristic curves had to conform to theory and there could be no presence of differential item functioning across either gender or ethnicity. The best 80 items were retained forming the PGI-Short. This instrument demonstrated excellent reliability and adherence to a circular model, there was no differential item functioning across either gender or ethnicity. The PGI-Short was supported as an alternative to the fuller version of the PGI.

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1. Introduction

Interest assessment selection involves a compromise between quality and quantity. There is a need to have the best measures with strong psychometric properties that provide the most information to the user. Typically this means that instruments are quite lengthy as longer tests are generally more reliable. However, lengthy tests are often impractical given situational or client constraints, and can result in random or incomplete responding. Hence selecting an instrument is often a balance of quality with length. The purpose of the current study was to develop a shortened version of the Personal Globe Inventory (Tracey, 2002) using item response theory and examine the abbreviated scale for its psychometric support.

1.1. Personal Globe Inventory

The Personal globe Inventory evolved from the spherical model of vocational interests (Tracey & Rounds, 1996a, 1996b) which was proposed as a more general version of Holland's RIASEC (Holland, 1997) model. Holland proposed that the six RIASEC types exist in a hexagon structure with more proximate types being more similar than more distal types. The spherical model expands this conception in several ways. First, it proposed that interest preferences could be represented using a three dimensional model with the first two dimensions being People vs. Things and Data vs. Ideas and the third dimension being prestige. Prediger (1982; Prediger & Vansickle, 1992) demonstrated that Holland's RIASEC types existed in the two dimensions of People/Things and Data/Ideas. Second, the RIASEC types form an equally spaced circular structure (i.e., a circumplex) in the space formed by these two dimensions (Tracey & Rounds, 1993). This was in essence similar to the hexagon model but recognized that there could be more types than just six on the circle. Tracey and Rounds (1995) demonstrated that indeed, there is no empirical basis for six types. Interest preferences were equally distributed in a circle based on the People/

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Things and Data/Ideas dimensions. So there could be 4, 6, 8 or any number of types representing the same space. To demonstrate this, the spherical model used 8 types to represent the interest circle instead of the 6 RIASEC types. Finally, the spherical model incorporates a third dimension, that of prestige which is orthogonal to the other dimensions. Putting the three dimensions together results in a spherical structure of interests: basic interests at the equator (here exist RIASEC types and the newer 8 types) and prestige as the north–south pole. Interest types are placed all over the surface of the sphere. The original spherical model was based entirely on occupation preference item types. Tracey (1997a) examined whether the spherical model fit activity preferences and competence beliefs also and he found that it did. He developed the Personal Globe Inventory to operationalize the spherical model and incorporate occupational preferences items as well as activity liking and competence belief items.

The PGI thus consists of three separate types of items (i.e., occupational preferences, activity liking and activity competence beliefs), each of which can be utilized separately or combined into a composite. Each of these item types yields 31 different scores: 18 scales equally placed around the sphere, 6 RIASEC scores, the three dimensional scores of People/Things, Data/Ideas, and Prestige and the four separate scales of People, Things, Data, and Ideas. The 18 spherical scales, the 6 RIASEC scales and the People, Things, Data, and Ideas are depicted in Fig. 2. These scores are normed using same sex norms so individuals get scores on all these scales for the same sex norms as well for combined sex norms. Tracey (2002) has demonstrated strong reliability and validity of the measure. It is, however, quite lengthy containing 108 occupational items and 236 activity items (118 liking and 118 competence beliefs). Recent web applications of the PGI (i.e., http://vcc.asu.edu) have used the reduced set of activity items (liking sand competence beliefs) only, which still total 236 items. While this is a good assessment, it is detailed and computationally cumbersome, given its reliance on norms. So a shortened measure that still captured most of the PGI but also one that was simpler to administer and did not require norms was desired. It was decided

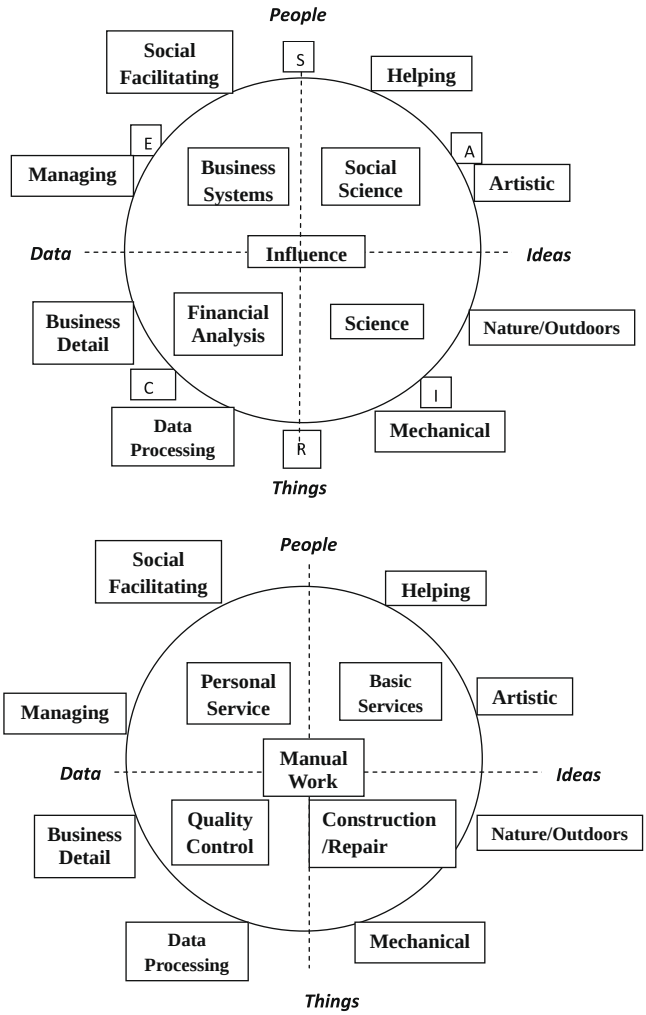

Fig. 1. Spherical structure of the 18 Personal Globe Inventory scales. Top depicts upper half (higher prestige) of the PGI and bottom depicts lower half (lower half). Also the top half includes the 6 RIASEC scales on the equator.

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