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# Exploring and measuring differences in person–thing orientations

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ABSTRACT

Individuals differ in their orientation toward aspects of the environment. Previous work suggests that some individuals orient primarily toward people, whereas others orient toward things. Women generally orient towards people more than men, and men orient towards things more than women. Person–thing orientation is related to occupational choices. This research examined the structure of person–thing orientation using a combination of exploratory and confirmatory factor analyses and structural equation modeling. Analyses suggested that thing orientation and person orientation can be measured (1) with a few items; (2) separately from each other; and (3) person orientation and thing orientation are not necessarily bipolar opposites.



## 1. Introduction

More than 40 years ago, Little (1968, 1972, 1974) began a series of theoretical papers about the fit between individuals and the environment. Most scientists grant that the environment has powerful influences on behavior and that living organisms continually adapt to environmental changes. Of special interest to Little was selective orientations towards people and things. Individuals differ in attending and responding to the people in the environment (Person Orientation), but also in how much they attend and respond to the objects in the environment (Thing Orientation). These orientations are related to person–environment fit, to individual adaptation, and ultimately, the capacity of organisms to exploit any environmental niche.

Little developed a 24-item self-report scale to measure person–thing orientation. From the structure of the instrument, 12 items of which measured Person Orientation (PO) and another 12 measured Thing Orientation (TO), we infer that Little kept open the possibility that TO and PO might not be bipolar aspects of a single dimension. Little left open as an empirical question the possibility that PO and TO could even be orthogonal. The relative independence of PO and TO could be falsified empirically. Little and Kane (1974) showed that their PO scale predicted concerns for privacy, but the TO scale did not. This suggests that PO and TO are not bipolar opposites and may not even be aspects of a single dimension.

The person–thing orientation distinction was first framed by Cattell and Drevdahl (1955), who examined characteristics of 294 research scientists in biological sciences, physics and psychology. They found that research scientists within each field differed from administrators and teachers within the same field. Researchers showed "schizothymic preoccupation with things and ideas, rather than people" (p. 259). Cattell and Drevdahl implied that being thing-oriented was negatively related to being people oriented. They may even be bipolar ends of a single dimension. Cattell and Drevdahl's (1955) study was published before modern computer technology was available to aid statistical analyses. Given serious computational errors found in some of Cattell's other 16PF work (e.g., Digman & Takemoto-Chock, 1981), conclusions by Cattell and Drevdahl require corroboration. Further empirical research is needed on dimensional structures of PO and TO.

In their comprehensive review of the literature on sex differences in dispositional vocational interests Su, Rounds, and Armstrong (2009) observed that person–thing orientations was first noted by Thorndike (1911) in his book, *Individuality*. Thorndike regarded person- and thing orientation similarly to Cattell: part of a single continuum. Su et al. organized their analyses around Prediger's (1982) two-dimensional conceptualization of occupational interests, namely Things-People and Data-Ideas. Procedurally, they examined technical manuals for 47 interest inventories, yielding 503,188 respondents. Men preferred working with things and women prefer working with people. The effect size was large ($d = 0.93$) on the People–Thing dimension. Sex differences on the Data-Ideas dimension were negligible.

To summarize, several researchers observed a difference in individual orientation toward people and things. These are related empirically to sex differences with women reporting greater orientation toward people than do men. Men report greater orientation

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toward things than do women. Meta-analytic work confirms that the orientations are also related to occupational preferences. Still unclear is the dimensional structure of PTO. PO and TO may be part of a one-dimensional continuum. Alternatively, PO and TO both reflect a common underlying variable of engagement with the environment, as part of a positive omnibus interest manifold. A third possibility is that PO and TO are separate dimensions that are largely independent. If this is correct, an individual could possess configurations, such as being high on both PO and TO, or, high on PO but low on TO.

One obstacle to empirical investigation for PO and TO involves measures. To conduct their comprehensive review, Su et al. (2009) conducted archival analyses of 47 technical manuals for interest inventories. Their classifications required a staggering commitment (pp. 864–865). Few researchers have the resources or expertise required to duplicate these procedures to study person–thing orientation. What is needed is a research friendly tool. Ideally, it would be a brief measure collected by persons without first-line expert knowledge of technical manuals or theories of occupational counseling. Concise measures bring advantages to research beyond reducing the measurement load. A concise tool allows its inclusion in time-constrained research (e.g., laboratory experiments) and multimethod research like diary studies and experience sampling. Underscoring the importance of concise, public domain interest measurement instruments, Armstrong, Allison, and Rounds (2008) validated short-forms based on Holland's (1997) RIASEC (realistic, investigative, artistic, social, enterprising, and conventional) vocational types for use in basic research. The social and realistic subscales of the shortened RIASEC assess interests that are generally related to person-oriented and thing-oriented occupational activities. However, the orientations conceived by Little are more global responses to the environment.

Our research set four converging goals, each accomplished with the use of a separate data set. First, we explored the dimensional structure of Little's original 24-item scale using modern statistical techniques. We used exploratory factor analysis (EFA) to uncover factors underlying Little's measure, and interrelations among the items. We also located PO and TO in "Big Five space" (i.e., in relation to the dimensions of the Big Five; Ozer & Benet-Martínez, 2006). Second, we used confirmatory factor analyses (CFAs) to test hypotheses about the factor structure of the person–thing orientation measure. Specifically, is it more plausible that PO and TO are two ends of a common continuum or that PO and TO are two separate dimensions? Third, we used structural equation modeling (SEM) to explore factor equivalence across sex. The fourth goal was pragmatic. Can the core aspects of Little's conceptualization be captured with a reduced set of items?

## 2. Study one: exploring factorial structure

### 2.1. Method

#### 2.1.1. Participants

Introductory psychology students from Purdue University ($N$ = 804 from a potential pool of 2119) completed the 24-item Person–Thing Orientation scale during an online mass-testing session. The median age was 19 (range: 18–44). Most were in their freshman (55%) or sophomore (26%) year of college. Fifty-six percent of the sample was female and 75% were White.

#### 2.1.2. Instrument and study variables

*2.1.2.1. Person–Thing Orientation scale.* Little's original PTO items were updated to reflect contemporary terminology (see Table 1). The term "beggar" was changed to "homeless person", and "record player" was changed to "stereo sound system." Participants completed the revised 24-item PTO scale with these instructions: "Please rate how much you would enjoy being in the situations listed below. Rate each one even if you have never done it", using a 5-point rating scale where 1 = "not at all", 2 = "slightly", 3 = "moderately", 4 = "quite a lot", and 5 = "extremely".

*2.1.2.2. Big Five measure of personality.* The 44-items of the Big Five Inventory (BFI, John & Srivastava, 1999) measured agreeableness, contentiousness, extraversion, openness to experience, and neuroticism. Items for both PTO and Big Five measures were randomized.

### 2.2. Procedures

The online mass-testing survey was offered to introductory psychology students during the first two weeks of the semester and was open to the first 800 volunteers.

### 2.3. Results and conclusions

#### 2.3.1. Factor structure

Exploratory factor analysis using Maximum Likelihood estimation was conducted (Muthén & Muthén, 2010). First, we compared factor models that included one to seven factors. To determine the optimal number of factors for the current data, we set three criteria (Fabrigar & Wegener, in press) for selecting the final model. First, the model should fit the data well. Second, a model with one fewer factor should fit substantially worse. Finally, a model with one additional factor should not fit appreciably better. The Comparative Fit Index (CFI; Bentler, 1990), the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), and the Root Mean Square Error of Approximation (RMSEA; Browne & Cudeck, 1993) for each model are reported. For CFI and TLI values of .90 or greater reflect adequate model fit. MacCallem, Browne, and Sugawara (1996) noted that RMSEA values of .05 or less indicate good fit, values ranging from .05 to .08 indicate reasonable fit, values ranging from .08 to .10 indicate mediocre fit, and values greater than .10 indicate poor fit.

Exploratory factor analysis of all 24 items indicated that a six factor model fit the data best, $\chi^2(147, N = 804) = 101.98$, $p < .001$, CFI = .95, TLI = .90, RMSEA = .057 (CI 90 interval = .052–.062). Two factors accounted for 13/24 items and also had the largest Eigenvalue, 5.10 and 4.03 (all other Eigenvalue <1.70). The first factor consisted of statements like "Listen in on a conversation between two people in a crowd" and "Attempt to comfort a total stranger who has had a disaster happen." This factor appears to represent the core of what Little called Person Orientation ($\alpha$ = .80). The second factor consisted of statements like "Redesign and install a stereo sound system yourself" and "Take apart and try to reassemble a desktop computer." This factor appears to represent the core of what Little called Thing Orientation ($\alpha$ = .90). The third factor consisted of items with statements such as "Breed rare forms of tropical fish" and "Learn to be good at the art of glass blowing." This factor appears to represent a smaller factor dealing with a focus on mastery ($\alpha$ = .66). The fourth factor consisted of items with statements such as "Explore the ocean floor in a one-person submarine" and "Go sky-diving." This factor represents an additional smaller factor dealing with exploration ($\alpha$ = .68). The fifth factor consisted of items with statements such as "Interview people for jobs in a large hospital" and "Interview people for a newspaper column." This represents a smaller factor dealing with talking with people and information exchange ($\alpha$ = .63). The final factor consisted of items with statements like "Join in and help organize a children's field trip at school" and "Help a group of children plan a Halloween party." This represents a smaller factor dealing with children and prosocial