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Response Latency Measures for Biographical Inventories

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Navy Personnel Research
and Development Center

Final Report

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Abstract

This is the final report of the project, "Response Latency Measures for Biographical Inventories." The purpose of this research was to determine whether recent findings about the connection between response latencies on personality inventory items and item instability can be used to increase a test's validity. A study was carried out, using latency-weighted scores and measures of deviant latencies for the Armed Services Applicant Profile, a biographical inventory, to predict the retention of Navy recruits. The latency data did not improve the ASAP's validity directly, but there were indications that employing these data in developing an inventory may enhance validity indirectly. The technical report for this project is summarized, the staff is listed, and directions for future research are outlined.

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Response Latency Measures for Biographical Inventories

The purpose of this research was to determine whether recent findings about the connection between response latencies on personality inventory items and item instability can be used to improve a test's validity (Dunn, Lushene, & O'Neil, 1972; Fekken & Jackson, 1988; Holden & Fekken, 1990; Holden, Fekken, & Jackson, 1985; Rogers, 1973). A study was carried out with the Armed Services Applicant Profile (ASAP; Trent, Quennette, & Pass, 1999), a biographical inventory intended for use in screening enlisted personnel for adaptability to military service. The ability of latency-weighted scores to predict retention and the ability of measures of deviant latencies to function as suppressor or moderator variables were appraised.

Abstract of Technical Report

The technical report, "Response Latency Measures for Biographical Inventories" (Stricker & Alderton, 1991) is summarized below:

This study assessed the usefulness of response latency data for biographical inventory items in improving the test's validity. The ASAP was computer administered to Navy recruits, and the regular score, latency-weighted scores, and measures of deviant latencies were obtained. The latency-weighted scores did not improve the ASAP's validity in predicting six-month retention, when used instead of or in addition to the regular score, and the measures of deviant latencies did not function as suppressor or moderator variables to improve the ASAP's validity. But subgroups of items with different latencies varied systematically in their internal-consistency reliability (with increased reliability for subgroups with shorter latencies), and a small subgroup of items with moderate latencies was almost as valid as the regular score. These findings suggest that latency data may be useful in writing and selecting inventory items.

Project Personnel

The project personnel follow:

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David L. Alderton, Co-Principal Investigator.

Lucient C. Chan, programmer.

Thomas Sheridan, programmer

Annette Turner, programmer.

Michael Alvarez, research assistant.

Mark Knapp, research assistant.

Presentations

Stricker, L. J. (1990, November). Response latency measures for biographical inventories. Briefing given to ONR MPT Committee, Arlington, VA.

Future Research Directions

Follow-up research might take several directions.

1. A replication and extension of the present study is needed. The primary focus would be on (a) the comparative and incremental validity of the latency-based measures vis-a-vis standard measures and (b) the unexpected finding that both reliability and validity appeared to be lower for items with either very long or very short latencies.

Three kinds of extensions are in order. One would be to use a more predictable criterion than six-month retention. Thirty-six month retention is one possible criterion, for it is appreciably more predictable than six-month retention ($r = .27$ vs. $.18$ to $.20$; Trent, 1989; Trent, personal communication, August 1986). Other suitable criteria for the ASAP might be disciplinary records, promotions, and recommendations for re-enlistment.

Another extension would be to employ other kinds of inventories. Homogeneous biographical or personality inventories would be obvious possibilities, perhaps less problematic than heterogeneous biographical inventories, like the ASAP.

A third extension would be to use populations for which selection and classification are critical because of the difficulty of recruiting qualified personnel, the expense of training them, or the sensitivity of their duties, and hence even modest improvements in the validity of assessments are of considerable importance.

2. Efforts should be made to partition response latencies into the time consumed in each stage in responding to inventory items (Kuncel, 1973; Rogers, 1974a, 1974b) because each of these times may have different psychological implications. Experimental manipulation of the item properties and stages in responding is critical in this research.

3. Situational influences that affect the importance of response latencies require investigation. Faking studies that simulate the demand characteristics of the operational use of inventories in selection would be feasible and relevant.

4. Psychometric research into optimal methods for weighting individual items and for grouping items by their latencies is called for. Two questions that need resolution are (a) the efficacy of weighting individual items vs. grouping items and (b) the value of assigning minimal weights to items with very long latencies vs. assigning minimal weights to items with either very long or very short latencies.

5. Research into other approaches to using response latency information to improve inventory validity is essential. Recent studies have established

the incremental validity of latency scores for personality inventory scales when combined with the regular scores for the scales (Fekken, 1990; Holden, Fekken, & Cotton, in press; Mervielde, 1988; Popham & Holden, 1990). This line of work is extremely promising and needs to be pursued in real-life operational situations.

6. Investigations of the usefulness of latency data in writing and selecting inventory items are needed. These would include correlational studies that compare the validity of items selected with latency data and items chosen with conventional methods, as well as experimental studies that manipulate latencies, by altering item length and other characteristics, and then assess differences in the items' validity.

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