Minimizing Response Bias, Enhancing Veracity, and Improving Accuracy of Predictions based on Biodata

Michael J. Cuttler, Ph.D. ABPP
Fellow, American Psychological Association
Director of Research, LESI®

Simply spoken, biodata are specific life events, derived from various personal history domains (e.g. employment/military, legal, substance use, etc.), which are then assigned numerical values. Scientific research has demonstrated that these values, considered in aggregate, are predictive of specific job dysfunctions in law enforcement officers (e.g. Sarchione, Cuttler, Muchinsky, and Nelson; 1998, Cuttler and Muchinsky; 2006). Therefore, analyzing personal history data (by deriving biodata scores) can be an effective means of evaluating applicants for employment. However, derivation of this information in an accurate and efficient manner can be problematic.

There are four things that effect accuracy of predictions based on biodata:

- The way the questions are formulated and presented
- The way the answers (responses) to the questions are scored
- The attitude or "bias" of the respondent who completes the questionnaire.
- The way the resultant information is indexed, organized, and presented to investigators.

In the academic literature, the most common way to construct a biodata questionnaire is to identify a series of life events that are common among incumbents who exhibit the behaviors and/or job outcomes that are the focus of investigation. Once these life events are defined, a series of questions are written. Responses to these questions are then scored and the resultant values are calculated to derive predictions and/or "risk score".

In order to facilitate scoring, questions are typically formulated in "objective" format ("true/false", "yes/no", multiple choice, and/or range related questions). As such, scoring of these questions is a straightforward, "mechanical" exercise that is easily adapted to scoring large applicant groups. However, objectively scored biodata instruments also contain significant limitations in regard to accuracy.

It is expected that employment applicants will attempt to portray themselves in as positive a light as possible in order to be viewed favorably in the selection process. Similarly, applicants' responses to "objectively scored" (true/false, yes/no, multiple choice, etc.) life history questions are dependent upon his/her interpretation of a given question. In regard to negative life events, it is expected that an applicant's "response set" effects his/her interpretation of a given question and impacts the accuracy of the resultant data.

The term "response set" is a psychometric concept, well documented in the literature, referring to the "attitude" with which an individual completes a test, questionnaire, or screening instrument. As noted above, it is generally accepted that the "response set" adopted by an employment applicant will engender a "positive bias" towards description of life events, particularly if these events are negative.

For example, an employment applicant might indicate "no" to an objectively formulated question reading "have you ever been fired, terminated, or asked to leave a job under negative circumstance". However, upon subsequent interview he/she might state:

"I was not terminated or asked to leave. I simply thought it was best to leave after my cash register came up short. The boss told me he would hold me responsible and company policy requires him to terminate any employee whose register comes up short, so I thought it best to leave before it came to that."

In this case a biodata value for "job termination" should be calculated. However, based on the applicant's interpretation of the question, and subsequent "objective" response, it would not be scored. Because of these phenomena, many objectively scored biodata instruments are found to be inaccurate upon interview and/or background investigation and are considered to be reliable only upon confirmation by personal interview. Besides effecting accuracy, this limits the utility of objectively scored questionnaires for use in large applicant groups.

onlinePHQ® overcomes this limitation by requiring applicants to respond to questions in both objective and subjective formats. Subjective formats (open ended questions) are less obvious to the applicant (hence less susceptible to response set biases). This format also has the advantage of allowing the evaluator (or rater), rather than the applicant, to interpret specific events and assign biodata scoring points.

Nonetheless, subjective formats also have limitations. Scoring subjective responses can be a tedious, time-consuming task yielding inconsistent and/or inaccurate results. This is because the responses are usually handwritten (often difficult to read, especially in the case of negative information) and relevant information is spread out among several pages (sometimes, several volumes) of personal history information so important data points are at risk of being overlooked.

onlinePHQ requires applicants to provide both objective (yes/no, true/false, etc.) and subjective (open ended) data electronically. This renders the text more readable. In addition, relevant information gathered in various (diverse and separate) sections of the questionnaire can be organized and presented to investigators consistently. For example, an applicant may indicate in section 2 of the questionnaire (employment) that they had never been “formally disciplined” on a job. However, several pages later, when responding to section 5 (integrity) they might indicate “I took some equipment home from work. I forgot about it until it came up missing in an audit; then I brought it back. I don’t know if this is stealing or not but the boss wrote me up even though I returned it. After I returned it they took the letter out of my file”.

In this case, the applicant completed section 2 (employment) with a positive bias; i.e., chose not to present this event as an instance of "formal discipline". The applicant's response set (attitude) in this case may have been that the incident was minor and/or since the "write up" was subsequently deleted, it was not worth mentioning. However, when completing section 5 (integrity), the applicant's response set was somewhat different. Since the question did not relate to employment discipline, he/she provided substantially more detail about this event.

Another way that an applicant’s positive bias and/or response set effects the accuracy of predictions based on biodata involves the way questions are presented (regardless of format). In conventional “paper and pencil” questionnaires, all questions must, necessarily, be visible to the applicant. As such, applicants can anticipate what specific explanations are required; they can “tailor” answers to fit specific questions and they can also avoid inconsistencies by going back to previous questions.

onlinePHQ is presented in electronic format. Various “pages” of the form are displayed, as needed, based on specific applicant responses. Detailed descriptions of specific responses are elicited on a conditional basis (additional questions are not visible until the “stem” question is endorsed), dependent upon logic contained in our "questionnaire engine".
In addition, the form is presented in sections. Once a section has been completed and submitted to the database, it cannot be changed or altered. This minimizes positive response bias (enhances accuracy) since it is more difficult to anticipate the specific information that will be required and impossible to alter previously submitted information.

In addition, when completing conventional "paper and pencil" questionnaires, applicants must “navigate” many non-applicable questions. As such, there is also no way to assure that all applicable questions are answered. Given the above mentioned “response set” and positive bias, applicants often fail to provide critical information by misunderstanding directions, overlooking questions, etc. In this regard, **online PHQ** "questionnaire engine" contains logic that navigates the form correctly and specifies "critical fields" that must be completed before the applicant is allowed to continue.

Finally, the "report engine" of **onlinePHQ** identifies related information contained in multiple sections of the questionnaire and presents this information in a spatially related report. This is done by classifying information into "life events" which are indexed (internally) by date. In the example above, the applicant's admission of discipline on the job (contained in section 5, while denied in section 2) can then be linked to a specific employment and this information is then reported to the background investigator within the context of a specific employment as well as integrity.

Summary

onlinePHQ enhances veracity and improves accuracy of biodata based predictions of job performance in law enforcement, criminal justice, and public safety applicants by:

- ✓ Minimizing the effects of applicant "response set" (positive response bias) associated with self report life history questionnaires.
- ✓ Presenting both objective and subjective responses "as indicated" by logic
- ✓ Requiring that all pertinent information be submitted
- ✓ Indexing responses as life events and relating them across questionnaire sections
- ✓ Reporting discrepancies between information currently and previously reported by the applicant
- ✓ Presenting this information in an organized and spatially related report format.

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onlinePHQ® by LESI

References:

The Prediction of Dysfunctional Job Behaviors Among Law Enforcement Officers; Sarchione, Charles D.; Cuttler, Michael J.; Muchinsky, Paul M.; Nelson-Gray, Rosemary; **Journal of Applied Psychology, 1998, Vol. 83, No. 6, 904-912**

Prediction of Law Enforcement Training Performance and Dysfunctional Job Performance with General Mental Ability, Personality, and Life History Variables; Cuttler, Michael J.; Muchinsky, Paul M; **Criminal Justice and Behavior 2006 33: 3-25**.