Psychometric Considerations When Using the Jesness Inventory-Revised (JI-R)

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Abstract

The Jesness Inventory-Revised (JI-R) is a self-report personality measure that is often employed in forensic mental health evaluations of juvenile delinquents. This measure provides both an assessment of personality attributes or traits, and a personality classification based on interpersonal maturity. In this brief review of the JI-R, the effectiveness of this instrument in detecting response bias, especially underreporting, is discussed. Additionally, the issues of item keying, heterogeneous item content within scales, and item overlap between scales within this inventory is addressed. Finally, the writer offers some practical considerations for evaluators when using the JI-R and suggestions for future research.

Keywords: Jesness Inventory-Revised; Response Bias; Item Overlap

Introduction

The Jesness Inventory [1] was designed to measure the attitudes and perceptions of juvenile delinquents and to aid clinicians in the classification, understanding, and treatment of juvenile offenders and youth with conduct problems. The Jesness Inventory-Revised (JI-R) [2] was identified as being among several standardized personality tests that are useful in juvenile forensic assessments [3]. This measure provides assessment of personality traits on 11 personality scales, personality classification based on level of perceptual integration and interpersonal maturity (9 subtype scales) and 2 DSM-IV scales (Oppositional Defiant Disorder and Conduct Disorder). The revised Jesness Inventory contains 160 items and can be completed in 30 to 45 minutes by respondents with as little as a 4th grade reading level. As indicated by Jesness [2], most studies using the JI have supported its validity in distinguishing delinquent from nondelinquent youths. For a further description of the JI-R and its application in juvenile delinquency assessments, see Semel [4]. The current report aims to identify some psychometric considerations relevant to use of the JI-R in juvenile delinquency assessments. In particular, the validity scales, scale item composition, heterogeneous scale content, item overlap, and inter-scale correlations on some of the Personality scales will be discussed. The function of the Denial scale will be discussed in some further detail. Additionally, some guidelines will be presented to help identify potentially invalid test profiles.

Scale item composition and detection of response bias on the JI-R

Items on the JI-R personality scales are heavily keyed in the True direction for most of the scales. Thus, the non-endorsement of problems on most of the personality scales would be reflected in a higher percentage of False responses. For example, on the Social Maladjustment scale, the longest personality scale on the JI-R, 59 of the 62 items add to the raw score when endorsed True. In contrast, the Denial scale is heavily weighted in the False direction - 16 of the 19 items on this scale add to the raw score when endorsed False. Thus, a tendency on the part of youths to respond to items in the False direction, if somewhat exaggerated, may have the effect of suppressing

scores on most of the personality scales while elevating the score on the Denial scale. The effectiveness of the two JI-R validity scales is uncertain. As noted in the technical manual, the Lie (L) and Random Response (RR) scales were developed "on a theoretical basis and should be regarded as experimental until research further validates their functional effectiveness" (p. 47). The test manual provides preliminary evidence that a score of 4 or more on the five-item Lie scale was very rare, i.e. 1.6% (sample N = 685) and a score of 4 or more on the five-item Random Response scale was rare, i.e. 4.7% (sample N = 683). Still, further research of these scales is warranted. It is also noted that four of the five items on the JI-R Lie scale (which is a subset of the Repression scale) are keyed in the True direction. Therefore, a non-acquiescent (nay-saying) response set may have the effect of suppressing or failing to elevate the Lie scale and may or may not be detected by the 5-item JI-R Randomness scale (see Pinsoneault [5], for his development of alternate, empirically effective, albeit non-official random response scales for the JI-R). The Lie scale appears to have good sensitivity to unrealistically positive presentation of self, yet the true negative rate may be weak. An implication is that if a youth is trying to conceal or deny anti-social attitudes and to appear well-adjusted but is not responding in a grossly careless or random manner, the test might yield a false negative result. The profile might reveal a high percentage of False responses, suppressed, low scores on the personality scales and on the Asocial Index, with the exception of the Denial scale and perhaps the Repression scale, and below cut-off scores on the Randomness and Lie scales. On the other hand, a very high percentage of False responses will yield a valid protocol in very few cases. As indicated by Pinsoneault (personal communication, March 10, 2020), only 2% of completed JI-R protocols with less than 10 omitted items were valid (i.e. non-random) when the False percentage was 85% or higher; only 11% of completed JI-R protocols were valid (non-random) when the False percentage was 75% or higher (n = 4340). Thus, as the False percentage elevates, the evaluator should be mindful of the increased possibility that the protocol may be invalid due to a random response set, given that random responding would not accurately reflect a respondent's self-perceived characteristics.

Item overlap on the JI-R

The JI-R contains substantial inter-scale item overlap among some of the personality and subtype scales, meaning that some items appear on more than one scale. Item overlap creates built-in correlation between such scales with increased statistical correlation corresponding with increased item overlap [6,7]. Scales developed with built-in inter-scale item overlap "can create spurious influences on correlations between scales" [8]. For example, 22 of the items on the Value Orientation scale also appear on the Social Maladjustment scale. Social Maladjustment and Value Orientation have a correlation of .91, indicating 82.8% shared variance, or that approximately 83% of the variance on the Value Orientation scale is shared with the Social Maladjustment scale. With covariance of these two scales being of such magnitude, it would be difficult to argue that the constructs being measured by these two scales are distinguishable and not essentially redundant [9]. It also is possible that such high covariance between these two scales may be explained by a higher order latent trait, or more general factor, e.g. antisocial attitudes. This would be consistent with the identification of a factor labeled "antisocial value/behavior orientation" in a study of the Jesness Inventory by Dembo., *et al* [10].

Of particular interest, with respect to item overlap, is the relationship between the Denial scale and other JI-R personality scales. It is noted that a slightly elevated score on the Denial scale may be indicative of "positive emotional adjustment and optimism", whereas low scores on the Denial scale suggest "low ego strength and/or family problems" (Jesness, 2003, p. 19). Indeed, nondelinquents, as a group, have higher mean scores on this scale than delinquents, as a group. As noted previously, items on the Denial scale are weighted heavily in the *False* direction, whereas items on most of the other scales are weighted heavily in the True direction. Thus, it follows rationally that, except for the Repression scale, scores on the Denial scale show a negative relationship with scores on the other personality scales. Additionally, there are as many as six items overlapping Denial and some of the other personality scales (keyed in opposite direction). Denial and Repression have no overlapping items. Thus, some of the high, negative correlations between the Denial scale and most of the other personality scales may be in part spuriously inflated as a result of item overlap. Applying the Item Overlap Correlation (IOC) formula provided by Hsu [11] to the relationship between the Social Maladjustment scale and the Denial scale yields an IOC coefficient of -.15, which is of a small effect size. Applying the same IOC formula to the relationship between the Value Orientation scale (which contains

a total of 38 items) and the Denial scale (which contains a total of 19 items), with 6 shared items keyed in the opposite direction yields an IOC coefficient of -.22, which, too, is of a fairly small, but not negligible, effect size. Thus, while item overlap between the Denial scale and other personality scales results in some spuriously inflated negative correlations, these correlations are of fairly small effect size. Although in part a result of spuriously inflated correlations, the strong, negative correlations between the Denial scale and some of the above scales raises the question whether, at high levels, the Denial scale might better reflect denial, minimization, or under-reporting of problems, rather than positive emotional adjustment. As per the JI-R Interpretive Report [2] by Multi Health Systems, T scores greater than or equal to 65 indicate the presence of denial and suggest "rigidity and lack of insight". It is suggested by this author that elevated T scores on the Denial scale, e.g. T ≥ 65, even if the validity scales are not elevated, increasingly suggest a level of denial of problems that decreases the accuracy of the self- report, especially if scores on the other personality scales are suppressed.

Interestingly, in a sample of youths who were incarcerated at the California Youth Authority Reception Center in 1991, who completed both an MMPI [12] and a Jesness Inventory, the JI Denial scale had a correlation of medium to large effect size (.50) with the MMPI K scale, suggesting overlapping constructs between these two scales. The JI Denial scale also had a considerable negative correlation with the MMPI F scale (-.49), which may be seen as supporting an interpretation of the Denial scale as tapping into denial, defensiveness, constriction, underreporting of psychopathology or general problems of adjustment, or, conversely, the portrayal of healthy, positive adjustment. Further study is needed to determine whether the Denial scale, perhaps more than, or apart from, the L scale or the Repression scale, may function as a marker of an underreporting response style on the JI-R, analogous to the K scale on the MMPI.

Additionally, Denial on the JI-R, along with the Asocial Index and several scales from other personality measures, was found to be a dynamic risk factor that predicted recidivism in serious youthful offenders [13]. Benda., *et al.* [13] opined that denial, which may serve as an excuse for disregard of social rules or antisocial behavior, should be included as a risk factor that is in need of intervention.

Heterogeneous scale content on the JI-R

Related to the issue of item overlap, personality scales on the JI-R tend to be heterogeneous in content, even though most of the scales have adequate internal consistency reliability for both males and females and in both delinquent and non-delinquent standardization groups (Withdrawal-depression and Repression being among scales with lower reliabilities). For example, the Manifest Aggression scale, which taps presence and awareness of anger, frustration, and aggression, clearly includes certain items that reference hostility, fighting, anger proneness; however, several items suggest cynicism, peculiar thoughts or experiences, and items that might be peripherally associated with aggression, but are not specific to this construct. Recently, Pinsoneault [14] developed content scales for the JI-R that are homogeneous in content with non-overlapping items. Research on these content scales will help determine whether they improve discriminant validity of scales on the JI-R.

Conclusion

The Jesness Inventory-Revised has demonstrated validity in discriminating between groups of delinquent and nondelinquent youth and assessing antisocial attitudes and characteristics. Nevertheless, this inventory has certain psychometric features that can complicate interpretation of test findings. This brief review of the JI-R noted that a non-acquiescent (nay-saying) response set may result in suppression of most of the personality scales, elevation of the Denial scale, while failing to elevate the Lie scale. Therefore, further research on the effectiveness of the two JI-R validity scales is warranted. However, the evaluator may consider that a high to very high False percentage, e.g. 75 - 85% or higher, is likely to be associated with a random, and thus non-valid protocol. Item overlap on the personality scales and heterogeneous item content have an effect on the discriminant validity of the personality scales. New scales developed by Pinsoneault [14], composed of homogeneous content and non-overlapping items, may help improve discriminant validity. The Denial scale was focused on in greater detail in this review. The Denial scale, similar to the K scale on the MMPI, suggests low ego strength at low levels, positive

emotional adjustment when modestly elevated, but it suggests defensiveness and unrealistic portrayal of healthy adjustment when highly elevated. It is suggested here that elevated scores on the Denial scale, e.g. ≥ T65, even if the validity scales are not elevated, increasingly suggest a level of denial of problems that decreases the accuracy of the self- report, especially if scores on the other personality scales are suppressed. Further research on the usefulness of the Denial scale as a marker of underreporting is warranted. However, it was also noted that as a personality trait, Denial may represent a dynamic risk factor in need of intervention as such trait may serve as an excuse for antisocial behavior.

Bibliography

1. Jesness CF. "The Jesness Inventory (Rev. ed.)". Palo Alto, CA: Consulting Psychologists Press (1983).

2. Jesness CF. "Jesness Inventory-Revised: Technical manual". North Tonawanda, NY: Multi-Health Systems, Inc. (2003).

3. Hoge RD and Andrews DA. "Evaluation for risk of violence in juveniles". New York, NY: Oxford University Press (2010).

4. Semel RA. "Incorporating the Jesness Inventory-Revised (JI-R) in a best-practice model of juvenile delinquency assessments". *Journal of Forensic Psychology Practice* 16.1 (2016): 1-23.

5. Pinsoneault TB. "Updating the Jesness Inventory randomness validity scales for the Jesness Inventory-Revised". *Journal of Personality Assessment* 86.2 (2006): 190-195.

6. Ben-Porath YS. "Interpreting the MMPI-2-RF". Minneapolis, MN: University of Minnesota Press (2012).

7. Weiner IB and Greene RL. "Handbook of personality assessment". Hoboken, NJ: Wiley (2008).

8. Budescu DV and Rodgers JL. "Corrections for spurious influences on correlations between MMPI scales". *Multivariate Behavioral Research* 16.4 (1981): 483-497.

9. John OP and Benet-Martinez V. "Measurement: reliability, construct validation, and scale construction". In HT Reis and CM Judd (Eds.), Handbook of research methods in social and personality psychology. New York, NY: Cambridge University Press: 339-369.

10. Dembo R., *et al*. "The nature and correlates of psychological/emotional functioning among a sample of detained youths". *Criminal Justice and Behavior* 14.3 (1987): 311-334.

11. Hsu LM. "Item overlap correlations: Definitions, interpretations, and implications". *Multivariate Behavioral Research* 29 (1994): 127-140.

12. Hathaway SR and McKinley JC. "The Minnesota Multiphasic Personality Inventory manual". New York, NY: Psychological Corporation (1943).

13. Benda BB., *et al*. "Recidivism among adolescent serious offenders: Prediction of entry into the correctional system for adults". *Criminal Justice and Behavior* 28 (2001): 588-613.

14. Pinsoneault TB. "Homogeneous, non-overlapping content scales for the Jesness Inventory-Revised". Manuscript submitted for publication (2020).