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# Readability and Test-Retest Reliability of a Psychometric Academic Positive Deviance/Rate-Busting Measure

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## Abstract

Previous research has relied heavily on qualitative methods in order to study the phenomenon known as positive deviance in an academic setting. Such methods reduce the likelihood of generalized results. To address this issue, the positive deviance typology derived by Heckert and Heckert was used as a guide to create an academic positive deviance/rate busting measure that uses both reactivist and normative perspectives of deviance quantitatively. The 27-item measure was tested using test/retest reliability by administering the test once and then administering the same test again two weeks after the first administration. A Flesh-Kincaid reading level score places the survey at a seventh grade reading level. Further, content and face validity of the measured was established. This measure should be of interest to deviance scholars who study positive deviance, rate busting, or stigma associated with academia and can be used in academic settings where scholars are examining deviant behavior.

**Keywords**: Positive deviance; Deviant behavior; Reliability; Validity; Academia

## Background and Significance

Most research on deviance focuses on negative violations of social norms. Although often ignored or enmeshed in controversy, Heckert and Heckert [1-4] have consistently argued that positive deviance be added to the conversation of deviance. Widely used in the medical field [1], the concept of positive deviance has found its way in deviance studies to include work on geniuses [5], straight A students [5] the gifted [6], athletes [7], and high achievers [8,9].

Proponents of the concept argue for the inclusion of positive deviance to the study of deviant behavior [7,10,11]. This inclusion has influenced the expansion of a normative-reactivist typology that includes not only the concept of positive deviance, but also negative deviance, rate-busting, and deviance admiration [4] (Figure 1). Within the typology, positive deviance is considered to be behavior that over conforms to the normally expected behavior (normative) while receiving a positive reaction (reactivist) [4]. A classic example would be an overachieving college student who receives positive appraisal from parents and professors. Negative deviance is behavior that under conforms to a social norm (normative) while receiving negative sanctions or reactions (reactivist) [4]. These are the typical forms of deviance such as hurting someone (normative) and receiving a negative punishment for the behavior (reactivist). Researchers tend to concentrate attention on negative deviance. Rate-busting behavior is positive behavior that over conforms to a social norm (normative) but elicits a negative reaction (reactivist) [4]. With this, an overachieving student may receive negative reactions from their classmates or friends for breaking the curve on an exam [8,9]. Shoenberger et al. provide examples such negative comments from peers or being ostracized from peer groups as a result of overachieving in school [8]. Lastly, deviance admiration is negative behavior (normative) that receives positive appraisal (reactivist) [4]. This is typically seen in applauding bad behavior such as admiring Bonnie and Clyde and Robin Hood for committing criminal acts.

| | Positive Reaction | Negative Reaction |
|---|---|---|
| Positive Behavior | Positive Deviance (Mother Theresa) | Rate-Busting (Curve Busting Student) |
| Negative Behavior | Deviance Admiration (Bonnie and Clyde) | Negative Deviance (Serial Killer) |

**Figure 1:** Positive deviance typology.

The concept of positive deviance has been thoroughly diagramed theoretically and has generated new research [8,9,12]. Though there is renewed interest in the topic, one issue still remains: most studies utilize qualitative data. Though these studies produce quality work, the use of qualitative methods makes it difficult to generalize to the general population of those who may identify as a positive deviant. This partially stems from the difficulty of creating a measure that contains both normative and reactivist perspectives of deviance. Furthermore, a quantitative measure has yet to be created due to the limited research to guide researchers through operationalizing the construct. In all, positive deviance scholars have yet to create a psychometrically sound measure that taps the phenomenon of positive deviance/rate-busting behavior. By creating a quantitative measure to study academic positive deviance/rate-busting behavior, we hope to open up a new approach and opportunity to studying positive deviance and rate-busting behavior, especially within academic behavior.

## Methods

### Participants

The researchers used students in attendance at a small university in northwest Pennsylvania. Overall, 115 students took the Time 1

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survey but only 111 completed the survey at Time 2. Those who did not complete the survey at Time 2 were dropped from the sample. The pool of students was recruited through various classes including an honors class, two upper level classes, and two sections of a lower level class. The upper level classes included upper level social science students, whereas, the lower level classes contained a general sample of the University population. Given the tests conducted, various demographics were not collected; however, using the information gathered to create the unique identifier, both race and gender were collected. The sample included 91 White, 5 Asian, 11 Black, 2 Hispanic, and 2 other students. The distribution of the sample also included 69 females and 42 males.

## Validity

To add a layer of validity to the measure, both face validity and content validity were utilized. Face validity occurs when the survey that was created appears to appropriately test what it was intended to according to non-experts [13]. To achieve face validity, various undergraduate students, University professors (non-deviance scholars), and one research technologist reviewed the measure. Suggestions were considered and appropriate changes were made.

Content validity occurs when the survey that was created appears to appropriately measure what it was intended to according to experts [13]. After face validity was achieved, the measure was reviewed by scholars in the deviance and positive deviance specialties. Suggestions on phrasing, scale construction, relevance, and comprehensiveness were considered and changes were made when appropriate and the measure was re-reviewed.

## Measure

Based on the validity feedback and multiple iterations of the measure, the final measure contained 27 items that pertain to academic performance. It includes both positive behaviors (such as receiving excellent grades) and negative behaviors (such as skipping class). These questions seek to understand the normative aspect of deviance (e.g., behaviors). The construct further includes questions pertaining to the reactions of others (positive appraisals, teasing). These questions measure the reactivist component of the positive deviance typology (e.g., reactions).

Each item on the scale measures the degree to how well a statement accurately describes the respondent. Degree of accurateness was assessed by a Likert scale of 1 (not true at all), 2 (slightly true), 3 (somewhat true), 4 (mostly true), and 5 (completely true). To create the measure, all scores were summed and then divided by 27 to create a mean score that ranges from 1 to 5 (Appendix A for all questions). Scores higher than 4 are considered to be students who are high achieving students. Table 1 contains the means and standard deviations of all variables. The mean of the academic positive deviance/rate-busting scale at Time 2 is 2.94 with a standard deviation of 0.48.

## Procedure

The test/retest reliability survey was administered to the participants twice with two to three weeks in between each administration in order to determine reliability of the measure. The same survey was given to the participants to complete for both administrations. Each administration took place in the same testing conditions; at the end of each class period on a Thursday. Each administration of the survey took about ten minutes; therefore, to complete both administrations, participants only needed to provide twenty minutes of their time for the entire study. The participants did not receive compensation or reward for participating. Students were also provided the ability not to take the survey.

| | $T_1$ | | $T_2$ | |
|---|---|---|---|---|
| | **Mean** | **St. Dev.** | **Mean** | **St. Dev.** |
| **Q1** | 4.58 | 0.654 | 4.51 | 0.749 |
| **Q2** | 3.51 | 0.841 | 3.58 | 0.837 |
| **Q3** | 2.97 | 1.179 | 3.04 | 1.128 |
| **Q4** | 2.60 | 1.178 | 2.67 | 1.201 |
| **Q5** | 2.90 | 1.035 | 2.85 | 1.080 |
| **Q6** | 3.07 | 1.173 | 3.23 | 1.059 |
| **Q7** | 3.65 | 1.319 | 3.59 | 1.268 |
| **Q8** | 3.89 | 0.835 | 3.81 | 0.889 |
| **Q9** | 1.46 | 0.829 | 1.42 | 0.769 |
| **Q10** | 1.56 | 0.901 | 1.52 | 0.933 |
| **Q11** | 2.50 | 1.052 | 2.54 | 1.025 |
| **Q12** | 2.95 | 1.069 | 3.06 | 1.038 |
| **Q13** | 3.23 | 1.095 | 3.21 | 1.054 |
| **Q14** | 3.63 | 0.953 | 3.72 | 0.906 |
| **Q15** | 3.41 | 1.132 | 3.50 | 0.952 |
| **Q16** | 3.02 | 1.206 | 3.04 | 1.220 |
| **Q17** | 2.87 | 1.273 | 2.92 | 1.251 |
| **Q18** | 2.95 | 1.119 | 2.95 | 1.139 |
| **Q19** | 3.84 | 1.148 | 3.76 | 1.169 |
| **Q20** | 3.10 | 1.183 | 2.94 | 1.208 |
| **Q21** | 4.61 | 0.788 | 4.65 | 0.0656 |
| **Q22** | 3.38 | 0.982 | 3.49 | 0.923 |
| **Q23** | 4.48 | 0.830 | 4.45 | 0.806 |
| **Q24** | 3.54 | 0.951 | 3.53 | 0.882 |
| **Q25** | 1.48 | 0.807 | 1.52 | 0.862 |
| **Q26** | 3.94 | 1.245 | 3.93 | 1.211 |
| **Q27** | 2.82 | 1.460 | 2.85 | 1.302 |
| **P.D. Scale** | 3.1832 | 0.54118 | 2.9399 | 0.48270 |

**Table 1:** Means and standard deviations.

| | |
|---|---|
| **Cronbach's α** | 0.89 |
| **Guttman Split Half** | 0.849 |

**Table 2:** Internal reliability.

# Results

## Readability of the survey instrument

To verify the readability of the survey, a Flesh-Kincaid reading level score was performed. The test places the survey at a seventh grade reading level, which makes the survey accessible to a wide sample population.

## Reliability

To test whether the variables that make up the scale measure the same construct, an internal consistency score was calculated. For internal reliability, a Cronbach's alpha of .70 or higher is needed for moderate reliability [14]. The Cronbach's alpha for this scale was 0.89. A Guttman Split Half internal reliability test was also performed and yielded a 0.849 (Table 2). Both illustrating that the variables used to create the scale measure the same construct.

Further reliability is also achieved when the measure produces similar responses each time the measure is administered. For a stable fit, a .70 or higher is recommended for the test-retest reliability (correlation coefficient). For this scale, a correlation coefficient of 0.912 was recorded and was statistically significant. Thus illustrating that the scale produced similar responses over the two to three week time frame of administration. Further, each of the 27 variables that are used for

the scale all are significantly correlated between the two time points. A few variables did correlate slightly below 0.70 but all were statistically significant (Table 3). Further, a correlation matrix for all 27 variables can be found in Table 4.

## Discussion

Many studies have used the concept of positive deviance in regard to academics but only qualitatively. Using the Standards for Educational and Psychological Testing on test validation and construction, a test/retest reliability procedure was implemented in order to construct a psychometrically sound measure to adequately test positive deviance and rate-busting behavior for academic behavior. Questions used for the measure were pooled from various qualitative studies of positive deviance and verified by experts in the field of deviance. Before the measure was tested for reliability, both face and construct validity were achieved through multiple iterations of the measure being examined by non-experts and experts. After the researchers were satisfied with the validly of the measure, a Flesh-Kincaid reading level score was performed and measured the construct at a seventh grade reading level. Internal reliability scores illustrated that the measure was indeed internally reliable (Cronbach's alpha=0.89). Lastly, a test/retest reliability was conducted and yielded a score of 0.912; concluding the measure consistency tapped the same construct overtime.

This is just the first step in creating a psychometrically sound construct that measures academic positive deviance/rate-busting behavior. Further tests need to be conducted on the measure to further investigate the validity of the construct by using the measure in various studies to verify if it correlates with possible academic measures in

| Variable | Test-Retest r[#] |
|---|---|
| **P0.D0. Scale** | 0.912** |
| **Q1** | 0.689** |
| **Q2** | 0.777** |
| **Q3** | 0.787** |
| **Q4** | 0.786** |
| **Q5** | 0.661** |
| **Q6** | 0.755** |
| **Q7** | 0.804** |
| **Q8** | 0.633** |
| **Q9** | 0.690** |
| **Q10** | 0.807** |
| **Q11** | 0.731** |
| **Q12** | 0.790** |
| **Q13** | 0.792** |
| **Q14** | 0.680** |
| **Q15** | 0.690** |
| **Q16** | 0.778** |
| **Q17** | 0.753** |
| **Q18** | 0.726** |
| **Q19** | 0.823** |
| **Q20** | 0.749** |
| **Q21** | 0.631** |
| **Q22** | 0.667** |
| **Q23** | 0.641** |
| **Q24** | 0.716** |
| **Q25** | 0.814** |
| **Q26** | 0.823** |
| **Q27** | 0.760** |

[#]Test-Retest Reliabilities were conducted on an interval of two to three weeks.
**Correlation is significant at the 0.01 level (2-tailed).

**Table 3:** Test retest reliability.

| | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 |
|---|---|---|---|---|---|---|---|---|---|
| **Q1** | 1 | | | | | | | | |
| **Q2** | 0.219* | 1 | | | | | | | |
| **Q3** | 0.172 | 0.324** | 1 | | | | | | |
| **Q4** | 0.03 | 0.419** | 0.351** | 1 | | | | | |
| **Q5** | 0.109 | 0.440** | 0.318** | 0.521** | 1 | | | | |
| **Q6** | 0.254** | 0.467** | 0.313** | 0.224* | 0.467** | 1 | | | |
| **Q7** | -0.032 | 0.227* | 0.182 | 0.153 | 0.139 | 0.07 | 1 | | |
| **Q8** | 0.284** | 0.307** | 0.043 | 0 | 0.111 | 0.287** | -0.01 | 1 | |
| **Q9** | 0.045 | 0.253* | 0.15 | 0.312** | 0.308** | 0.217* | 0.09 | -0.07 | 1 |

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

**Table 4a:** Correlation matrix.

| | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 | Q16 | Q17 | Q18 |
|---|---|---|---|---|---|---|---|---|---|
| **Q10** | 1 | | | | | | | | |
| **Q11** | 0.206* | 1 | | | | | | | |
| **Q12** | 0.294** | 0.574** | 1 | | | | | | |
| **Q13** | 0.194* | 0.417** | 0.653** | 1 | | | | | |
| **Q14** | 0.013 | 0.193* | 0.280** | 0.375** | 1 | | | | |
| **Q15** | 0.12 | 0.379** | 0.253** | 0.339** | 0.291** | 1 | | | |
| **Q16** | 0.167 | 0.326** | 0.300** | 0.291** | 0.289** | 0.164 | 1 | | |
| **Q17** | 0.356** | 0.474** | 0.613** | 0.481** | 0.292** | 0.263** | 0.317** | 1 | |
| **Q18** | 0.296** | 0.449** | 0.625** | 0.538 | 0.296** | 0.18 | 0.217* | 0.635** | 1 |
| **Q19** | 0.176 | 0.065 | 0.117 | 0.226* | 0.253** | -0.019 | 0.210* | 0.322** | 0.408** |
| **Q20** | 0.03 | 0.087 | 0.141 | 0.317** | 0.249** | 0.012 | 0.113 | 0.303** | 0.480** |
| **Q21** | -0.277** | -0.012 | -0.034 | 0.146 | 0.246** | 0.228* | 0.016 | -0.002 | 0.088 |
| **Q22** | 0.156 | 0.286** | 0.195* | 0.279** | 0.196** | 0.287** | 0.194* | 0.223* | 0.280** |
| **Q23** | -0.026 | 0.242* | 0.161 | 0.253** | 0.348** | 0.293** | 0.15 | 0.253** | 0.240* |
| **Q24** | 0.134 | 0.212* | 0.300** | 0.291** | 0.210* | 0.197* | 0.05 | 0.278** | 0.404** |
| **Q25** | 0.720** | 0.048 | 0.258** | 0.14 | -0.137 | 0.097 | 0.103 | 0.284** | 0.228* |
| **Q26** | 0.082 | -0.064 | 0.033 | 0.09 | 0.18 | -0.102 | 0.039 | 0.14 | 0.215* |
| **Q27** | 0.134 | 0.383** | 0.451** | 0.421** | 0.218* | 0.158 | 0.290** | 0.467** | 0.480** |

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

**Table 4b:** Correlation matrix.

| | Q19 | Q20 | Q21 | Q22 | Q23 | Q24 | Q25 | Q26 | Q27 |
|---|---|---|---|---|---|---|---|---|---|
| **Q19** | 1 | | | | | | | | |
| **Q20** | 0.568** | 1 | | | | | | | |
| **Q21** | 0.125 | 0.224* | 1 | | | | | | |
| **Q22** | 0.271** | 0.215* | 0.270** | 1 | | | | | |
| **Q23** | 0.329** | 0.225* | 0.457** | 0.314** | 1 | | | | |
| **Q24** | 0.259** | 0.288** | 0.121 | 0.450** | 0.278** | 1 | | | |
| **Q25** | 0.127 | 0.041 | -0.348** | 0.089 | -0.159 | 0.086 | 1 | | |
| **Q26** | 0.796** | 0.413** | 0.213* | 0.196* | 0.248** | 0.274** | -0.025 | 1 | |
| **Q27** | 0.310** | 0.381** | 0.171 | 0.244** | 0.196* | 0.182 | 0.161 | 0.229* | 1 |

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

**Table 4c:** Correlation matrix.

conjunction with deviant studies. Though still in its infancy, this measure advances the possibility of positive deviance/rate busting behavior by allowing the use of a quantitative variable in survey studies, which may increase the use of positive deviance concepts in the field of deviance studies.

## Conclusion

The purpose of this research was to create a valid construct which provides deviance scholars the ability to quantitatively examine positive deviance in an academic setting. Proper testing of the variable constructed here illustrates it does just that. Next steps need to be taken to rigorously test the construct in multiple academic settings while testing for deviant behavior and academic excellence. It is suggested that this construct be tested in various settings such as junior high and high school where students are forging their academic identities while also entering into crime prone ages. The construct can also be examined in a college setting where many students attempt to retain part of their identity from high school. It would also be of interest to use this variable in longitudinal studies to assess the stability of the identity overtime. Lastly, it would be of interest to examine sex, race, and socioeconomic differences in relation to the construct.

Though the construct has a solid base, it does limit the scholar to using it only in academic terms. It would be a great interest to use this variable to help inform a construct that could measure various components of positive deviance. This would broaden the reach of the variable and provide it more support in the field of deviance. Therefore, the use of this construct in future studies coupled with the possibility of new constructs, may open more doors and further the examination of positive deviance.

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