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Effects of Authoritative Structure in the Measurement of Identity Formation: Individual Computer-Managed Versus Group Paper-and-Pencil Testing

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Abstract — *A total of 113 university undergraduates completed paper-and-pencil versions of the Ego Identity Process Questionnaire (Balistreri, Busch-Rossnagel, & Geisinger, 1995) and the Identity Style Inventory (Berzonsky, 1992b) in a group-testing format. Another 100 undergraduates from the same university and with the same general demographic characteristics completed the same measures in an individually administered, computerized form. Results show significant differences in identity status and style variables between the two methodologies.*

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The individual-testing, computer-managed approach appeared to increase the frequency of foreclosure and to raise reported use of all three identity processing styles for non-exploring participants, whereas for exploring participants, the mean exploration score was greater in this condition. In paper-and-pencil testing, much more diffusion was expressed. The results suggest that the presence of authoritative structure may be important in identity measurement and identity manifestation generally. Also, individual differences in identity status and style may produce differential response tendencies between computer-managed and paper-and-pencil modes of administration of identity formation measures.

Keywords — identity, measurement, computers, testing

The present paper reports evidence that a common personality and developmental measure varies in an important way as a function of mode of test administration. Individual computer-managed (CM) administration, in contrast with group paper-and-pencil (PP) testing, increases the percentage of foreclosed individuals and decreases the percentage of diffused individuals among participants who manifest weak identity exploration tendencies and whose responses have categorized them into the diffuse/avoidant or normative identity styles. CM administration also increases identity exploration scores in individuals who are categorized into the exploring statuses, achievement and moratorium.

Terms such as "identity exploration," "identity commitment," "identity status," and "identity style" are drawn from a tradition of personality research stemming from the theory of Erikson (1963) and its operationalization by Marcia (1966). Erikson identified eight life stages, including that of Identity Formation, which occurs principally in adolescence and young adulthood after the stage of Industry and before the stages of Intimacy and Generativity. Marcia succeeded in operationalizing the stage transition between Industry and Identity as a joint product of two underlying psychological processes – exploration and commitment. The presence or absence of identity exploration and identity commitment interact to produce a two-by-two table of four identity statuses. Statuses are transitory steps presumed to occur in the development from one stage to the next. The four statuses are *diffusion*, *foreclosure*, *moratorium*, and *achievement*. Diffusion is the absence of both exploration and commitment; foreclosure, the presence of commitment in the relative absence of exploration; moratorium, the presence of exploration in the relative absence of commitment; and achievement, the presence of both exploration and commitment. A substantial body of scientific literature has validated the statuses and has shown them to have

distinctive personality correlates (see Marcia, 1980, 1993, for reviews). It will become apparent that the mode of test administration has its greatest effect in the present data among those participants who manifest weak exploration tendencies and are therefore diffused or foreclosed. In the identity research literature, these two groups typically comprise half or more of adolescent and young adult samples.

The formulation offered by Marcia was extended and modified by Berzonsky (1989) to show that there also exist more abiding or trait-like tendencies to respond in ways consistent with what was known about diffusion, foreclosure, moratorium, and achievement. Berzonsky has provided evidence that individuals respond in a *diffuse/avoidant* style, a *normative* style, or an *informational* style consistently across situations and over considerable developmental spans. The diffuse/avoidant style, which represents procrastination and evasion, has been correlated mostly with the diffusion status. The normative style, which represents imitation and conformity, has been correlated mostly with the foreclosure status. The informational style, which represents goal-directed exploration, has been correlated mostly with the moratorium and achievement statuses (Berzonsky, 1989).

Because no prior studies have investigated the effects of mode of testing on identity measurement, there are no established hypotheses, and any rationally derived predictions must be thought of as tentative. However, if the CM condition is viewed as an increase in authoritative structure over the PP condition, it may be predicted that foreclosure will be enhanced in the CM condition and that diffusion will not. The opposite should be true for PP administration, in which participants may be more apt to lose interest (Horton & Lovitt, 1994). There is even less basis for a differential prediction concerning participants in achievement and moratorium. The exploration tendency may sustain them in both conditions – CM and PP – or achievers may be conscientious in the PP condition, as foreclosers are expected to be.

It was expected that identity styles would be more stable than identity statuses. Berzonsky (1989) has described them in terms that suggest that they may be traits. It was therefore predicted that there would be less of an effect on style measurement than on status measurement.

METHOD

Participants

Both the PP and CM conditions drew on a pool of university undergraduates who were enrolled in introductory psychology courses. Participation in this

study, though voluntary and optional, partially fulfilled a course requirement. Both groups ranged in age from 17 to 24 years, with a median age of 18 years.

Participants were asked to sign a consent form indicating that they agreed to take part in this study. Two participants were excluded from the PP condition because of missing data.

The gender distributions in the two conditions were significantly different from one another, $\chi^2(1, 213) = 14.48$, $p < .0001$. The CM condition consisted of 33 males and 67 females, whereas the PP condition was comprised of 13 males and 100 females. However, no gender differences were revealed, in either condition, for any variable reported in this study.

Measures

Ego identity. The Ego Identity Process Questionnaire (EIPQ; Balistreri, Busch-Rossnagel, & Geisinger, 1995), a 32-item, 6-point Likert-scale instrument, was used to assess ego identity in four ideological domains (occupational choice, political preference, religious affiliation, and personal values) and in four interpersonal domains (friendships, dating, sex roles, and family). Of the EIPQ items, 16 assess exploration and the remaining 16 target commitment. There are 2 exploration and 2 commitment items per domain.

The values of Cronbach's α for exploration and commitment were .76 and .75, respectively. Test–retest reliability coefficients were .90 for exploration and .76 for commitment. The laboratory in which this study was conducted is believed to be the first setting, other than that in which the measure was created, in which the EIPQ has been used.

Identity style. The Identity Style Inventory (ISI; Berzonsky, 1992b), a 40-item, 5-point Likert-scale instrument, measures a person's use of the three identity styles as well as ideological commitment. The ISI consists of 11 items assessing the informational style, 9 targeting the normative style, 10 aimed at the diffuse/avoidant style, and 10 measuring commitment as defined by Marcia (1966). Of the three styles, the one assigned the highest standard score becomes the participant's classification.

Internal reliability coefficients (Cronbach's α) for the ISI, as reported by Berzonsky (1992a), were informational style, .62, normative style, .66, diffuse/avoidant style, .73, and commitment, .77. Test–retest reliabilities over a 5-week interval were informational style, .75, normative style, .74, diffuse/avoidant style, .71, and commitment, .84. Intercorrelations among the four ISI scales in Berzonsky's study were as follows: informational × normative, $r = -.09$, *ns*; informational × diffuse/avoidant, $r = -.36$, $p < .01$; informational × commitment, $r = .24$, $p < .05$; normative × diffuse/avoidant, $r = -.28$, $p < .05$; normative × commitment, $r = .49$, $p < .01$; and diffuse/avoidant × commitment, $r = -.57$, $p < .01$.

Procedure

CM condition. Instruments were administered by means of a graphical computer interface. The software was written in Asymetrix® ToolBook® 3.0, a software construction set for Microsoft® Windows®. The order of measures was randomized by means of a computerized algorithm. Participants were tested individually and typically used the entire 90-min time slots allotted to them. Research assistants were not present in the testing room while the participant completed the computer-based measures; however, they provided initial instructions, entered the room to load the next instrument after the participant had completed the previous one, were available to answer questions, and provided debriefing at the end of the testing session. For all measures, one item was displayed at a time, and the program ensured that each participant answered every item. The typeface used for all item text was 24-point Arial.

PP condition. Testing sessions were conducted in a psychology classroom. Each participant attended one of two sessions. Instruments were presented to participants in the following order: (a) a brief demographic form; (b) EIPQ; and (c) ISI. All instruments were presented in their original PP forms. Each questionnaire page contained 30 or more items. The typeface used on these sheets was 10-point Times.

As in the CM condition, 90-min testing sessions were allotted. However, the completion time for the PP procedure was roughly 45 min per participant. Two additional participants were excluded from the sample because of missing data.

RESULTS

The results of this study will be reported in terms of significant differences in frequencies, central tendencies, and dispersion measures. In order to minimize Type I errors associated with exploratory studies in new areas, the alpha level was set at .01. Kolmogorov-Smirnov normality tests were conducted on all variables reported in this study. No significant departures from normality were found in any of the variables in either condition.

Ego Identity

Neither the central tendencies nor the variances of measures of exploration and commitment differed significantly between the CM and PP conditions when the samples were not broken down by identity status. However, within the exploring statuses (moratorium and achievement) only, the mean

exploration score in the exploring statuses was greater in the CM condition, $t(92) = 3.24$, $p < .005$.

Further, the frequencies of identity statuses differed significantly between conditions, $\chi^2(3, 213) = 14.85$, $p < .01$. Specifically, there were more foreclosers and fewer diffusers in the CM condition than in the PP condition, $\chi^2(1, 213) = 14.45$, $p < .0005$. The frequencies of foreclosure were 47.0% and 25.7%, respectively. For diffusion, the frequencies were 11.0% and 28.3%, respectively.

Identity Style

The frequencies of identity style categorizations were not significantly different between the PP and CM conditions. However, the mean normative, $t(211) = 4.55$, $p < .001$, and mean diffuse/avoidant, $t(211) = 3.29$, $p < .005$, style scores were greater in magnitude in the PP condition. The difference in mean informational style score by condition also approached significance, $t(211) = 2.32$, $p < .02$, with the higher mean in the PP condition. Thus, as all three style scores increased in the PP condition, the salient style remained stable. Variances were greater in the CM condition for the informational style score, Levene's $F = 8.46$, $p < .005$, and the ISI commitment scale score, Levene's $F = 10.14$, $p < .005$.

Differences in identity style variables were broken down by identity status in order to isolate the source of the differences. Within the non-exploring statuses only, the mean diffuse/avoidant style score was significantly greater in the PP condition than in the CM condition, $t(117) = 2.70$, $p < .01$. The mean normative style score was greater in the PP condition for both the exploring, $t(92) = 3.77$, $p < .001$, and non-exploring, $t(117) = 3.03$, $p < .005$, identity statuses; thus, differences in the mean normative style score did not break down by status. The marginally significant difference in informational style scores did not approach significance for either the exploring or non-exploring statuses.

Frequencies

The patterns of relationships between identity status and identity style differed significantly between conditions. Using the PP results as expected frequencies and the CM results as observed frequencies, significant differences were found between the two sets of status-by-style distributions, $\chi^2(6, 213) = 40.86$, $p < .001$. This effect was strongly isolated within the non-exploring statuses, diffusion and foreclosure, and the diffuse/avoidant and normative styles. A chi-square analysis of the 2×2 contingency table, formed using the diffuse/avoidant and normative styles in relationship to diffusion

and foreclosure, revealed departures of the frequencies in the CM condition from those in the PP condition in a strongly patterned way, $\chi^2(1, 213) = 28.56$, $p < .001$. Thus, for non-exploring participants, the diffuse/avoidant style is expressed as the diffusion status in the PP condition (18 of 26 participants) and as foreclosure in the CM condition (19 of 25 participants).

The data also suggest that the combination of the normative style and diffusion is more likely to be manifest in the PP condition (10 of 13 participants). Although the frequencies are small and do not lend themselves to statistical analysis, the data also show that the diffuse/avoidant style occurs with the achievement status rarely and possibly less in the CM condition (0 of 5 participants).

DISCUSSION

The major hypothesis of the present study was that the computer-based process would foster foreclosure and reduce the salience of the diffusion status, whereas identity style, as a category or trait, would be relatively stable. In general, these hypotheses have been supported. Table 1 summarizes the empirical findings in conceptual terms.

The findings indicate that mode of administration of measures is an important factor to consider in understanding findings in identity formation research, but that no single simple generalization will provide a sufficient guide for the cautious researcher. It is encouraging to find so few differences in identity measures between the modes of testing. Those that were found, however, were strong, patterned in a meaningful way, and important to the understanding of research findings in identity formation studies. The findings also have implications for identity formation theory.

The major finding of the present study is that participants who have not engaged in identity exploration differed in their response to the two modes of test administration. Both foreclosure and diffusion can be thought of as sets or orientations to some level of externally imposed control. The CM condition

Table 1. Summary of Differences in Findings Between Conditions

Status	Greater in CM condition	Greater in PP condition
Non-exploring	Likelihood of foreclosure contingent with diffuse/avoidant and normative styles	Likelihood of diffusion contingent with diffuse/avoidant and normative styles
	Foreclosure frequency	Diffusion frequency
		Mean diffuse/avoidant and normative scores
Exploring	Mean exploration score	Mean normative score

CM = computer-managed; PP = paper-and-pencil.

appeared to bring out foreclosure in non-exploring participants, whereas mode of testing did not affect status assignments within the exploring statuses.

The PP condition appeared to enhance diffusion in non-exploring participants. Not only was the frequency of the diffusion status higher, but mean scores on the diffuse/avoidant style scale were higher in the PP condition for non-explorers.

The categorical relationships between identity status and identity style across the two conditions further strengthen the contention that the PP condition facilitated diffusion and the CM condition facilitated foreclosure. Although the frequencies of identity style categorizations were stable between conditions, there were more normative participants in diffusion within the PP condition. Similarly, the frequency of foreclosure among diffuse/avoidant participants was higher in the CM condition.

In the current study, participation in the CM condition was on an individual basis, and because sign-up sheets were posted outside the testing location, it can be assumed that participants in this condition knew that their names were available to the experimenters. Thus, among participants classified as normative or diffuse/avoidant, the prevalence of foreclosure in the CM condition and of diffusion in the PP condition may be indicative of the Big Brother Syndrome (Martin & Nagao, 1989).

The effects within the non-exploring statuses may be associated with the close supervision inherent in the individual-testing format of the CM condition. In this view, when the participant has either repressed or not internalized the tendency to explore, diffusion will occur in the absence of external structure and foreclosure will occur when external structure is present.

For the exploring statuses, achievement and moratorium, the tendency to explore may serve as an internal stabilizing agent, insuring some degree of task orientation and reducing the importance of externally imposed structure for the control of the participant's behavior in the testing situation. Such an interpretation is consistent with a view that exploration occurs within the individuation process as part of the emergence of self-reliance and broadly responsible adult behavior.

Rosenfeld, Booth-Kewley, Edwards, and Thomas (1996) have shown that CM testing may induce increases in socially desirable responding if participants are identifiable to the experimenter by name. This resulting increase in socially desirable responding has been termed "Big Brother Syndrome" (Martin & Nagao, 1989). The foreclosed status is synonymous with conformity to external expectations (Marcia, 1980). Rosenfeld et al. (1996) reported a significant interaction between mode of testing and participant identifiability. Their results indicated that identifiable participants who completed their measures on computer were most apt to respond in a socially desirable manner. The CM condition in the present study may be

regarded as an approximation of the high identifiability, CM condition as reported in the Rosenfeld et al. study.

Perhaps the higher style score means in the PP condition are the result of an "agreement bias," in which participants simply marked higher responses to the ISI items. This agreement bias may be due to the loss of interest that may accompany PP testing (Horton & Lovitt, 1994). Further, it is possible that diffused participants, who are often apathetic and disinterested or are looking for authoritative direction (Marcia, 1980), may be most apt to manifest this agreement bias.

There are numerous implications of the findings for identity formation theory and measurement. Foreclosure may be thought of as a process which is more salient when individuals operate in highly structured, closely and authoritatively monitored situations. In fact, the scientific study of foreclosure may be facilitated by the use of such situations. Similarly, diffusion may be more salient in less structured, less supervised situations, and it may be more easily studied in such situations.

There may be several ways in which the present findings may be meaningful. For psychological theory, the findings suggest that (a) persons in the non-exploring statuses – diffusion and foreclosure – respond to authoritative structure with a more normative, and therefore more compliant and conforming, attitude; and (b) persons in the exploring statuses – achievement and moratorium – respond with an informational, and therefore more exploratory or agentic, attitude.

For the study of CM testing, the present study offers evidence that (a) individual differences in identity formation may interact with level of authoritative structure and thereby influence the performance-related attitudes of about half of adolescents and young adults; and (b) socially desirable responding and the Big Brother Syndrome may be theoretically related to concepts in identity formation.

For the study of identity formation, the results indicate that (a) authoritative structure may be an artifact in measurement; and (b) it may be possible to use computer management of testing to develop a broad hypothetico-deductive experimental initiative in an area that has been largely dependent on inductive and correlational studies.

More research will be necessary to confirm and map the effects reported in this study. Future research may tell us not only what to expect from a given mode of administration, but also how to understand the workings of the identity formation process itself. This research will not be solely "methodological." It may also be a direct contribution to the substance of identity theory. Put another way, the change in test behavior of research participants from mode to mode will reflect not only the stimulus characteristics of the mode, but also the response tendencies of the participants themselves.

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