THE EFFECTS OF RESPONSE DELAY ON AUTOMATIZING SELF-REPORTS

by

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Abstract

The development of automatic self-presentation was examined through studying the effects of practicing arbitrary self-reports on subsequent honest self-reports. In a replication of Paulhus, Bruce and McKay (1990), subjects practiced self-reports under one of three faking strategies (fake good, fake bad, honest) until they reached high levels of speed and accuracy. Subjects were then asked to respond honestly under two test modes: (1) emphasize speed, and (2) emphasize accuracy.

Results replicated the previous findings: Speed instructions yielded more carry-over errors than did accuracy instructions. As before, even the accuracy instructions generated a significant amount of carry-over errors in the fake-good condition. There was also a "rebound effect" for fake-bad subjects: That is, practicing negative responses tended to reduce the subsequent probability of claiming them on the post-test.

This study also extended Paulhus et al. by testing the duration of the carry-over effects. To do so, the delay between practice and testing was varied (no delay, 10 minutes, 25 minutes). Results showed no differences among the three delay conditions, indicating that the effect endures over time. The implications of these findings for Automatic and Controlled Self-presentation theory are discussed.

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The Effects of Response Delay on Automatizing Self-Reports

A major focus of theory and research within the field of social cognition has been on determining how people attempt to control the impressions other people form of them. This topic is often referred to as self-presentation (SP) or impression management (e.g., Jones 1964; Tedeschi, 1981; Schlenker, 1985). An important advance in this area has been the discovery that SP processes are not always as deliberate or managed as traditional formulations have assumed. More specifically, it now appears that positivistic self-descriptions may result from a self-deceptive bias (Paulhus, 1984), habitual role responses (Schlenker, 1985), or reflexive responses (Greenberg & Pyszczynski, 1985).

ACSP Theory

Stimulated by these advances, Paulhus (in press) has proposed an attentional model of self-presentation, Automatic and Controlled Self-Presentation (ACSP) theory: It involves what cognitive psychologists refer to as automatic and controlled processes (Logan, 1978, 1980, 1989; Posner & Snyder, 1975; Shiffrin & Schneider, 1977). Automatic processes are well-practiced forms that operate without attentional resources. Controlled processes are strategic, deliberate mechanisms that require attention to proceed. According to the ACSP theory, there is a dynamic interplay

between automatic and controlled aspects of self-presentation. Sometimes self-presentation is controlled: It involves deliberate and tailored self-descriptions. At other times, when insufficient attention is available, self-presentation moves to an automatic level. Here, self-descriptions are presented without thought or memory search.

According to ACSP theory, automatically-generated self-descriptions are highly practiced from years of repetition. They also tend to be positive in nature, presumably because we are encouraged from childhood, and through adulthood, to say positive things about ourselves (Heilbrun, 1964). This positivity bias may also result from the fact that people rarely receive negative feedback from their peers (Tesser & Rosen, 1975).

Relevant Research

The first studies to test aspects of the ACSP model were a series of dual-task experiments conducted by Paulhus and his associates. In 1987, Paulhus and Levitt assessed the effects of distraction on self-presentation by asking subjects to make self-descriptive judgements while being exposed to affect-laden stimuli. More specifically, subjects were asked to respond "me" or "not me" to trait adjectives presented on a microcomputer. While each trait adjective was presented, either an innocuous or an affect-laden distractor word appeared nearby. Results showed that endorsements of positive traits were increased by the affect-laden distractors. It may be that affect-laden

distractors "grabbed" attention, forcing subjects to perform the trait-rating task in automatic mode. An arousal explanation is also plausible. That is, it may be that affect-laden distractors trigger a fast-rising arousal that increases dominant (i.e., positive) responding.

To distinguish between attentional and arousal explanations, Paulhus, Graf and Van Selst (1989) conducted a conceptual replication of the Paulhus and Levitt study. This experiment employed a digit counting task to provide an affect-free attentional manipulation. The results directly paralleled those of Paulhus and Levitt (1987). They therefore provide strong support for an attentional explanation of the findings of both studies.

Current Research Program

Another assumption of the ACSP model is that positivistic self-descriptions become automatized over a lifetime of practice. The aforementioned research findings, however, provide only indirect support for this assumption in that they merely demonstrate the existence of positive automatic self-presentation. Paulhus, Bruce and Stoffer (1990), (see also Stoffer, Paulhus & Bruce, 1990) therefore argued that the development of automatic self-presentation should be examined under controlled conditions. They noted that through repeated expression, other cognitions such as person categorization (e.g., Smith & Lerner, 1986) and political attitudes (Fazio, Sanbonmatsu, Powell, & Kardes, 1986) have been gradually automatized in the laboratory. Accordingly,

Paulhus et al. (1990) decided to use similar procedures in an attempt to automatize various arbitrary self-concepts.

More specifically, the following procedure was employed in two studies. Subjects were first asked to provide honest responses on a checklist asking whether or not each of a series of trait adjectives was self-descriptive. They were then asked to practice responding to the same traits on a microcomputer using either faking good, faking bad responses, or, honest strategies. Since it has been found that automatism can be achieved within only a few trials (Smith & Lerner, 1986), the number of practice trials was limited to ten. Afterwards, subjects were asked to "respond honestly" on both speed and accuracy tests. These tests permitted an evaluation of possible "carry-over" effects from the practice.

The speed test ("Respond as quickly as possible.") was given first. According to ACSP theory, subjects should shift to the automatic mode of responding under such an attentional-load condition. Consistent with this reasoning, results showed that a substantial number of carry-over errors were obtained in the direction of the practice trials during the speed test as compared with the accuracy test. However, unexpected findings were also obtained.

The carry-over for faking good was found to be greater than for faking bad. It appears that positive traits are more readily automatized than negative traits. In fact, subjects in the fake bad condition were later found to

disclaim many of the negative traits that they had originally claimed.

Also surprising was the finding that carry-over errors occurred even when subjects were subsequently asked to report their honest traits with an emphasis on accuracy. We had no reason to anticipate that practice would alter the honest self, defined here as the deliberate, considered assessment of the self-concept given under honest instructions.

Self-concept malleability. In retrospect, it is possible that the honest self is more malleable than many theorists have assumed. For example, it may be the case that the priming of traits that contradict the pre-test self-description evokes self-relevant information that is different from that guiding the pre-test responses. This new information then overrides the previously available information, leading to a response change on the accuracy post-test.

In fact, there is already a previous body of work that examines this issue from a self-presentation perspective. For example, Gergen (1965) found that self-presentation becomes internalized when rewarded or validated. However, research conducted by Fazio (1981) and his colleagues suggests that reinforcement is not necessary: Making specific self-relevent information salient was adequate to effect changes in self-ratings. The Fazio et al. and the Paulhus et. al findings suggest that availability alone can

serve as a potent agent in effecting changes to the "internal" self-concept.

Implications. If positive carry-over effects of faking good are discovered to be robust there could be important clinical implications. For example, it might be possible to produce positive affective and behavioral changes in people with largely negative self-concepts by having them automatize certain positive self-descriptions. This might be accomplished through a variant of the current "trait-claiming" procedure.

These ideas are not entirely new. French psychologist Emile Coué (1917) used a technique entitled "conscious autosuggestion", which entailed systematically repeating positive self-propositions. The technique was said to effect changes to the "unconscious" which would translate to changes in one's "conscious" self-image. Similar techniques known as "self-affirmations" have resurfaced recently under the guise of so called "new-age psychology" (Yogananda, 1958). Neither Coué's nor these more recent versions of autosuggestion, however, have been tested empirically. In summary, given the great potential value of these techniques, it is crucial to study their underlying mechanisms in a controlled laboratory setting.

Duration of effect. Before considering such applications, however, the carry-over effect must be shown to be enduring, not merely transitory. It may be the case that the availability of the practiced traits rapidly

decreases and that these traits soon lose their capacity to override the originally claimed traits. Alternatively, the availability effects may be long lasting and they may lead to relatively permanent changes in the self-concept.

In the Paulhus et al. (1990) study the dependent measure was taken immediately after the practice trials. Consequently, it is difficult to determine whether the findings reflect an effect of some permanence. The goal of this thesis is to examine the temporal stability of the Paulhus et al. findings by conducting a replication-and-extension of their study. An additional factor, therefore, is included in the design: The dependent measure was taken either immediately, after a 10 minute delay, or after a 25 minute delay. If the effect has any temporal stability, then the pattern of data obtained by Paulhus et al. should be replicated across the 3 levels of the delay factor.

Hypotheses

Based on the above literature review, several hypotheses were advanced.

Hypothesis 1. The first hypothesis concerns the shape of the learning curves. For all three strategies (fake-good, fake-bad, and honest), reaction times during the practice trials should drop substantially over the first few trials, and then level off over the remainder of the trials. This hypothesis is based on the Paulhus et al. (1990) results, as well as from those of Smith and Lerner (1986).

Hypothesis 2. Also from Paulhus et al. (1990), fake-bad responses should be the most difficult to automatize, as should be illustrated by slower reaction times for that group during the practice learning trials.

Hypothesis 3. The ACSP model, as well as the results from Paulhus et al. (1990), lead to the hypothesis that more practice-consistent, or carry-over errors, should occur during speed test mode than in the accuracy test mode. In short, ACSP predicts that the automatized self should surface under high attentional load.

Hypothesis 4. Subjects in the fake-good strategy should show more carry-over than subjects in the fake-bad and honest strategies. This hypothesis is based on the previous Paulhus et al. (1990) findings.

Hypothesis 5. Also based on the Paulhus et al. (1990) findings, subjects in the fake-bad strategy should exhibit the "rebound" effect of disclaiming negative traits. Specifically, results should show more "practice-inconsistent" errors on initial negative claims for fake-bad subjects than those in each of the other two strategies.

Hypothesis 6. Subjects in the fake-good strategy should show carry-over in the accuracy test mode. This hypothesis is also based on the Paulhus et al. (1990) findings. As noted in the literature review, however, the work of Emile Coué (1917) would also predict this finding.

Hypothesis 7. The final hypothesis is based solely on Coué (1917). The pattern of results obtained in the accuracy

condition should endure over time; the repetition of positive self-statements should make them chronically available, which should then lead to lasting changes in the self-image.

Method

Subjects

Forty-four undergraduate students from the University of British Columbia participated in this experiment. All subjects were recruited from a subject pool of first and second year psychology students who receive course credit for participation in experiments.

Design and Overview

The experimental design included four independent variables: strategy (fake good, fake bad, and honest), delay (no delay, short delay, and long delay), and test mode (speed and accuracy) and error type (practice consistent and practice inconsistent). The first two variables were manipulated between subjects, whereas the latter two variables were manipulated within subjects.

The study had four phases: pre-test, practice, delay and post-test. During the pre-test phase, subjects were required to check off whether each of a series of adjectives presented on a list was self-descriptive. During the practice phase, the same traits were presented one at a time on a microcomputer. Subjects were randomly assigned to practice the traits under one of the three impression-management conditions.

On completion of the practice trials, subjects were randomly assigned to either proceed immediately from practice to post-test, or to complete a filler task (the delay) before proceeding to the post-test. Finally, for the post-test, subjects were required to again indicate whether each trait was self-descriptive (i.e., as in the pretest). This task was also carried out on the computer, and included two trials. On the first test trial, subjects responded with an emphasis on speed. On the second trial, they responded with an emphasis on accuracy.[1]

The dependent measure of interest was the proportion of carry-over errors from pre-test to post-test. A carry-over error was counted if the subject changed a response from pre-test to post-test in the direction of practice. For instance, a fake-good subject may have responded "not me" to the trait "patient" on the pre-test and then during practice, repeated that he/she was "patient". If the subject claimed to be "patient" on the post-test, a <u>practice-consistent error</u> was counted.[2]

In contrast, a <u>practice-inconsistent error</u> would involve responding "me" to the trait "cruel" on the pre-test, faking bad by repeating "me" to "cruel", and subsequently responding "not me" on the post-test.

<u>Apparatus</u>

An IBM compatible computer was used to present the traits during practice trials. Subjects responded on a keyboard labeled "me" and "not me". Trait presentation was

controlled through a program developed using the Micro Experimental Lab (MEL) package. The program controlled trait randomization for each trial, and on-line recording of such variables as response accuracy, response selection, and reaction time.

Materials

Trait adjectives. The 12 traits used in the three adjective checklists and on the computer were chosen from lists that had been rated for social-desirability (Anderson, 1968; Kirby & Gardner, 1972).

Trait desirability and claim rate tend to be highly correlated. Therefore, traits with moderate claim rates were chosen to ensure that subjects would not always claim positive traits, or conversely, deny all negative traits. This was done to maximize the potential for inconsistent practicing in the fake-good condition. That is, if claim rates were too high for positive traits, (and too low for negative traits), then self-ratings would not differ sufficiently from the fake-good condition to allow for possible carry-over errors.

In addition to trait norms for desirability, a within-subjects trait valence measure was also included in the form of the fake-good adjective checklist. That is, by completing this checklist, each subject provided his or her own rating of each trait's valence. This ensured that subjects' own ratings were consistent with norms on positive

and negative traits, as well as providing a dichotomous valence rating for the neutral traits.

Adjective checklists. Subjects completed three adjective checklists designed specifically for this experimental paradigm (see Appendix A). Each list contained the identical 12 trait adjectives, for which subjects were required to respond "me" or "not me".

For the first list, subjects were told to indicate whether or not the traits were self-descriptive. This first checklist served as the pretest with which subsequent test trials were to be compared to measure carry-over errors due to practice. In addition, the information gathered in this list was entered into the computer and functioned as a key during the practice rounds for those subjects assigned to the "honest" condition. That is, this information allowed the computer program to identify incorrect responses.

For the second list, subjects were told to "fake good". That is, they were to respond to the traits as an "ideal" person would. The information gathered in this list functioned as a key during the practice rounds for those subjects assigned to the fake-good condition.

For the third list, subjects were told to "fake bad". That is, they were to respond as if they were trying to create a negative impression. The information gathered here was used as a key for those subjects assigned to the fake-bad condition.

Music rating forms. In line with the cover story, which identified the study as being concerned with the relationship between music and personality, subjects were required to complete two music rating forms. In actuality, both forms simply functioned as filler tasks within the experiment.

The first form listed 36 songs, and their corresponding performers (see Appendix B). Subjects were told to rate the quality of the music and lyrics for each song on a 7-point Likert rating scale ranging from "poor" to "excellent". Subjects performed this task after completing the three adjective checklists. The sole purpose of the task was to occupy the subject while the experimenter entered into the computer the information from the checklists that served as a key during practice trials.

Similarly, the second music rating form was included to provide an activity to function as a delay between the practice and test phases of the experiment. This form required subjects to rate, on a 7-point Likert scale ranging from "poor" to "excellent", the quality of the music and lyrics of songs they listened to on a cassette recorder (see Appendix C). Subjects rated either two or six songs, depending on the delay condition to which they had been assigned. Subjects in the no-delay condition did not perform this task.

Procedure

Subjects participated one at a time. On entering the laboratory, the subject was greeted by the experimenter and seated at a table. The experimenter stated that the experiment was concerned with the relationship between music and personality. The subject then read a description of the procedure to be followed in the experiment and gave his or her consent to be a participant.

Next, subjects were handed the three adjective checklists. For the first list, the subject was asked to rate each trait as either self-descriptive or non self-descriptive ("me" or "not me"). For the second list, subjects were told to "fake good". Specifically, they were instructed to "answer as if you were trying to look as positive as possible to an experimenter like me". Finally, for the third list, subjects were told to "fake bad"; that is, they were told to "answer as if you were trying to appear as negative as possible to an experimenter like me". On completion of the adjective checklists, the experimenter collected the lists and gave the subject the first music rating form to complete.

Next, she/he was asked to sit down at the microcomputer. The subject was informed that the same 12 traits that appeared on the adjective checklists would appear one by one, in random order, on the computer screen. Each subject was told to repeat for the following trial (i.e., 12 trait presentations), the answers that he/she had given on the

checklist of the assigned strategy condition, and to continue to do so for the subsequent ten trials. Further instructions included pressing a keypad labeled "me" and "not me" to respond to the trait adjectives. Subjects were also informed that if he/she did not respond as in the assigned adjective checklist, a tone would sound and the trait would be repeated at the end of the trial. Finally, the subject was told to be accurate, but to try and to increase his or her speed, somewhat, from trial to trial.

On completion of the verbal instructions, the subject was directed to begin the computer practice trials. At this point, the instructions were repeated on a series of user-paced computer screens. Next, subjects initiated trials by pressing the space bar. After doing so, a message appeared on the screen indicating that the first trait of the trial would appear in five seconds, in the centre of the screen. On pressing either the "me" or "not me" key, the trait disappeared, and a new trait appeared in 500 milliseconds. At the end of each trial, a brief instruction screen appeared. To begin the next trial, the screen instructed subjects to press the space bar. After doing so, the next trial proceeded in the same manner as the previous trial. This sequence of events continued over the ten practice trials. On completion, the screen instructed the subject to ask the experimenter for further instructions.

At this point, subjects in the no-delay condition remained at the computer and proceeded directly to the test

phase. Subjects in the two delay conditions, however, were led to a table and given a set of headphones. They were then told to perform the second music rating task. When done, the delay-condition subjects returned to the computer for the test phase.

For Part 1 of the test phase, subjects were instructed to forget all their previous practicing, and to report their "honest" traits. As well, they were instructed to answer as quickly as possible, and were informed that the tone would not sound for errors. Subjects then began the speed trial, which was the same as the practice trials in terms of trait presentation. On completion of the trial, the screen instructed subjects to ask the experimenter for further instructions.

For Part 2 of the test phase, subjects were instructed to report their honest traits again. This time, however, they were told that accuracy was more important than speed, and that they could take as much time as they wanted to complete the task. Otherwise, Part 2 was identical to Part 1 of the test phase.

On completion of the test phase, subjects were debriefed, and thanked for their participation.

Results

Manipulation Check

To determine whether or not subjects adequately followed the speed and accuracy instructions, a t-test was performed to compare the overall speed mean (M=946.95) versus the

overall accuracy mean (M=1287.42). The difference between the two means was significantly different, $t(43)=-4.75$, $p<.001$, indicating that subjects were indeed following these instructions.

Learning Curves

Hypothesis 1, concerning the shape of the practice learning curves, was supported by the results. A t-test comparing reaction times over the first three practice trials with those of the following three practice trials revealed significant differences, $t(43)=7.38$, $p<.001$. Reaction times during the practice trials dropped from the first few trials to the next three trials.

Insert Figure 1 about here

Hypothesis 2 was also supported. A one-way ANOVA comparing reaction times for the three strategies revealed significant differences, $F(2,41)=5.52$, $p<.01$. Fake-bad reaction times were significantly slower than those of the other two strategies, as is evident from a Newnam-Keuls multiple comparisons procedure. This test revealed that the mean reaction time for the fake-bad strategy was significantly different ($p<.05$) from that of each of the other two strategies. This result indicates that fake-bad responses were the most difficult to automatize.

Error Rates

The dependent measure for the analyses was the change in trait ratings from pre-test to post-test. Two types of errors were possible: practice-consistent and practice-inconsistent. Practice-consistent or, "carry-over" errors consisted of responses which changed from pre-test to post-test in the direction of practice. All other errors were practice-inconsistent. For each error type, a proportion was calculated which represented the ratio of errors to the total number of possible errors for the respective error types. For example, a carry-over error could only occur for those traits where the subject was practicing a response that countered the initial pre-test claim.

A mixed 3 x 3 x 2 x 3 ANOVA with two between-groups and two within-group variables was conducted on these scores. The two between factors were strategy (honest, fake good, fake bad) and delay (no delay, short delay, and long delay). The two within factors were test mode (speed vs. accuracy) and error type (practice-consistent, practice inconsistent).

Insert Table 1 about here

The results of the ANOVA are presented in Table 1. Main effects were significant for error type, $F(1, 22)=4.26$, $p=.05$, and test mode, $F(1,22)=17.14$, $p<.001$. A significant two-factor interaction was obtained for Strategy X Error Type, $F(1, 22)=25.5$, $p<.001$. A significant three-factor

interaction was obtained for Strategy X Error Type X Test Mode, $F(1,22)=4.67$, $p<.05$. No significant main or interactive effects were found for delay.

Insert Table 2 about here

Practice-consistent errors. To clarify the nature of the findings, we performed separate ANOVAs for the two error types. Note that there was no opportunity for practice-consistent errors in the honest strategy: Thus the experimental design was a 2 (strategy: fake-good vs. fake bad) X 3 (delay) X 2 (test mode) mixed ANOVA. Main effects were obtained for strategy, $F(1,22)=15.05$, $p=.001$, and test mode, $F(1,22)=15.67$, $p=.001$. In addition, the Strategy X Test mode interaction was marginally significant, $F(1, 22)=3.89$, $p=.06$.

Insert Figure 2 about here

The means for each level of delay (no delay, short delay, and long delay) for practice-consistent errors were: $M=.35$, $M=.20$, and $M=.36$ respectively. Because none of the delay effects were significant, the data presented in Figure 2 are collapsed over this factor.

The main effect for test mode derived from a higher overall mean in the speed condition ($M=.36$) than in the accuracy condition ($M=.26$). Thus, Hypothesis 3, that

automatized self-presentation should surface relatively more frequently under attentional load, is supported. The observed main effect for strategy indicated that carry-over errors were higher in the fake-good condition (M=.50) than in the fake-bad condition (M=.09). This finding supports Hypothesis 4, and replicates the Paulhus et al. (1990) findings.

These effects were qualified, however, by a marginally significant Strategy X Test Mode interaction of the following form. The difference in mean error rates between the fake-good/speed condition (M = .58) and the fake-bad/speed condition (M = .12) was greater than the difference between the fake-good/accuracy condition (M = .45) and the fake-bad/accuracy condition (M = .08).

Errors in the fake-good/accuracy condition remained elevated, however, which supports Hypothesis 6. The mean of this group was significantly different from 0, $t(13) = 6.33$, $p < .001$. Again, the Paulhus et al. (1990) finding of carry-over to the honest self is replicated.

Combining the above result with the absence of delay provides support for Hypothesis 7, in that the elevated errors in the accuracy condition endure over time. This result provides further support for Coué's (1917) work.

Insert Table 3 about here

Practice-inconsistent errors. The experimental design for the practice-inconsistent errors was a 3 (strategy) X 3 (delay) X 2 (test mode) mixed design. The means for each level of delay (no delay, short delay, and long delay) for practice-inconsistent errors were: M=.12, M=.18, and M=.08 respectively. Because none of the delay effects were significant, the data presented in Figure 3 are collapsed over this factor.

Only a main effect for strategy was obtained, $F(1, 23)=10.56$, $p < 001$. In this case, the overall error rate was higher for the fake-bad condition (M=.30) than for the honest (M=.06) or fake-good (M=.02) conditions. This finding replicates Paulhus et al. (1990), providing support for Hypothesis 5.

Insert Figure 3 about here

To further examine the rebound effect, fake-bad practice-consistent errors were compared with the comparable honest disclaiming-negative errors. Note that only subjects in the honest and fake-good strategies had the opportunity to practice negative traits and then subsequently disclaim them (i.e., the rebound effect). All practice-inconsistent errors in the fake-bad strategy consisted of these "disclaiming-negative" errors. Practice-inconsistent errors in the honest strategy, however, consisted of both disclaiming-negative and "disclaiming-positive". Thus,

errors in the honest strategy were divided into the two error types for the following analyses.

The experimental design was a 2 (strategy: honest vs. fake bad) X 2 (test mode) mixed ANOVA. A main effect was obtained for test mode F (1,27)=9.34, p=.01. Error rates were higher for the speed trial (M = .27) than for the accuracy trial (M = .16). The main effect for strategy was marginally significant, F (1,27)=3.73, p< .10. Thus, the

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Insert Table 4 about here

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rebound effect was stronger for the fake-bad strategy (M = .30) than for the honest strategy (M = .13). This result provides further support for Hypothesis 5 concerning the replication of the rebound effect. The pattern of results, which includes that of the subsequent ANOVA for comparison, is depicted in Figure 4.

Insert Figure 4 About Here

Note that only subjects in the fake-good and honest strategies had the opportunity to practice positive traits and then subsequently disclaim them. Thus, an additional 2 (strategy: honest vs. fake good) X 2 (test mode) mixed ANOVA was performed on the disclaiming-positive scores for these two groups. The only effect that

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Insert Table 5 about here

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approached significance was a marginal interaction for Strategy X Test Mode, $F(1,28)=3.38$, $p<.10$. Whereas the mean-error rate dropped off slightly from speed (M = .07) to accuracy (M =.01) in the honest strategy, errors were virtually non-existent for fake good in both the speed (M = .02) and accuracy (M = .02) test modes.

Discussion

The present results closely replicated those of two previous studies (Paulhus et al., 1990, Studies 1 and 2). Subjects who were asked to make honest self-descriptions after practicing arbitrary self-descriptions were more likely to make carry-over errors when tested under a speed, rather than an accuracy testing mode. These carry-over errors were also more apparent in the fake-good condition than in the fake-bad condition. In fact, fake-bad instructions led to the "rebound effect", where subjects ultimately renounced negative traits that they had practiced. The present study also went further to show that all these effects replicated across two levels of test delay.

The results support two basic elements of ACSP theory. First, the carry-over observed from practice trials to honest test trials demonstrates that traits can become automatized with practice: Moreover, this carry-over was

more apparent under high attentional load. This pattern again supports our use of the term "automatic self" to describe the self-description emerging under attentional load.

Apparently, repetition increased the availability of practiced traits. The lesser degree of carry-over in the accuracy condition suggests the ability of subjects to overcome sheer availability and search more deeply for self-descriptions. Other studies have demonstrated that people can over-ride highly available cognitions--but only in conditions of low cognitive load (Devine, 1989; Paulhus, Martin, & Murphy, 1991).

Consider an alternative explanation for this speed vs. accuracy effect. Given the previous studies showing a positivity effect for high attentional load, it is possible that our test mode differences are not due specifically to automatization. Indeed, the greater carry-over of positive than negative responses seems to amount to a positivity effect.

To refute this alternative, the reader is invited to compare the strong results in this study (F = 15.67 for test mode) to the weak effect of Paulhus and Levitt (1987) where F = 4.14 for test mode. An effect size similar to the latter was found in Paulhus et al. (1989). Clearly, the practice trials in the current study had the effect of magnifying the typical positivity effect.

Nonetheless, to examine directly whether the practice trials might be producing such unintended effects, an appropriate condition should be included in the design of a future study: For example, subjects would make their post-test judgments after delay, but without practice.

Positive-Negative Asymmetry

The fact that positive traits were more easily automatized than negative ones is an intriguing finding. This asymmetry may simply reflect the well-known positivistic bias in self-evaluations (Greenwald, 1980; Paulhus, 1986; Taylor & Brown, 1988). Particularly relevant are studies showing that positive traits are easily processed and easily recalled whereas negative traits are poorly processed and difficult to recall (e.g., Kuiper, Olinger, MacDonald, & Shaw, 1985).

Several known mechanisms provide possible explanations for the greater assimilation of positive than negative traits. Perhaps inhibitory reactions accompanying the self-ascription of negative traits prevents their assimilation (Taylor, 1991). Although more accessible after repetition, they may not reach the final stages of incorporation. Also negative events grab attention more than do positive events (Pratto & John, in press): Some time ago, Coué had warned about the debilitating effect of drawing attention to the repetitions--particularly those that have negative implications. These mechanisms warrant further study as

possible explanations why the automatization process seemed to be nullified when subjects faked bad.

Carry-Over to Honest Self: Internalization

The practice trials also effect a carry-over to the honest self--that is, the deliberate, reflective self description given by subjects in the accuracy condition. Thus, it appears that arbitrary self-descriptions can be, not only automatized, but internalized through repetition.

Although we had found a similar carry-over in our first study, the import of this finding motivated us to twice reconfirm it. This finding supports the arguments of Emile Coué (1917) who touted the benefits of repeating positive affirmations long before it became fashionable in the New Age repertoire of therapeutic techniques. He argued that permanent effects could be effected by mere repetition.

Duration of carry-over

Most important for this thesis, the positive carry-over effect was found to endure even when the temporal interval between the practice phase and the post-test measure was extended to 25 minutes. The duration of carry-over for the automatic self was predictable from the theory--indeed the source of the automatic self is held to be a lifetime of practice.

The enduring nature of carry-over to the honest self, however, requires alteration of ACSP theory. The original model predicted little change between the pre-test and the post-test honest selves because subjects should, on both

occasions, undertake controlled searches that should tap similar information. What appears to be happening, however, is that the practicing of new traits evokes novel information that is then used to determine the true self. Moreover, this new information seems to become internalized (at least for 25 minutes). The result appears to be a seemingly enduring change in the honest self-concept.

One might counter that, given that the accuracy test was always preceded by a speed test, the effect may be temporarily primed. In other words, no matter how long the delay, if subjects must respond to the speed condition, then a subsequent accuracy test will show apparent internalization. Other studies from our laboratory, however, have demonstrated that the same pattern of results appears in a between subjects design (Paulhus & McKay, 1992).

Rebound effect

Most intriguing was our finding that the practicing of already-held negative traits led subjects to subsequently renounce them. This surprising result remains wide open for speculation. Perhaps an undermining process operates when subjects perceive that they are being required to describe themselves with negative traits. Note, however, that no such undermining appeared for positive traits. Finally, Taylor's (1991) mobilization-minimization hypothesis suggests that the negative affect accumulating from repeatedly claiming negative traits would make them seem too

negative to claim afterward. In any case, the original version of ACSP theory must now be qualified to incorporate the rebound effect.

Note that the results have interesting therapeutic implications. Although counter-intuitive, it may actually be beneficial for depressed or anxious clients to repeatedly avow the negative traits that are most bothering them.

Future Directions

Testing the Limits. Given that no dissipation of the automaticity effects was observed across a 25 minute delay, one wonders how long this change might last. It may persist for days, weeks, or longer. On the other hand, longer durations may only be possible if the amount of practice were increased. This increase could take the form of more practice trials, or in the number of days over which practice trials occurred.

It is also important to determine the parameters of self-concept malleability. For instance, some traits may be more malleable than others. To pursue this question, Paulhus and McKay have recently completed a study that examines the malleability of 63 traits chosen from all five of the Big Five domains. Preliminary results suggest that traits related to Neuroticism show the greatest change with cognitive load.

As well, only lists of unrelated traits have as yet been automatized using the Paulhus paradigm. It would be informative to see if an entire cluster of traits

representing some cohesive self-description could be automatized to subsequently induce changes in self-ratings on that particular dimension. An investigation was recently conducted by Paulhus, McKay, Erickson, Kelly, Phillips & Stenson (1992) that addressed this issue. In that study, subjects automatized introversion and extraversion in the laboratory using the repetition paradigm.

Following the post-test, subjects interacted with a confederate. Several measures of extraversion were then taken, including latency to initiate conversation, seating distance from the confederate, and changes in scores on the NEO-FFI. Results showed that mere repetition of these trait constructs leads to pre-test post-test changes in scores on the NEO-FFI. Unfortunately, no changes were observed with these behavioral measures. It is possible that a different array of behavioral measures, perhaps combined with extended practice trials would yield positive results. Research on this important question should continue.

Finally, the issue of self-concept malleability could be examined further by including relevant individual difference measures in the current design. One measure that merits investigation is self-concept clarity (Campbell, Trapnell, Katz, & Lavalee, 1992). Persons high in clarity demonstrate higher consistency in self-ratings. Presumably, automatization effects would be stronger for subjects low, rather than high, on this dimension.

Other improvements. It might be informative as well to see the effects of encouraging subjects to give considerable thought to their pre-test trait judgments. In addition, the trait check-lists could be administered on more than one occasion so that the baseline reliability of these judgments could be assessed. It might also be useful to employ continuous, rather than dichotomous, pre-test and post-test measures so that more subtle changes in trait judgments could be detected.

Although the utility of post-experimental interviews has been challenged by some (e.g., Nisbett & Wilson, 1977), it may be useful to query subjects in this condition who have changed their responses. These subjects may be able to provide some insights into the processes mediating the above effects. For example, it would be fascinating to ask subjects why they had renounced negative traits after practicing them.

The final goal. Ultimately, the greatest potential for our automaticity findings lies in their therapeutic benefits for neurotics and depressives. Presumably, these individuals have automatized negative self-descriptions over at least a portion of their lives. According to the ACSP model, then, they should manifest a negativity, rather than a positivity bias under attentional-load conditions (see also Bargh & Tota, 1988).

But, as Coué (1917) suggested many years ago, it may be possible for such individuals to improve their self-concepts

by repeatedly claiming positive self-descriptions. Although our results support his case, our findings suggest that repetition of their negative traits may be also be beneficial.

Footnotes

1. The order of the two test mode measures, speed and accuracy, was not counterbalanced in this study. It could be argued, then, that the results in the accuracy condition reflect an order effect. However, subsequent research did employ a counterbalanced design indicates that accuracy scores do not vary due to order (Paulhus & McKay, 1992).

2. It is important to note that carry-over errors were not possible in the honest impression-management condition because subjects in this condition did not practice inconsistent traits. This condition was included merely to provide a base-rate for non carry-over errors.

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Table 1.

Mixed-Effects ANOVA on Error Rates

Source of Variation	SS	DF	MS	F	Sig of F
Within Cells	2.62	22	.12		
Constant	4.84	1	4.84	40.58	.00**
Delay	.07	2	.04	.30	.74
Strategy	.16	1	.16	1.32	.26
D X S	.22	2	.11	.93	.40
Within Cells	2.49	22	.11		
Error Type	.48	1	.48	4.26	.05
D X E	.06	2	.03	.25	.78
S X E	2.89	1	2.89	25.50	.00**
D X S X E	.02	2	.01	.08	.92
Within Cells	.14	22	.01		
Test mode	.11	1	.11	17.14	.00**
D X T	.02	2	.01	1.68	.21
S X T	.00	1	.00	.11	.74
D X S X T	.01	2	.00	.77	.47
Within Cells	.23	22	.01		
E X T	.03	1	.03	2.63	.11
D X E X T	.02	2	.01	.80	.46
S X E X T	.05	1	.05	4.67	.04*
D X S X E X T	.04	2	.02	1.68	.20

* $p < .05$, ** $p < .001$.

Table 2.

Mixed-Effects ANOVA on Practice-Consistent Error Rates

Source of Variation	SS	DF	MS	F	Sig of F
Within Cells	3.21	22	.15		
Constant	4.19	1	4.19	28.71	.00**
Delay	.06	2	.03	.21	.81
Strategy	2.20	1	2.20	15.05	.00**
D X S	.16	2	.08	.53	.59
Within Cells	.17	22	.01		
Test Mode	.12	1	.12	15.67	.00**
D X T	.02	2	.01	1.20	.32
S X T	.03	1	.03	3.89	.06*
D X S X T	.04	2	.02	2.47	.10

* $p < .10$, * $p < .001$.

Table 3.

Mixed-Effects ANOVA on Practice-Inconsistent Errors

Source of Variation	SS	DF	MS	F	Sig of F
Within Cells	1.91	23	.08		
Constant	1.14	1	1.14	13.73	.00*
Delay	.07	2	.03	.40	.67
Strategy	.88	1	.88	10.56	.00*
D X S	.09	2	.04	.51	.60
Within Cells	.20	23	.01		
Test Mode	.01	1	.01	1.55	.22
D X T	.02	2	.01	1.10	.34
S X T	.02	1	.02	2.32	.14
D X S X T	.01	2	.00	.34	.71

* $p < .001$.

Table 4.

Mixed-Effects ANOVA on Practice-Inconsistent Errors: Disclaiming Negative for Honest and Fake-Bad Strategies

Source of Variation	SS	DF	MS	F	Sig of F
Within Cells	2.81	27	.10		
Constant	2.70	1	2.70	25.89	.00***
Strategy	.39	1	.39	3.73	.06*
Within Cells	.46	27	.02		
Test Mode	.16	1	.16	9.34	.01**
S X T	.01	1	.01	.30	.59

* $p < .10$; ** $p = .01$; *** $p < .001$.

Table 5.

Mixed-Effects ANOVA on Practice-Inconsistent Errors:

Disclaiming Positive for Honest and Fake-Good Strategies

Source of Variation	SS	DF	MS	F	Sig of F
Within Cells	.16	28	.01		
Constant	.05	1	.05	9.89	.00*
Strategy	.00	1	.00	.69	.42
Within Cells	.12	28	.00		
Test Mode	.01	1	.01	2.65	.12
S X T	.02	1	.02	3.38	.08

* $p < .01$.

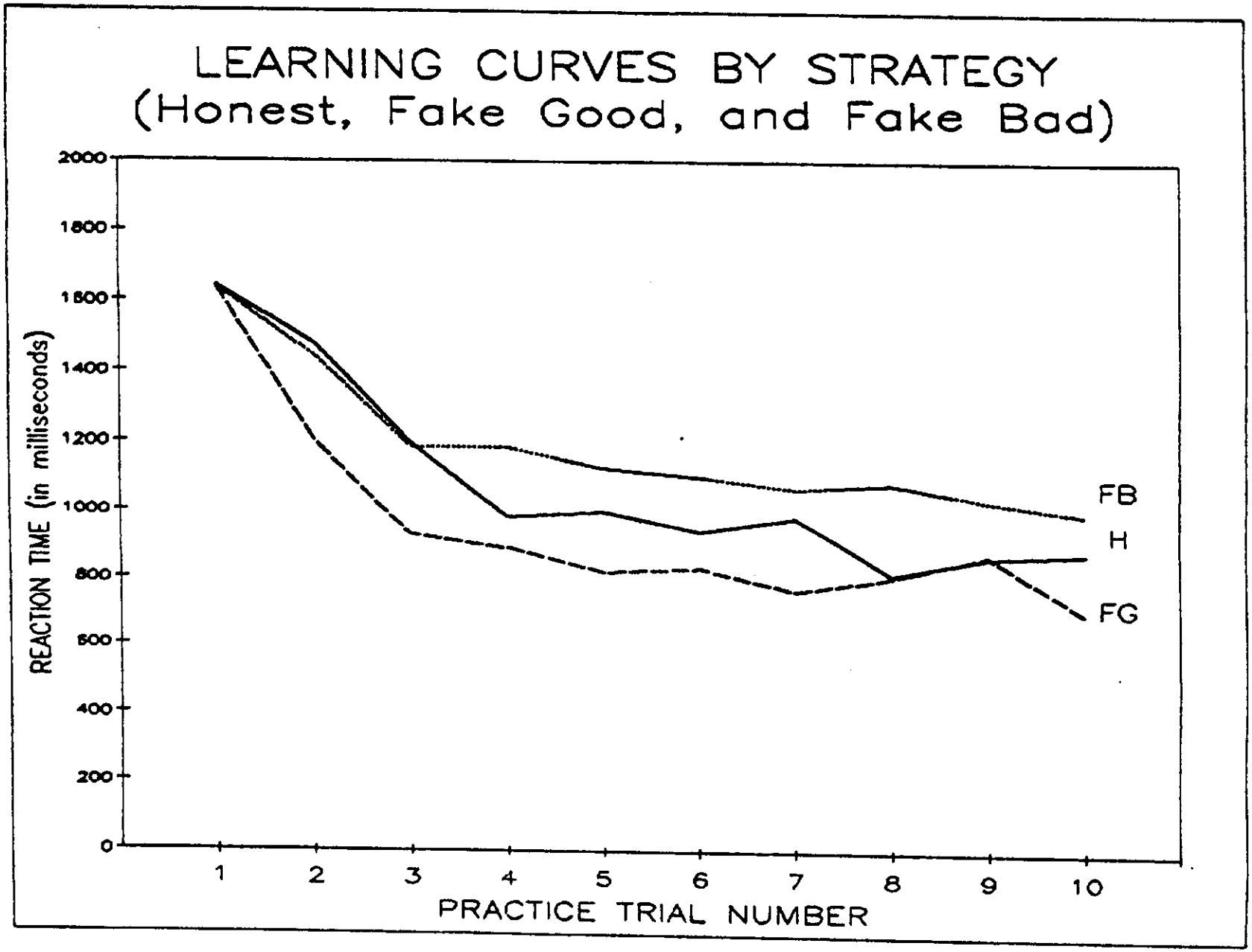
Figure Captions

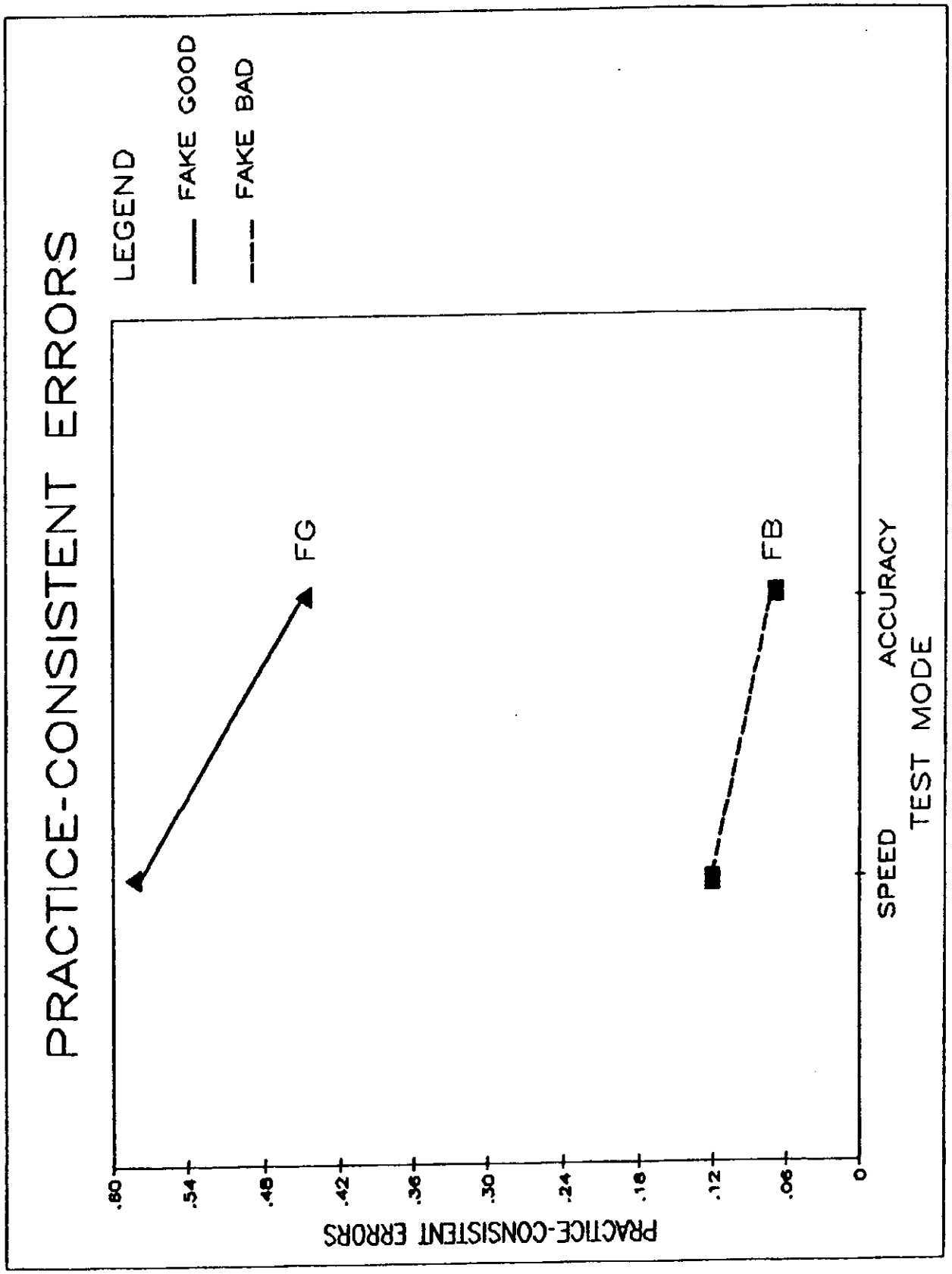
1. Reaction times as a function of practice trial and faking strategy.

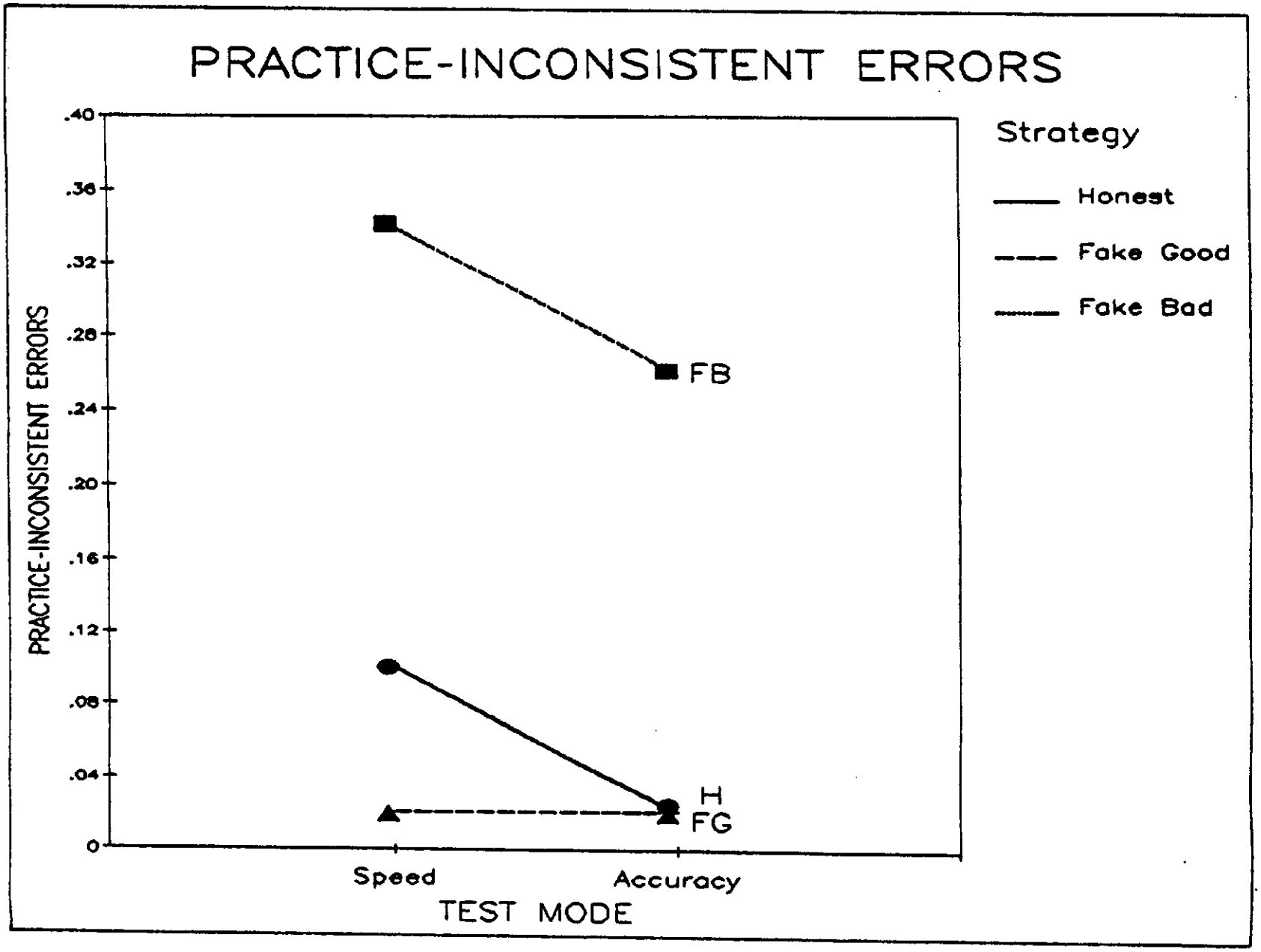
2. Practice consistent errors as a function of test mode and faking strategy.

3. Practice inconsistent errors as a function of test mode and faking strategy.

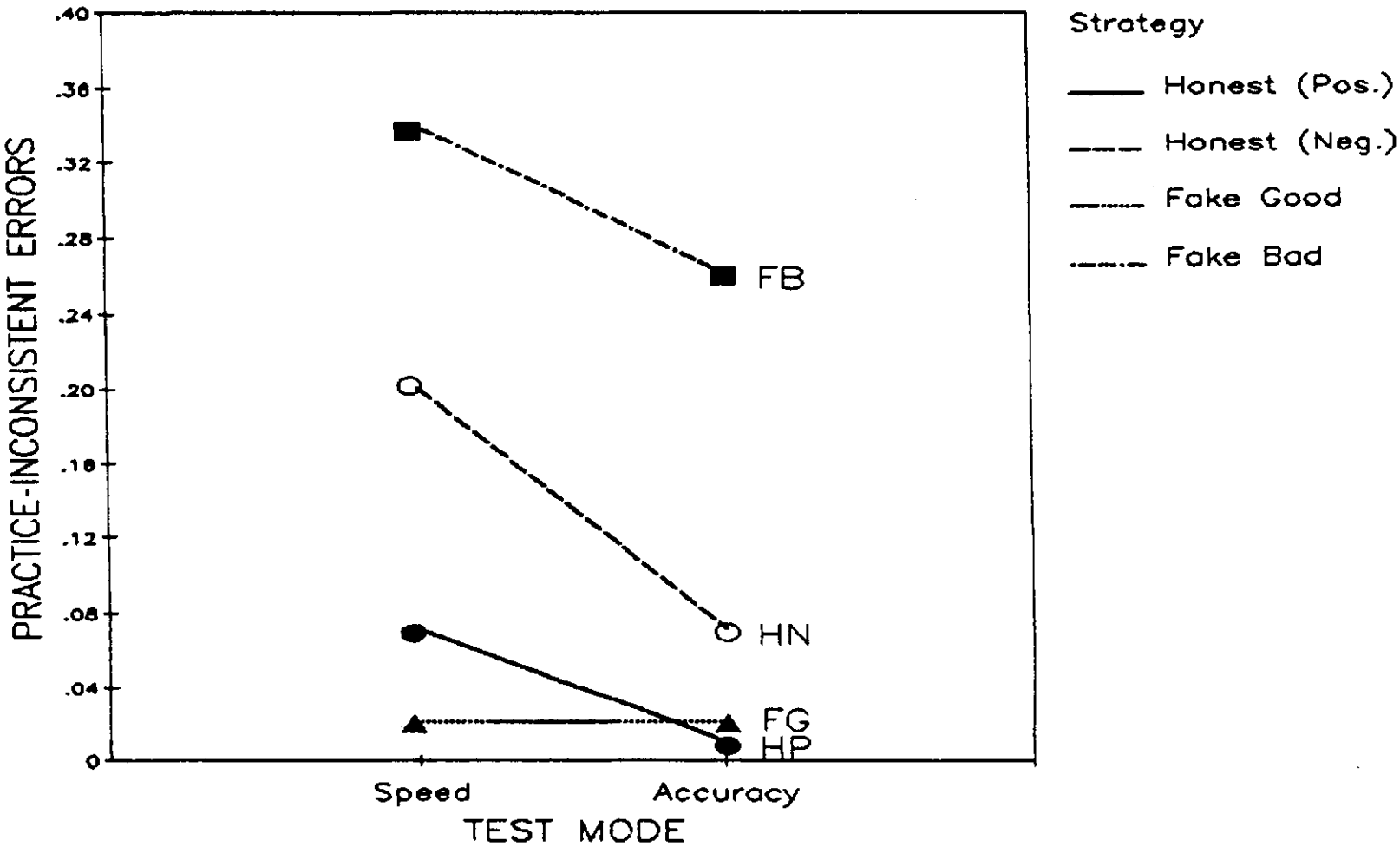
4. Practice inconsistent errors after separating positive and negative disclaiming.


LEARNING CURVES BY STRATEGY
(Honest, Fake Good, and Fake Bad)
REACTION TIME (in milliseconds)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1
2
3
4
5
6
7
8
9
10
PRACTICE TRIAL NUMBER
FB
H
FG


PRACTICE-CONSISTENT ERRORS
LEGEND
FAKE GOOD
FAKE BAD
FG
FB
.60
.54
.48
.42
.36
.30
.24
.18
.12
.06
0
PRACTICE-CONSISTENT ERRORS
SPEED
ACCURACY
TEST MODE


PRACTICE-INCONSISTENT ERRORS
PRACTICE-INCONSISTENT ERRORS
.40
.36
.32
.28
.24
.20
.16
.12
.08
.04
0
FB
H
FG
Speed
Accuracy
TEST MODE
Strategy
Honest
Fake Good
Fake Bad

PRACTICE-INCONSISTENT ERRORS: Honest Strategy Divided Into Positive and Negative Disclaiming



Appendix A

TRAIT QUESTIONNAIRE: FAKE GOOD

For each of the following traits, please respond **"ME"** or **"NOT ME"**, while faking good.

	NOT ME	**ME**
1. tolerant	_____	_____
2. greedy	_____	_____
3. quiet	_____	_____
4. generous	_____	_____
5. boring	_____	_____
6. secretive	_____	_____
7. patient	_____	_____
8. insulting	_____	_____
9. conventional	_____	_____
10. reliable	_____	_____
11. conceited	_____	_____
12. extravagant	_____	_____

TRAIT QUESTIONNAIRE: FAKE BAD

For each of the following traits, please respond **"ME"** or **"NOT ME"**, while faking bad.

	NOT ME	**ME**
1. tolerant	_____	_____
2. greedy	_____	_____
3. quiet	_____	_____
4. generous	_____	_____
5. boring	_____	_____
6. secretive	_____	_____
7. patient	_____	_____
8. insulting	_____	_____
9. conventional	_____	_____
10. reliable	_____	_____
11. conceited	_____	_____
12. extravagant	_____	_____

TRAIT QUESTIONNAIRE: HONEST

For each of the following traits, please respond **"ME"** or **"NOT ME"**, while answering honestly.

	NOT ME	**ME**
1. tolerant	_____	_____
2. greedy	_____	_____
3. quiet	_____	_____
4. generous	_____	_____
5. boring	_____	_____
6. secretive	_____	_____
7. patient	_____	_____
8. insulting	_____	_____
9. conventional	_____	_____
10. reliable	_____	_____
11. conceited	_____	_____
12. extravagant	_____	_____

Appendix B

Music Ratings

Rate the following songs in terms of music quality and lyrics (i.e., the words).

Use following rating scale for music and lyrics:

1	2	3	4	5	6	7
Poor			Moderate			Excellent

If you are not familiar enough with the song, check Don't Know It

Title	Performer	Music	Lyrics	Don't know it
Fast Car	Tracy Chapman	___	___	___
Still Be Loving You	Prairie Oyster	___	___	___
Billy Jean	Michael Jackson	___	___	___
Your Song	Elton John	___	___	___
Need You Tonite	INXS	___	___	___
Running Up That Hill	Kate Bush	___	___	___
Whoever's in N.E.	Reba McIntire	___	___	___
Have You Seen Her	M.C. Hammer	___	___	___
Iceblink	Cocteau Twins	___	___	___
Crazy for You	Madonna	___	___	___
Rockin in Free World	Neil Young	___	___	___
Stairway to Heaven	Led Zeppelin	___	___	___
People are People	Depeche Mode	___	___	___
Lady in Red	Chris DeBerg	___	___	___
Five and Dime	Nancy Griffith	___	___	___
In Your Eyes	Peter Gabriel	___	___	___
Hotel California	The Eagles	___	___	___
Teddy Bear	Elvis Presley	___	___	___
Born in USA	B. Springsteen	___	___	___

Junk	k.d. lang	___	___	___
How Soon Is Now	The Smiths	___	___	___
Famous Blue Raincoat	Jennifer Warnes	___	___	___
Saving All My Love	Whitney Houston	___	___	___
My Way	Frank Sinatra	___	___	___
Troy	Sinead O'Connor	___	___	___
Grape Vine	Marvin Gaye	___	___	___
Fill their Shoes	George Jones	___	___	___
When Doves Cry	Prince	___	___	___
Lets Go to Bed	The Cure	___	___	___
Blue Sky Mine	Midnight Oil	___	___	___
Been Caught Stealin'	Jane's Addiction	___	___	___
Add it Up	Violent Femmes	___	___	___
My Island Too	Rita McNeil	___	___	___
Please Please Me	Beatles	___	___	___
59th St Bridge	Simon/Garfunkel	___	___	___
Ice, Ice, Baby	Vanilla Ice	___	___	___

Appendix C

Cassette Tape Rating Form

After each song on the cassette, rate it in terms of music quality and lyrics (i.e., the words). Don't stop the tape.

Use following rating scale for music and lyrics:

1	2	3	4	5	6	7
Poor			Moderate			Excellent

Number	Music	Lyrics
1.	___	___
2.	___	___
3.	___	___
4.	___	___
5.	___	___
6.	___	___