

Creative Imagination, Absorption, and Dissociation with African American College Students

Marty Sapp, Ed.D. and Kim Hitchcock, Ed.D.

The purpose of this study was to assess creative imagination, absorption, and dissociation with African-American college students. Two hundred thirty-six undergraduate African-American students ranging between the ages of 18 to 22 participated in this study. Students were assigned to the following experimental manipulation: (a) Creative Imagination Scale (CIS), a cognitive-behavioral measure of hypnotizability; and (b) Dissociative Experiences Scale (DES), General Dissociation Scale (GDS), and Tellegen Absorption Scale (TAS) embedded within the CIS. Results indicated that dissociation and absorption were affected by the CIS. Finally, this sample was compared to the European American sample obtained by Barber and Wilson (1978) and Wilson and Barber (1978), and clearly the two samples differed on creative imagination, $t=(405)=7$, $p<.005$. The African American sample had a significantly lower mean CIS score than the European American sample. **(Sleep and Hypnosis 2003;5(2):95-104)**

Key words: *imagination, hypnosis, absorption, dissociation, adolescents, cultural differences, African-American college students, cognition*

INTRODUCTION

Dissociation theories of hypnosis suggest that absorption and dissociation are correlated with hypnotizability (1). Absorption can be described as a trait that involves openness to cognitive and affective alterations across several situations. Moreover, absorption is a participant's readiness for deep mental and emotional involvement, and the participant appears to be impervious to naturally

distracting events. Roche and McConkey defined imaginative involvement, a term proposed by J. R. Hilgard (2), as the readiness for openness to experience that involves an alteration in reality testing, and absorption involves the narrowing or expansion of consciousness.

According to Roche and McConkey (1), absorption and imaginative involvement overlap, but they are different constructs. Plus, this researcher pointed out that absorption is a broad and complex construct that cannot be totally measured or assessed using one instrument. From this broad definition of absorption, one can conclude that absorption has trait and state dimensions; however, many clinicians and researchers assume that absorption is a relatively simple, unitary

From Department of Educational Psychology University of Wisconsin-Milwaukee, Milwaukee, Wisconsin (Dr. Sapp) and Central State University, Wilberforce, Ohio (Dr. Hitchcock), USA

Address reprint requests to: Dr. Marty Sapp Department of Educational Psychology University of Wisconsin-Milwaukee Milwaukee, Wisconsin USA

Phone: 414 229-6347 Fax: 414 229-4939
e-mail: sapp@uwm.edu

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dimension (1). Clients who are capable of rich fantasies and very vivid imagery score highly on the Tellegen Absorption scale (TAS), which is a standardized measure of absorption. The TAS is a 34-item (true-false but can be modified into a Likert scale) scale that measures absorption, and it correlates approximately .38 with hypnotizability (3).

Dissociation means that two or more mental processes are not integrated (4). For example, dissociation is the ability to detach from one's environment such as day dreaming and seeing oneself performing actions outside of one's body. Clinically, dissociation is useful for promoting increased hypnotic depth during pain relief. In addition, it can be used to assess nonconscious processes by facilitating "automatic handwriting" for nonconscious exploration. The domain of dissociation includes normal, pathological, psychological, and neuropsychological phenomena. Some pathological phenomena include, but are not limited to, dissociative identity disorder (DID), depersonalization, derealization, dissociative amnesia, dissociative fugues, and conversion disorder (psychological factors that affect motor and sensory functioning). Neuropsychological dissociative phenomena include, but are not limited to, blindsight, commissurotomy, organic amnesia, epileptic fugues, and hemineglect.

Psychological dissociative phenomena include, but are not limited to, hypnosis, day dreaming, fantasizing, out-of-body experiences, and automatisms. Normal dissociative phenomena include, but are not limited to, self-hypnosis, fantasy proneness, and meditative fugues. During dissociation, clients' sensations, memories, and volitions may not be integrated; hence, these mental processes are dissociated. In summary, the domain of dissociation is on a continuum and it is not discrete.

The Dissociative Experiences Scale (DES) is a standardized measure of dissociation; it is a 28-item scale ranging from 0 to 100 percent. It has a test-retest reliability of .84, and it

correlates with hypnotizability from .08 to .62 (5). In addition, Sapp (3,6) developed the General Dissociation Scale (GDS) that allows dissociation to be assessed in the following categories based on the Diagnostic and Statistical Manual of Mental Disorders (4th edition) (DSM-IV): dissociative identity, depersonalization, dissociative amnesia, and dissociative fugue. The GDS correlates significantly with the DES, $r = .34$, $p < .01$, and it has a Cronbach's alpha of .85, $p < .01$.

The purpose of this study was to assess hypnotizability with African American college students using the Creative Imagination Scale (CIS), a cognitive-behavioral measure of hypnotizability (7,8), when dissociation and absorption measures are embedded with the CIS. Finally, another purpose of this study was to compare this African American college student sample to the Wilson and Barber (9) European American college student sample on the CIS.

Sapp (3) and Council (7) described the Creative Imagination Scale (CIS) as a cognitive-behavioral hypnotizability scale. Although the CIS does not contain an induction, it can be used with one; however, it does use guided imagination instructions to facilitate participants' abilities to experience the suggested effects. The CIS consists of the following 10 items: arm heaviness, hand levitation, finger anesthesia, water hallucination, olfactory-gustatory hallucination, music hallucination, temperature hallucination, time distortion, age regression, and mind-body relaxation. After the last suggestion, participants self-score their responses to the suggested effects. Scores range between 0 and 40. In terms of psychometric properties, items on the CIS have a reliability measure of .82, and it correlates significantly with the Barber Suggestibility Scale (BSS); Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A); and the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C). The CIS is especially useful for participants who fear losing control or fear

the term "hypnosis."

Sheehan, McConkey, and Law (10) administered the CIS to 303 undergraduate Australian college students. In contrast to sleep instructions, students were given waking instructions. Factor analytic results found that items on the CIS were reliable and that the CIS did correlate well with other cognitive variables such as vividness of imagery.

Baba (11) administered a Japanese version of the Creative Imagination Scale (CIS) to 136 undergraduate Japanese students. The items on the scale were found to have adequate reliability and validity. Varga (12) standardized the CIS on Hungarian college students and found that the normative data were similar to that of the original scale, and the psychometric features were the same as the original scale.

Siuata (13) reported on the normative and psychometric properties of a Polish version of the CIS that was administered to 101 Polish undergraduate students. Results were similar to the findings of Barber and Wilson (14), Wilson and Barber (9), and the Australian results of Sheehan et al. (10). The total scale score means differed by no more than 20 scale points; however, these differences were not statistically significant. Moreover, there was a high consistency in item difficulty level among the three samples compared. The CIS was found to have high test-retest reliability and moderate split-half reliability. Furthermore, factor analysis yielded only one significant factor that was congruent with the results of Barber and Wilson and Wilson and Barber. Finally, these researchers concluded that cultural differences did not influence the major findings yielded by the CIS.

Hilgard, Sheehan, Monteiro, and MacDonald (15) investigated within two studies containing 329 undergraduate students the factor structure of the CIS by correlating it with scores on the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A), the Tellegen Absorption Scale (TAS), and Bett's revised imagery scale. Findings were consistent across both studies, indicating that two factors accounted for the

majority of the variance. One factor was designated as a Hypnotic Performance Factor and the other scale was labeled as an Absorption/Imagination Factor. Interestingly, the CIS loaded highly on both factors.

McConkey, Sheehan, and White (16) administered the HGSHS:A and CIS in separate sessions to 327 undergraduate students, and they found that the two instruments were correlated .28; however, they reported that the CIS and HGSHS:A are independent in their underlying dimensions. They concluded that the CIS taps into the imagery and imagination aspects of hypnosis, while the HGSHS:A measures more complex aspects of hypnosis.

Sapp and Evanow (17) determined the impact of two measures of hypnotizability on absorption and dissociation. One hundred two undergraduate and graduate students participated in this study. Neither hypnotizability measure had a significant influence on absorption or dissociation, but greater changes on the hypnotizability measures were found when the CIS preceded the HGSHS:A. Finally, this study found that the CIS and HGSHS:A were significantly correlated, $r=.37$, $p<.05$; these researchers concluded that the two hypnotizability measures are not independent.

METHODS

Participants

Two hundred thirty-six undergraduate African-American college students from a predominantly African-American 4-year college participated in this study (68 men and 168 women). All students ranged in age from 18–22, and they received extra credit for their participation.

Procedures

Participants completed the experimental procedure in groups, and they received the following experimental condition: tape-

recorded Creative Imagination Scale (CIS) without an induction and the Dissociative Experiences Scale (DES), General Dissociation Scale (GDS), and Tellegen Absorption Scale (TAS) embedded with the CIS. Embedding is an experimental procedure popularized by Pekala, Kumar, and Marcano (18). Specifically, embedding occurred by stopping the tape-recorded CIS after Item 9 for two minutes and offering the following instructions: "For the next 2 minutes, I would like for you to sit quietly and continue the experience you have right now. After 2 minutes, I will start the tape again."

Once participants completed the CIS, they were asked to complete the DES, TAS, and GDS in reference to the pause on the CIS tape. Finally, participants rated the vividness of their imaginations by completing the Vividness Scale (VIS), a ten-point scale that asks participants to rate the vividness of their imaginations.

Psychometric Results of Instruments for African-American College Student Sample

Items on the CIS had a coefficient alpha reliability of .84, items on the GDS had a coefficient alpha coefficient of .85, items on the DES had a coefficient alpha reliability of .95, and items on the TAS had a coefficient alpha reliability of .89.

The CIS and VIS correlated .341, $p < .01$; the GDS and CIS had a .279 correlation, $p < .01$; the GDS and VIS did not have a significant correlation, $r = .105$, $p > .01$; the DES correlated significantly with the CIS, $r = .241$, $p < .01$; the DES correlated significantly with the GDS, $r = .581$, $p < .01$; the DES did not correlate significantly with the VIS, $r = .152$, $p > .01$. Finally, the TAS correlated significantly with the CIS, VIS, GDS, DES, and TAS, and the respective correlations are as follows: .250, $p < .01$; .336, $p < .01$; .394, $p < .01$; and .552, $p < .01$.

Table 1. Intercorrelation of items on the CIS for African-American college students

Test Suggestions	1	2	3	4	5	6	7	8	9	10
1. Arm Heaviness	1.0									
2. Hand Levitation	.49	1.0								
3. Finger Anesthesia	.26	.40	1.0							
4. Water Hallucination	.25	.33	.34	1.0						
5. Olfactory-Gustatory Hallucination	.23	.42	.40	.61	1.0					
6. Music Hallucination	.12	.22	.29	.30	.38	1.0				
7. Temperature Hallucination	.24	.43	.44	.50	.50	.34	1.0			
8. Time Distortion	.17	.31	.33	.26	.43	.25	.33	1.0		
9. Age Regression	.13	.25	.29	.39	.43	.36	.30	.33	1.0	
10. Mind-Body Relaxation	.23	.31	.39	.44	.42	.43	.45	.42	.54	1.0

Barber and Wilson's Sample

Test-Suggestions	1	2	3	4	5	6	7	8	9	10
1. Arm Heaviness	1.0									
2. Hand Levitation	.52	1.0								
3. Finger Anesthesia	.35	.41	1.0							
4. Water Hallucination	.50	.40	.30	1.0						
5. Olfactory-Gustatory Hallucination	.44	.49	.27	.58	1.0					
6. Music Hallucination	.26	.28	.19	.37	.36	1.0				
7. Temperature Hallucination	.42	.45	.40	.43	.42	.36	1.0			
8. Time Distortion	.45	.42	.28	.34	.41	.35	.48	1.0		
9. Age Regression	.32	.47	.33	.46	.50	.37	.37	.46	1.0	
10. Mind-Body Relaxation	.42	.44	.18	.47	.48	.33	.48	.52	.48	1.0

RESULTS

Table 1 has the intercorrelation of items on the CIS for the African-American college students and Barber and Wilson and Wilson and Barber sample. A principal components analysis was performed on the intercorrelation of items on the CIS for African American college students. The criterion that was used to

determine the number of components or factors to be retained from the principal components analysis was based on retaining factors with eigenvalues greater than one, which is referred to in the literature as Kaiser's rule. Moreover, following the principal components' analysis, a varimax rotation was employed to aid with interpretation. Table 2 shows that two components or factors accounted for the

Table 2. Principal components analysis of CIS for African-merican college students

	Component Matrix ^a		Rotated Component Matrix ^a	
	Component		Component	
	1	2	1	2
Creative Imagination Scale 1	.443	.697	-8.711E-03	.826
Creative Imagination Scale 2	.636	.540	.238	.800
Creative Imagination Scale 3	.642	.144	.459	.471
Creative Imagination Scale 4	.704	-5.449E-02	.620	.338
Creative Imagination Scale 5	.766	-7.466E-02	.683	.355
Creative Imagination Scale 6	.565	-.347	.662	1.748E-02
Creative Imagination Scale 7	.719	6.923E-02	.565	.450
Creative Imagination Scale 8	.588	-.106	.551	.232
Creative Imagination Scale 9	.628	-.395	.742	1.161E-02
Creative Imagination Scale 10	.727	-.266	.754	.174

Extraction Method: Principal Component Analysis.
^a2 components extracted.

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
^aRotation converged in 3 iterations.

intercorrelation of the items of the CIS for the African-American college students. Table 3, in contrast, for the Barber and Wilson sample of European-American college students, shows that one component or factor accounted for the intercorrelation of items on the CIS.

Table 3. Results of Barber and Wilson's principal component analysis

Loadings of the Test-Suggestions of the Creative Imagination Scale on the First and Only Factor	
Test-Suggestion	Factor I
1. Arm Heaviness	.69
2. Hand Levitation	.72
3. Finger Anesthesia	.52
4. Water Hallucination	.72
5. Olfactory-Gustatory Hallucination	.74
6. Music Hallucination	.55
7. Temperature Hallucination	.71
8. Time Distortion	.70
9. Age Regression	.70
10. Mind-Body Relaxation	.72

The Wilson and Barber (9) European American college student sample had a higher mean on all 10 items of the CIS and on the grand mean CIS scores. The mean differences for Items 1–10 of the CIS were as follows: .4, .2, .3, .7, .9, .8, .3, .8, .7, and 1.1, and the grand mean difference for CIS scores was .61.

The t-tests and d effect sizes for Items 1–10 of the CIS were as follows: $t=3.59$, $p<.005$, effect size=.36 (small); $t=1.62$, $p>.005$, effect size=.17 (small); $t=2.40$, $p>.005$, effect size=.26 (small); $t=5.22$, $p<.005$, effect size=.57 (medium); $t=7.00$, $p<.005$, effect size=.75 (large); $t=5.97$, $p<.005$, effect size=.63 (medium); $t=2.36$, $p>.005$, effect size=.25 (small); $t=5.78$, $p<.005$, effect size=.66 (medium); $t=5.58$, $p<.005$, effect size=.60 (medium); $t=7.27$, $p<.005$, effect size=.72 (medium). Finally, the total mean CIS difference was $t=7.00$, $p<.005$, effect size=2.35 (large).

Type I error rate was controlled for with the 11 t-test calculated by taking the alpha level of .05 and dividing it by the number of tests, which equals .005; therefore, this

controls for Type I error, referred to as the Bonferroni Inequality test or procedure (19,20). The European-American college students had significantly higher means than the African-American college students on the following items of the CIS: 1, 4, 5, 6, 8, 9, and 10. Moreover, the European-American college students had higher total mean CIS scores than African-American college students.

The d effect sizes were calculated by taking the mean differences between the two groups, on the CIS items, divided by the African-American students' standard deviation, on the CIS items, which is the operational definition of a d effect size (3,6). Likewise, the effect size for the total CIS score was found by taking the mean differences between the two groups, on the CIS, divided by the African-American students' standard deviation on the CIS. Sapp reported d effect sizes of .20 as small, .50 as medium, and .80 as large. Items 1–3 had a small d effect size, item 4 had a medium effect size, item 5 had a large effect size, item 6 had a medium effect size, item 7 had a small effect size, items 8–10 had medium effect sizes, and the total mean CIS had a large effect size. Essentially, the African-American sample differed from the Wilson and Barber sample on every item of the CIS.

Finally, Table 4 has the indices of difficulty for the CIS. There did not appear to be a pattern for the difficulty indices. The mean and standard deviation Dissociative of Experiences Scale was 23.88 and 7.17; the mean and standard deviation General Dissociation Scale was 23.88 and 7.17; and the Tellegen Absorption Scale mean and standard deviation was 16.45 and 7.21; and, finally, the mean and standard deviation for the Vividness of Imagination Scale was 5.61 and 2.21.

Results of Embedding Procedure for DES, GDS, and TAS Within the CIS

When the DES, GDS, and TAS were

Table 4. Indices of difficulty for CIS (Indices of difficulty are in bold.)

1. In the first test you were asked to imagine that one, two, and then three dictionaries were being piled on the palm of your hand. Compared to what you would have experienced if three dictionaries were actually on your hand, what you experienced was:

0 0% Not at all the same	1 25% A little the same	2 50% Between a little & much the same	3 75% Much the same	4 90+% Almost exactly the same
.19	.25	.27	.21	.08

2. In the second test you were asked to think of a strong stream of water from a garden hose pushing up against the palm of your hand. Compared to what you would have experienced if a strong stream of water were actually pushing up against your palm, what you experienced was:

0 0% Not at all the same	1 25% A little the same	2 50% Between a little & much the same	3 75% Much the same	4 90+% Almost exactly the same
.29	.25	.23	.14	.05

3. In the third test you were asked to imagine that Novocain had been injected into your hand and it made two fingers feel numb. Compared to what you would have experienced if Novocain had actually made the two fingers feel numb, what you experienced was:

0 0% Not at all the same	1 25% A little the same	2 50% Between a little & much the same	3 75% Much the same	4 90+% Almost exactly the same
.31	.32	.20	.14	.03

4. In the fourth test you were asked to think of drinking a cup of cool mountain water. Compared to what you would have experienced if you were actually drinking cool mountain water, what you experienced was:

0 0% Not at all the same	1 25% A little the same	2 50% Between a little & much the same	3 75% Much the same	4 90+% Almost exactly the same
.30	.23	.22	.18	.07

5. In the fifth test you were asked to imagine smelling and tasting an orange. Compared to what you would have experienced if you were actually smelling and tasting an orange, what you experienced was:

0 0% Not at all the same	1 25% A little the same	2 50% Between a little & much the same	3 75% Much the same	4 90+% Almost exactly the same
.34	.20	.25	.17	.04

6. In the sixth test you were asked to think back to a time when you heard some wonderful music and to re-experience hearing it. Compared to what you would have experienced if you were actually hearing the music, what you experienced was:

0 0% Not at all the same	1 25% A little the same	2 50% Between a little & much the same	3 75% Much the same	4 90+% Almost exactly the same
.15	.22	.28	.20	.15

7. In the seventh test you were asked to picture the sun shining on your hand making it feel hot. Compared to what you would have experienced if the sun were actually shining on your hand, what you experienced was:

0 0% Not at all the same	1 25% A little the same	2 50% Between a little & much the same	3 75% Much the same	4 90+% Almost exactly the same
.29	.26	.22	.18	.05

8. In the eighth test you were asked to imagine time slowing down. Compared to what you would have experienced if time actually slowed down, what you experienced was:

0 0% Not at all the same	1 25% A little the same	2 50% Between a little & much the same	3 75% Much the same	4 90+% Almost exactly the same
.34	.28	.20	.14	.05

9. In the ninth test you were asked to think back to a time when you were in elementary school. Compared to the feelings you would have experienced if you were actually in elementary school, the feelings you experienced were:

0 0% Not at all the same	1 25% A little the same	2 50% Between a little & much the same	3 75% Much the same	4 90+% Almost exactly the same
.25	.22	.24	.22	.07

10. In the tenth test you were asked to picture yourself lying under the sun on a beach and becoming very relaxed. Compared to what you would have experienced if you were actually relaxing on a beach, what you experienced was:

0 0% Not at all the same	1 25% A little the same	2 50% Between a little & much the same	3 75% Much the same	4 90+% Almost exactly the same
.25	.18	.24	.24	.09

embedded within the CIS, there were significant associations with the CIS. First, the DES correlated, $r=.288$, $p<.01$ with the CIS. Second, the GDS correlated significantly with the CIS, $r=.330$, $p<.01$. Third, the TAS had a significant correlation with the CIS, $r=.320$, $p<.01$. To summarize, even though all the correlations were small, each was significant at the .01 alpha level, and Sapp (3) describes correlations of .1 as small-effect sizes, .3 as medium-effect sizes, and .5 as large-effect sizes. Effect sizes measure practical significance, the effect a treatment has within a population, or the degree to which the null hypothesis may be false; therefore, within rounding error, the dissociation measures and absorption measure had a medium-effect size.

Test for Gender Differences of African-American College Students

African-American male and female college students were compared on the DES, GDS, TAS, and CIS using a two-group MANOVA and there were no significant statistical differences, Wilks's Lambda=.985 (4, 231), $p=.631$.

DISCUSSION

Very little is known about hypnosis with African-American college students (20). This study found that when measures of dissociation and absorption were embedded within a cognitive-behavioral measure of hypnotic responsiveness, the CIS, statistically significant

alterations were found on measures of dissociation and absorption.

In terms of creative imagination, this sample of African-American college students differed from the sample of Barber and Wilson in two ways. First, their creative imagination scores were not unidimensional, and this African-American sample of college students had significantly lower CIS total scores than the Barber and Wilson sample. Essentially, more African American college students scored lower on the CIS than the Barber and Wilson and Wilson and Barber European-American college students.

Two features of hypnosis may account for the lower CIS scores for the African-American college students. First, they may need a hypnotic induction to obtain maximal responsiveness to the CIS. Second, it may also be necessary to manipulate expectancy effects as a means of increasing these students' scores of the CIS. Additional research is needed on the CIS, especially research that manipulates induction effects (giving versus not giving) and expectancy effects. According to certain cognitive-behavioral theorists, expectations are critical factors that influence hypnotic responsiveness (3). As far as these writers are aware, there is one published study for African-American college students using the HGSHS:A. (21). Clearly, this African-American college student sample did not correspond to what Barber (22) has described as fantasy-prone participants, or individuals who are able to

vividly use their imaginations; therefore research is needed to determine if African-American college students are positively-set. And additional research is needed that investigates how to use guided imagery, hypnosis, and related techniques with these students.

In terms of future research, a two-sample structural equation modeling study could provide additional evidence concerning the cultural differences between African-American college students and European-American college students and creative imagination. Specifically, before a two-sample structural equations model could be performed, each sample would have to be fitted independently by a structural equations model (8,21).

The implications of assessing creative imagination is that students who have vivid imaginations often show excellent responses to hypnosis and related techniques. For example, hypnosis, guided imagery, and related techniques have been used to treat a variety of psychological disorders such as substance-related disorders, mood disorders, anxiety disorders, somatoform disorders, dissociative disorders, sexual disorders, eating disorders, adjustment disorders, attention-deficit disorder, and obsessive-compulsive disorder. Moreover, meta-analyses have shown that hypnosis and guided imagery can increase the effect sizes of cognitive-behavioral and psychodynamic therapies. Finally, hypnosis and related techniques can change clients' expectations, which is the ultimate goal of psychotherapy (6).

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