Formative Evaluation of a Hepatitis C Virus Computer Assisted Instruction Tool for Communities of African Descent

R. Eric Weston[1], Rogelio I. Thomas[2], Michelle A. Lang[3], Peter J. Weston[1], John Cardwell[4], Adam P. Gordon[5]

[1]*Brooklyn College of the City University of New York*
[2]*Special Care*
[3]*Samaritan Village. Inc.*
[4]*EVAXX, Inc.*
[5]*Elmhurst Hospital*

Abstract

Hepatitis C Virus (HCV) has become increasingly prevalent within traditionally undeserved communities. The paper describes the formative evaluation of a HCV Computer Assisted Instruction (CAI) tool. Specific aims are to describe the feasibility of a CAI tool with a high-risk population, and the use of Nigrescence Theory to develop targeted messages. Three participants, recruited at an all-male substance abuse halfway house, reviewed the CAI in a mini-focus group. A Health History/HCV Knowledge Questionnaire, The Cross Racial Identity Scale and a focus group question route were used to collect qualitative and quantitative data. The analysis plan utilized descriptive statistics, content analysis and profile analysis. Results suggested that the CAI was acceptable to this segment of the population, and Nigrescence Theory provided a context for targeting messages to differing segments of the target group. Recommendations are offered to health promotion programs targeting people of African descent.

Keywords: Computer Assisted Instruction, Hepatitis C Virus, Racial Identity Theory, community partnership

Introduction

Hepatitis C virus (HCV) is highly associated with disease of the liver and represents a serious health risk for residents of the United States. The National Center for Infectious Diseases (NCID) reports that HCV is the most common chronic bloodborne viral infection in the United States (NCID, 2001). Among adults, chronic liver disease is the tenth leading cause of death, the most frequent indication for liver transplantation, and 40 to 60% of chronic liver disease is due to HCV (NCID, 2001). Although two different therapy regimens have been approved (monotherapy with Alpha Interferon, and combination therapy with Alpha Interferon and Ribavirin), treatment adherence has been meager at best (Abreu, 1999). HCV is now notably associated with HIV/AIDS, and increasingly prevalent within traditionally underserved communities (Abreu, 1999).

Efforts to disseminate HCV- related information to high-risk communities have been hampered by multiple barriers including, reading level and substance abuse related behavior (McNair, Roberts, 1997; Quirk, 2000). Moreover, recent statistics suggests that segments within communities of color have been less receptive to traditional approaches to health promotion and disease prevention than their counterparts of western European descent (Brathwaite, 1992). In the case of HCV therapy, a study by Muir, Bornstein, and Killenberg (2004) suggests that combination treatment was less successful with people of African descent in comparison to their counterparts of Western European descent. The failure of traditional approaches to halt these deteriorating health indices has led some health professionals to argue for health promotion efforts in these communities utilizing new, innovative approaches in order to attain success

(McNair, Roberts, 1997). This article describes the development of a HCV-based Computer Assisted Instruction (CAI) tool, a novel approach to health promotion that is gaining increasing popularity among professionals (Thorkildsen, Allard, Reid, 1983). The specific aims of this report are to: a) outline the steps in the development of an HCV-based CAI tool, and b) describe the response of targeted individuals to the CAI tool in the context of a formative evaluation.

The Hepatitis C Information Dissemination Project (HCVIDP)

The HCVIDP represents a partnership between an urban college and a community- based substance abuse treatment facility to disseminate HCV information to communities of African descent. The aims of the project were to: a) describe the HCV-related knowledge, attitudes, and behaviors of a high risk segment among people of African descent, b) develop a HCV CAI tool to disseminate HCV information to this target population, and c) evaluate the feasibility of the CAI in the context of a formative evaluation.

The Community Diffusion Model (CDM) was used as the guide in developing a community partnership. The CDM was developed by the National Heart, Lung, and Blood Institute as a method of disseminating health related information to communities of color (NHLBI, 1987). A key element in this model is a respect for the cultural mores and community norms of the target population (Bowman, l991; Weston, Rapkin, Potts & Smith, 1998). A detailed account of the use of the CDM in developing community partnerships has been provided elsewhere (Weston & Stayton, 2004). A brief description of the use of CDM in the current project is presented in Appendix A.

Theoretical Perspectives. Two basic premises guided the development of the investigation. First, a CAI could present an innovative method to disseminate HCV information in communities of African descent. Second, the development of the CAI could be guided by an understanding of the racial identity of the viewer. Each of these premises is described below.

Computer Assisted Instruction. An approach to health promotion that is gaining increasing popularity among professionals is the CAI (Levin, 1983; Thorkildsen, Allard, & Reid, 1983; Schinke, Gordon, & Weston, 1990). The use of multimedia computer-based learning models offers a method to overcome many traditional barriers to the delivery of effective health promotion messages, such as reading level, cultural mores, and community norms (Freeman, 1990; Orlandi, 1989; Quirk 2000; Weinrich, Reynolds, Tingen, & Starr, 2000). However, even such a novel approach must be guided by an awareness of the multiple determinants existing in communities of African descent (Cross, 1991; Weston, Rapkin, Potts & Smith, 1998). One vital determinant, racial identity is described below.

Nigrescence Theory. A developmental model of racial identity in people of African descent, Nigresence Theory was developed by William Cross and his colleagues (Cross 1991, Cross, Parham, & Helms (1991). For an excellent review of Nigresence Theory, the reader is referred to the work of Cross, Parham, & Helms (1991). The cornerstone of Nigresence Theory is the four-stage process through which individuals proceed in developing high levels of awareness. These stages can be found in Table 1.

Two additional elements of Nigresence Theory should be mentioned. First, Cross (1991), suggests that the impact of racial identity is most evident when the target issue is clearly related to race. In the current study, this factor was accounted for by focusing the CAI content on the health disparity of HCV on communities of African descent. Second, Helms (1990) suggests that the stages of Nigrescence should be viewed as ego states rather than as discreet and separate entities. Thus, some elements of each of these stages are present in all persons of African descent at any given time. This perspective has a critical impact on the interpretation of the Cross Racial Identity Scale (CRIS) for the current study, as will be evidenced in later sections.

Table 1
Stages of Nigrescence Theory

Stage	Description
Pre-Encounter	Views him/herself from a Eurocentric perspective
Encounter	A movement away from the security of the Eurocentric worldview, often the result of some personal or vicarious experience. This change is accompanied by feelings of insecurity and a desire for self-affirmation.
Immersion-Emersion	At first, the individual inundates him/herself in African/African American history, accompanied by a devaluation of all non-Black mores and values. By stage end he/she moderates valuation of things African/African American with the recognition of the potential value of all cultures
Internalization	Acceptance of him/herself as a member of the African diaspora, and views the world from an Afrocentric perspective.

The Hepatitis C Virus Computer Assisted Instructional Tool

The prototype of the CAI consisted of 27 slides, each using a multimedia format. Features of the CAI included: a visual representation of the speaker on each slide, auditory feedback on the slide content, and text of slide. Several technical terms were designated as hot words and linked to a glossary with additional information, most often a definition. This format was intended to maximize attention and comprehension of the material across a wide variety of educational levels. The content, taken from a variety of sources and web-based materials from centers within the Department of Health and Human Services, included: basic definition of Hepatitis C, transmission information, prevalence data, prevention strategies, and treatment options. The first author, a man of African descent, served as the voice and face of the CAI, which can be reviewed on-line (Weston, 2005).

Methodology

Site. The investigation was conducted at a substance abuse treatment halfway house located in midtown Manhattan serving adult males. The agency utilized a therapeutic community model and provided residential and ambulatory care to individuals with substance related disorders. Data collected in 2001 indicated that approximately 47% of these residents were of African descent, 32% of Latino origins, 21% of Western European descent, and <1% other. Approximately 35% – 40% of the population tested positive for HCV and almost 85% were unemployed.

Procedure. Candidates were recruited at the weekly community meting. Following informed consent procedures, interested candidates were asked to complete the survey, and place it in a box outside the director's office. A total of 15 participants were recruited over a three -month period. Next, focus group participants were selected to evaluate a CAI education tool for HCV targeting people of African descent. Inclusionary criteria for the focus group included: a) self designation as person of African descent, b) born in the Unites States, c) eighteen years of age or older, d) history of high-risk behavior for HCV infection. Exclusionary criteria included any mental or physical condition that prevented an individual from providing informed consent. In order to maintain confidentiality, the Program Director facilitated focus group arrangements with four individuals who met all criteria. Three participants responded to the invitation.

Confidentiality. All protocols and consent procedures were approved by the Institutional Review Board prior to implementation. Participant confidentiality was protected by unique identification numbers known only by the participants (month of birth, second initial of

last name, driver's license [Y/N], number of brothers).

Incentives. The participating agency received a $600 stipend for participants to decide on a facility purchase. Focus group participants were given two $5.50 gift coupons redeemable at a local fast food restaurant.

Instrumentation. Three instruments were used in the investigation, A Health History/HCV Knowledge Questionnaire, the CRIS and a Focus Group Question Route. Each of these forms is described below.

Health History/ HCV Knowledge Questionnaire. Each participant completed a 99 item questionnaire which focused on six areas: a) sociodemographic characteristics, b) health history, c) HCV knowledge, substance abuse history, and d) high risk sexual behavior, and e) readiness to change high risk behavior for HCV infection. The survey included modified items from the Michigan Alcoholism Screening Test, and the University of Rhode Island Change Assessment Scale.

Cross Racial Identity Scale (CRIS). A modified version of the CRIS was used to assess the racial identity stage of each participant. The CRIS is a 63-item scale that measures three of the identity stages predicted by Nigresence Theory, Pre-Encounter, Immersion-Emersion, and Internalization. The CRIS is comprised of 23 items that provide basic sociodemographic information, and 40 items that include six subscales representing racial identity attitudes. Subscales cannot be summed to produce a global CRIS, hence profiles must be examined.

Worrell and his colleagues report fairly high Cronbach's alpha reliability estimate for the subscales, ranging from .78 to .89. The authors provide results of discriminant validity analyses that demonstrate low intercorrelations between CRIS subscales and scores on, "measures of global self-esteem, personality, and social desirability" (Worrell, Vandiver, & Cross, 2000, p11). CRIS scores were calculated by totaling the items across each subscale. Scores can range from 5-45 with higher scores reflecting stronger scale agreement.

Focus Group Questioning Route. Ten focus group questions were developed using the format suggested by Kruger, (1988). Targeted areas included: scope of HCV information, source of HCV information, influential models regarding HCV treatment decisions, factors promoting persuasive messages regarding HCV, barriers to HCV treatment, feasibility of HCV-based CAI mode, and impact of CAI on people of African descent. Content analysis was used to analyze the focus group data, following the recommendations of Patton (1987) by creating case records, and reviewing for themes, patterns and categories. Cases were then compared to each other to identify areas of similarities as well as areas of divergence.

Results

Sociodemographic characteristics of the four participants who meet all criteria are presented in Appendix B. The mean age of the participants was 47.5 years and all were born in the United States. Additionally, results indicated that one participant possessed a very high level of knowledge regarding the risk, symptoms, and treatment of HCV; one possessed a high level of HCV knowledge; and two had a low level of HCV knowledge. Two participants reported HCV positive status, one did not know his status, and one reported negative status. Two participants indicated a history of serious alcohol use, and all indicated a history of serious illicit substance use. All reported the use of marijuana, cocaine/ crack, and heron, while two reported use of methadone, and meth-amphetamine. Finally the sexual history of the participants indicated multiple high risk behaviors, i.e., multiple partners and unprotected sex.

Racial Identity Levels. Racial Identity score are presented for the three individuals who agreed to participate in the mini-focus group. CRIS score data were assessed in a manner consistent with the suggestion of Cross, i.e., profile analysis of the six subscale scores (Worrell, Vandiver, & Cross, 2000). Results of the analysis can be found in Figure 1.

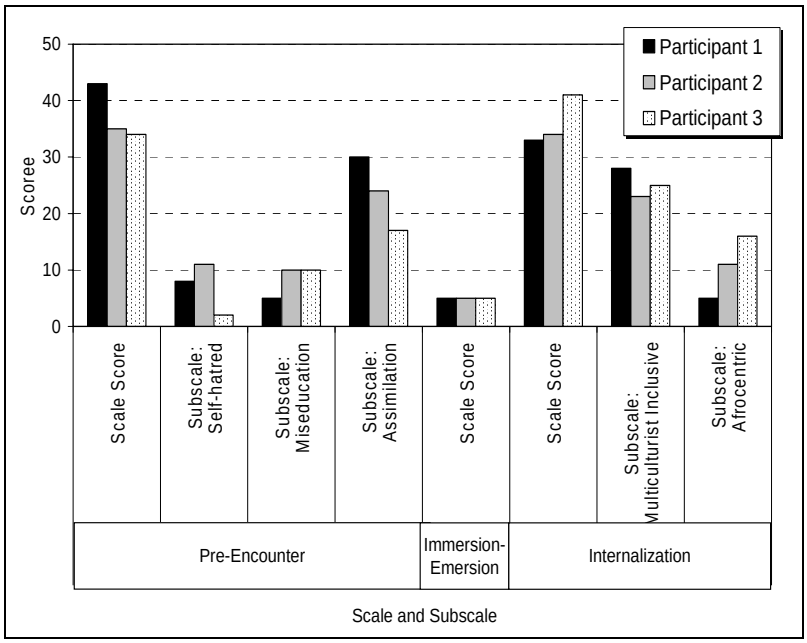

Figure 1
Cross Racial Identity Scale Scores of Focus Group Participants

Subscale scores. An evaluation of subscale scores revealed distinct differences among the participants. As shown in Figure 1, Participants 1's Pre-Encounter subscale profile presented very high Assimilation scores (30), the highest of all participants; a very low Miseducation score (5); and low Self-Hatred score (8). His Immersion-Emersion subscale score, Anti-White, was very low (5). Finally, a review of the Internalization subscale scores revealed that Afrocentric was also very low (5), the lowest of all participants; and Multiculturalists Inclusive was high (28), the highest of all participants (see Figure 1). Based upon this profile, the participant was place in Stage 1, the Pre-encounter Stage.

Alternatively, Participant 2's Pre-encounter subscale profile presented a high Assimilation score (24); low Miseducation score (10); and while his Self-Hatred score (11) was low, it was the highest of all participants. His Immersion-Emersion sub scale score, Anti-White, was very low (5). Finally, Internalization subscale scores, Afrocentric was low (11); and Multiculturalist Inclusive was high (23) (see Figure 1). Based upon this profile, the participant was placed in Stage 1, the Pre-encounter Phase.

In contrast, Participant 3's Pre-Encounter subscale profile presented a moderate Assimilation score (17), the lowest of all participants; a low Miseducation score (10) and a very low self-hatred score (2), the lowest of all participants. His Immersion-Emersion sub scale score, Anti- White, was very low (5). Regarding his Internalization Subscales, Afrocentric was moderate (16), the highest of all participants; and Multiculturalist Inclusive was high (25) (see Figure 1). Based upon this profile Participant 3 was placed in the Internalization Stage.

Focus Group Responses. As indicated above, three individuals agreed to participate in the mini-focus group. The overall response of the participants suggested that the CAI format required modification. However, suggestions for the form of these modifications often differed sharply as a function of level of racial identity. Several themes emerged from the focus group including: a) role of medical personnel as providers of information, b) lack of HCV

knowledge in community; c) HCV myths and misconceptions, d) global vs. targeted population messages, e) attention grabbing elements of effective messages, f) personal experience vs. vicarious experience of messenger, and g) strategies to improve the CAI. A review of each theme is presented below.

Role of Medical Professionals in HCV Dissemination. Each participant identified the medical team of their facility (psychiatrist, physician, nurse) as his main source for health related information. Each mentioned several health issues that directly affected them, most often discussing Hepatitis C and hypertension. They expressed satisfaction with the way that medical information was communicated within the facility, such as one-to-one and bulletin board notices. One participant mentioned word of mouth as a secondary channel of information, such as when residents diagnosed with specific maladies shared their experiences and knowledge with newly diagnosed residents in the facility. However, two of the participants (2 and 3) also expressed negative attitudes towards medical professionals, stating that a lack of concern for patients was evident in communities of African descent. Illustrative comments from these participants follow:

- Dr. C from X Hospital. He helped me a lot and gave me information.
- In here, (substance abuse facility) Nurse X keeps me informed
- In our community, with public assistance places, it seems like doctors don't really care much. They don't give the information to patients there
- They are Medicare Mills

Lack of HCV Knowledge in Community. The participants suggested that HCV information is underexposed in communities of African descent. Consequently, the lack of HCV knowledge has led to both inattention and fear of the health consequences of this disease. Finally, available HCV information comes from very specific sources, such as the prison system. Illustrative comments follow:

- I never see much communication on Hep C. I never heard much on Hep C until I was arrested and was at Rikers (jail).
- I never heard much on Hep C … I thought it was something like AIDS, when I found out more about it, it knocked your boots off.
- My viral load is not that bad. If I get that bad, I'm probably going to use [drugs] again. I'm hoping they find something (medication) oral for Hep C.

HCV Myths and Misconceptions. Participants agreed that myths and misconceptions regarding the etiology and consequences of HCV infection were common due to the underexposure of HCV related information. They further suggested that in order to counter these myths and misconceptions, information must be available in visual form. The visual channel was deemed a more acceptable medium to the community. One Pre-Encounter participant (1) suggested that his style of seeking information was based upon his perception of need, i.e., issues were of interest to him only as they directly affected him. This response is suggestive of the Health Belief model's view of vulnerability as a key factor in the adoption of health promoting behavior (Janz, Becker, 1984). Illustrative comments follow:

- People think like in myths, which is part of lack of information.
- People have a lot of misconceptions. A lot of people think you have to have yellow eyes (when infected with Hepatitis C).
- People can have Hep C and can walk around for years not knowing they have it.
- Now I read stuff on the board at the doctor's office. Like you say, go visual. You need visuals
- A lot is visuals today, that's what you have to use. Like in the mass media, signs, computers, or most people won't know about it
- But I read a lot. I get information from people that flow my way.
- I didn't learn about it only until I had it. Then I learned about it. I learn about things only if it's related to me

Global Versus Targeted Population Messages. A specific question regarding the impact of HCV on people of African descent led to a divergence of opinions. The Internalization Stage participant (3) focused on the high-risk status of people of African descent. This participant objected to a stereotypical view of people of African descent with HCV as intravenous drug users, stating that a person could become infected with HCV through multiple routes. Alternatively, the Pre-Encounter Stage participants took exception to viewing the problem from the perspective of any one group. Participant 1 also objected to stereotypes, but broadened his concerns to include all group, and ages. Illustrative comments follow:

- And there are stereotypes, especially of drug users who get it, or African Americans. The information is not broad enough.
- No pigeonhole type should be used in advertisements in the media or in the paper. They should use all groups, the Chinese, Spanish people, all times and have it filtered back way to the community with no age barriers.

Stimulus Value of Effective Message. Effective messages were described as having eye-catching qualities that demanded the attention of the observer. Factors affecting message effectiveness included forcefulness of delivery (fear message), and scope. There was disagreement regarding the focus of the message. The Internalization stage participant (3) and one of the Pre-Encounter participants (2) felt that appeals to protect the family would be most effective in message delivery. However, the remaining Pre-Encounter Stage participant (1) opted for a more individualized, universal approach that went beyond a specific racial group. After some discussion, it appeared that the other Pre-Encounter stage participant (2) adopted the latter approach. Illustrative comments follow:

- I'll give you an example, like that commercial, this is your brain, this is your brain on drugs, and it's frying in the pan. That's direct, it might be rude, but it has to be. That mentally woke me up. You have to be forceful.
- But you have to get attention. Like use rap music, or fashion, like put a message on jeans, or in comic books, or older 60's music for older people. It [message] could be crass, or straight to the point, or raw, use anyway to get people to think twice about it.
- It's human nature to take care of family. Like a message to do something to help yourself so that you can help your family. I love them first - them now, me after.
- This is a diverse world. If it is for me, and so universal, even though it's hitting my culture hard, it [message] should be geared to everyone in general. When geared to human race, it's better.

Personal Versus Vicarious Experience of Messenger. Opinions regarding the necessary characteristics of the messenger diverged along Racial Identity lines. The Internalization stage participant (3) stated that real life experience was essential for creditability. He expressed a sense of disbelief that an individual who had no personal experience regarding an issue could be helpful to individuals who had lived the experience. The Pre-Encounter participants (1 and 2) rejected this contention, stating that lack of personal experience did not invalidate an individual as an effective messenger. Illustrative comments follow. It is interesting to note that in the mini-focus group, all participants reported HCV positive status, while only two disclosed this information on the survey.

- The messenger has to have it [Hep C]; the person who has it would be a powerful messenger.
- Well, we have Father V, he hasn't been through what we have, but I've heard him talk, and he knows. He really gets me.
- I don't believe it. I disagree. I think it should be a person who people and others look up to, but not like a poster boy who got it. It should be words, not the flesh.

Strategies to Improve the CAI. All participants stated that the CAI could be a useful method of disseminating information regarding HCV. A

Pre-Encounter stage participant (2) suggested that CAIs could be placed in physician's offices. The discussion soon shifted to improvements in the prototype. All participants indicated a need to make the presentation more appealing. This included the use of music as a means of initially capturing and maintaining attention.

The messenger, that is the face and the voice of the CAI, was the next area of discussion. The Internalization participant (3) stated that the speaker in the prototype was not interesting, and that a more dynamic speaker was necessary. Suggestions from a Pre-Encounter stage participant (2) and the Internalization stage participants (3) immediately focused on celebrities and popular entertainers. The remaining Pre-Encounter participant (1) suggested that the level of respect for the speaker was more important than their celebrity status. He identified political figures as potential speakers.

The focus shifted to other aspects of an effective messenger. The Internalization Stage and one of the Pre-encounter stage participants (2 and 3) stated unequivocally that the messenger should have a positive HCV diagnosis. The Pre-Encounter participant (1) rejected this criterion, again pointing to the need for the speaker to be respected by a wide range of viewers. All participants responded positively to the idea of incorporating more than one messenger into the CAI. Recommendations included: multiple races, multiple ages, professional, HCV positive, celebrity, and individuals who are widely respected.

A sharp divergence of opinions arose regarding the glossary feature of the CAI. Technical terms had been hot wired in the text, and placed into a glossary. A viewer had two options when confronted with a hot word: he could access the glossary in order to view more information on the term, or she could skip the hot word and continue through the remaining slides. The Internalization Stage participant (3) agreed with this structure, stating that it allowed the viewer the option to obtain more information or to skip sections that might be difficult to understand. A Pre-Encounter stage participant (2) appeared to accept this approach, but the other Pre-Encounter stage participant (1) vehemently objected to this statement, saying that the implication was that people of African descent were too stupid to read technical terms. Illustrative comments follow:

- Yeah, like in the doctor's office on those TVs in the waiting room, where they advertise stuff
- What about those who don't know and may not want to bother to click it to learn about it?"
- Keep it simple
- You're saying people in my community are stupid, that people in my community are too stupid to use that. Some people might want it simple, and some might be smart and not use it, and for some people it might be too simple
- Yeah, mosaics are best. Don't pigeon hole."
- Yeah, different ethnic groups

Discussion

Two findings emerged from the investigation. First, the results of the mini-focus group suggested that a CAI could be a feasible approach to disseminating health promotion information to people of Africa descent. Second, the response to the CAI demonstrated the heterogeneity that existed within the mini-focus group and Nigrescence Theory provided a framework for understanding these divergent reactions. However, areas of divergence between the Pre-Encounter stage participants, (1 and 2), suggest that the effect of racial identity is a complex interaction of attitudes and values that cannot be simply categorized. Each of these findings is discussed below.

Feasibility of CAI to Reach Divergent Segments Among People of African Descent Consistent with the Tenets of Nigrescence Theory. The CRIS responses suggest that health promotion efforts targeting a homogeneous community of African descent would miss important segments of the population. Indeed, the basic premise of Nigresence Theory is the need to understand differences that exist within communities of African descent. These

differences are depicted visually in Figure 1. While the differences between the Pre-Encounter participants are extremely subtle, there is a perceptible increase in the Internalization stage scale scores. A review of the subscale analysis, suggests that the identified difference is a function of the Internalization - Afrocentric subscale, in which Participant 1 is lower.

Differences between Pre-Encounter (1) and Internalization (3) are the most noticeable. The scale analysis, demonstrate differences between Pre-Encounter scores, where Participant 1 is higher, and Internalization scores, where Participant l is lower. These differences are made more striking by a review of the subscale profiles. Differences of two scale units are seen between Pre-Encounter Assimilation scores, with Participant 1 noticeably higher; and Internalization-Afrocentric scores, with Participant 1 noticeably lower. Differences between Pre-Encounter (2) and Internalization (3) are again subtle, with no subscale difference of more than one scale unit. How such subtle differences may influence attitudes and preferences will be discussed next.

Divergent Reactions to a HCV CAI within the Context of Nigrescence Theory. The participants endorsed the CAI as a strategy for information dissemination. However, there were several areas of clearly divergent reactions to the CAI, most notably between Participant 1 (Pre-Encounter) and Participant 3 (Internalization). The first of these oppositional reactions revolved around the use of global message versus a targeted message. The Pre-Encounter stage (1) participant felt strongly that it would be a mistake to focus on any one group. Instead, he opted for an inclusive message that would feature members of various racial groups, ages, etc. This response is consistent with his Pre-Encounter scale scores of Assimilation (30), the highest score of all participants; his Internalization Multiculturalist Inclusive (28), the highest of all participants, and Afrocentric (5), the lowest of all participants.Thus the preference for an inclusive, multi-targeted message is consistent with Nigrescence Theory expectations.

Likewise, the response of Participant 3 (Internalization Stage) is predictable from a Nigrescence context. The preference for a message targeting people from “his community” is consistent with his Internalization Afrocentric subscale score (16), the highest of all participants. The Internalization person, according to Nigrescence theory, views the world from an Afrocentric perspective. This perspective would make participant 3 more responsive to a messenger who “looked like him”.

A second area of disagreement occurred around the importance of personal experience with HCV for the credibility of the messenger. The Internalization Stage participant (3) insisted that a positive HCV diagnosis was critical for credibility. Again, this response is consistent with this participant’s score on the Afrocentric subscale. Likewise, one of the Pre-Encounter participants (1) vehemently disagreed, stating it was the level of respect that the individual elicited far outweighed HCV status. This response was also consistent with the lower Afrocentric subscale score and higher Multiculturalist Inclusive subscale score. In this context, it is interesting to note that the other Pre-Encounter participant (2) agreed with Participant 3, Internalization stage, rather than the other Pre-Encounter stage participant (1). A review of his subscale scores revealed midway scores in Pre-Encounter Assimilation (24), and Internalization Afrocentric (11).

It is also interesting to note that all three of the participants responded favorably to the presence of multiple messengers from various racial groups. This is consistent with their scores on the Internalization Multiculturalist Inclusive subscale, Participant 1(28), Participant 2 (23) and Participant 3 (25). More research is needed to identify transitional points and specific issues.

Summary and Conclusions

The results of this investigation must be reviewed in the context of its limitation: the small sample size, while appropriate for a formative investigation, suggests the need for additional focus group to corroborate these findings.

Nevertheless the CDM provided a sound roadmap for the development of a partnership between a college and a community-based substance abuse program. The shared goal of disseminating information regarding Hepatitis C virus to high risk population led to the development of a HCV CAI tool targeting people of African descent.

Additionally, the use of Nigrescence Theory to understand differences within men of African descent was equally instructive. Mini-focus group results suggested that Nigrescence Theory provided a context for predicting variance in the response of people of African descent. However, the moderating effect of racial identity is complex and requires an understanding of sub levels (Assimilation, Miseducation, Self-Hatred, Afrocentric, and Multiculturalist Inclusive) as well as major levels (Pre-Encounter, Immersion-Emerson, Internalization). The task appears to be, to paraphrase of Paul's (1967) observation regarding the efficacy of psychotherapy: Which aspect of racial identity level is affected by which messenger targeting what health concerns through which method.

Future Directions and Recommendations

CAI prototypes are currently being developed focusing on other diseases (prostate cancer) and other potential community partners (Black Church). The results of this formative investigation suggest the need for additional focus groups with additional segments of the target population to identify similarities and differences in their responses to CAI. Of specific interest will be the response to the idea of multiple presenters representing various racial, ethnic, age, and occupations.

At this time, based upon the current results, the following recommendation are made to individuals and organizations developing health related interventions targeting people of African descent:

1. Program planners are urged to acknowledge the diversity that exists within communities of African descent, and to develop their interventions accordingly. The scope of diversity is increasing as a result of the influx of diverse ethnic groups into the United States (Caribbean, African, and British). Messages must be developed that incorporate the community norms and values, which will make partnership with community-based organization all the more important to the success of the program. As described above, the CDM presents an effective strategy for the development of partnerships with the community.
2. Researchers are urged to incorporate diversity into their intervention models. Nigrescence Theory provides a blueprint to maximize participants' response to the intervention. However, additional research into the impact of racial identity sublevels is required to match messenger to the multiple observers who may view the CAI.
3. Both researchers and program developers are urged to seek partners in the target community. A successful partnership will require both sides of the partnership to surrender a measure of control in the development process, but the loss of autonomy is more than compensated for by the ability of the product to reach the target audience.

References

Abreu, K. (1999). Hepatitis c: A community and health care challenge. METROPLUS Health Plans. New York, New York.

Bowman, P. J. (1991). Race, class and ethics in research: Belmont principles to functional relevance. In Black Psychology (3rd ed). Hampton, VA: Cobb and Henry Publishers, pp. 747-766.

Brathwaite, R. L. (1992). Coalition partnerships for health promotion and empowerment. In R. L. Brathwaite, S. E. Taylor, (Eds.), Health issues in the black community. San Francisco: Jossey-Bass Publishers.

Centers for Disease Control and Prevention. (2001). Hepatitis c fact sheet. National Center for Infectious Diseases, Division of Viral and Ricketsiall Diseases, Hepatitis Branch. Retrieved September 16, 2001, from http://www.cdc.gov/ncidod/disease/hepatitis/c/fact.htm

Cross, W. E. (1991). Shades of black: Diversity in African American identity. Philadelphia: Temple University Press.

Cross, W. E. Jr., Parham, T. A., & Helms, J. E. (1991). The stages of black identity development: nigrescence models. In R. E Jones, (Ed). Advances in black psychology. Berkeley: Cobb and Henry.

McCord, C., & Freeman, H. P. (1990). Excessive mortality in Harlem. New England Journal of Medicine, 322(3), 173-177.

Janz, N. K., & Becker, M. H. (1984). The halth blief mdel: A decade later. Health Education Quarterly, 1, 48.

Krueger, R. A. (1988). Focus groups: A practical guide for applied research. Thousand Oaks, CA: Sage Publications.

McNair, L. D., & Roberts, G. W. (1997). Pervasive and persistent risks: Factors influencing African American women's HIV/AIDS vulnerability. Journal of Black Psychology, 23(2), 180-191.

Muir, A. J., Bornstein, J. D., & Killenberg, P. G. for the Atlantic Coast Hepatitis Treatment Group. (2004). Pegintefreorn alfa-2b and ribavirin for the treatment of chronic Hepatitis C in blacks and non-hispanic whites. The New England Journal of Medicine, 350, 2265-71.

National Heart, Lung and Blood Institute. (1987). Executive Summary - strategies for diffusing health information to minority populations: Profile of a community-based diffusion model. US Department of Health and Human Services. National Institute of Health.

Orlandi, M. A. (1989). Community-based substance abuse prevention: A multicultural perspective. Journal of School Health, 56, 394-401.

Paul, G. L. (1967). Strategy in outcome research in psychotherapy. Journal of Counseling Psychology, 29, 268-282.

Patton, M. Q. (1987). How to use qualitative methods in evaluation. Thousand Oaks, CA: Sage Publications.

Quirk P. A. (2000). Screening for literacy and readability: implications for the advanced practice nurse. Clinical Nurse Specialists, 14(1), 26-32.

Schinke, S. P., Gordon, A. N., & Weston, R. E. (1990). Self instruction to prevent HIV infection among African American and Hispanic American adolescents. Journal of Consulting and Clinical Psychology, 58, 432-436.

Thorkildsen, R. K, Allard, K., & Reid, B. (1983). The interactive videodisc for special education project: Providing CAI for the mentally retarded. The Computing Teacher, 10(8), 73-76.

Weinrich, S. P., Reynolds, W. A., Tingen, M. S., & Starr, C. R. (2000). Barriers to prostate cancer screening. Cancer Nursing, 23(2), 117-121.

Weston, R. E. (2005). Hepatitis c computer assisted instruction web site. Retrieved February 28, 2005, from http://academic.brooklyn.cuny.edu/health/rweston/media/hepatitisc/

Weston, R. E. & Stayton, C. D. for the Community Intern Partnership at Brooklyn College. (2004). The use of the community diffusion model to develop community partnerships and overcome barriers to an urban college internship program. California Journal of Health Promotion. 2(4), 1-19. Retrieved January 5, 2005, from http://www.csuchico.edu/cjhp/2/4/01-19-weston.pdf

Weston, R. E., Rapkin, B. D., Potts, R. G., & Smith, M. Y. (1998). The role of psycho-oncology in medically underserved communities. In Holland, J. (Ed.), Textbook of psycho-oncology: psychological care of the patient with cancer. New York: Oxford University Press.

Worrell, F. C., Vandiver, B. J., & Cross, W. E. (2000). The cross racial identity scale: Technical manual.

Acknowledgments
This study was funded by PSC-CUNY Research Awards.

We would like to thank Ms. Karla Felix, Ms. Tabitha N. Sukahi, and Mr. William B. Tutol for their assistance with data collection, management, and analysis. We also thank Dr. Jianwei Cai, Mr. Nicholas Irons, and the staff of the Academic Information Technology Department of Brooklyn College for their tireless efforts in support of this project.

Author Information
R. Eric Weston*
Department of Health and Nutrition Sciences
Brooklyn College of CUNY
2900 Bedford Avenue
Brooklyn, New York 11210
E-Mail: rweston@brooklyn.cuny.edu

Rogelio I. Thomas
Special Care

Michelle A. Lang
Samaritan Village, Inc.

Peter J. Weston
Brooklyn College of CUNY

John Cardwell
EVAXX, Inc.

Adam P. Gordon
Elmhurst Hospital

Michelle A. Lang, Ph.D. is now at the Research Foundation for Mental Hygiene, Inc.

* corresponding author

Appendix A
Application of the Community Diffusion Model in the Hepatitis C Virus Information Dissemination Project

Step	Activities	Application
Establish a working group of co-change agents	Identify the importance of recognizing community autonomy	• Meeting with agency Board member • Identification of shared goals regarding HCV education • Invitation to Board member and Director of Research and Evaluation to join Investigating team
Recognize the problem and seek help	Recognize that a problem is often a multi-directional process in which views of the target issue are shared among co-change agents	• Target issues conceptualized as dissemination of HCV information to high risk individuals • Agency focus on service component • College focus on research as well as service • Agreement made to conduct all inclusive quantitative assessment, while only target group (men of African descent) would be invited to the focus group • Copy of the CAI prototype given to the agency at the completion of the data collection for ongoing use
Assess the community	Implement a thorough community analysis including, social-demographics, vocational, educational, health, economic, religious, cultural and social issues	• Review of the demographic data of the clients served by the agency
Determine measurable goal	Co-change agents establish outcome indices	Methodology to measure outcomes established
Plan diffusion activities	Develop flexible implementation plans so that strategies may be modified based upon events in the field	Procedure to implement plan formulated
Prepare communication tools	Develop communication tools with the target population in mind	Created computer assisted instructional (CAI) application (see description of CAI model herein)
Pretest	Conduct trial run of the project prior to full implementation	Investigation developed in the context of a pilot study
Implement and monitor the plan	Develop a continuous feedback loop while the program is implemented	Clarify specific survey questions • Meet with research team and residents, answer questions to satisfaction of all stakeholders
Assess the final results	Evaluate the results of the initiative to guide future efforts	• Focus group script analysis for common content and respondent recommendations

Appendix B

Sociodemograhic Characteristics of Participants (N=4)

Characteristic	Number	Percentage	Mean	Standard Deviation
Age			47.1	6.1
Education				
Less than 8th grade	1	25		
High School Graduate	1	25		
GED	1	25		
College graduate	1	25		
Country of Birth				
USA	4	100		
Race/ethnicity				
Black/African descent	4	100		
Marital Status[a]				
Single	1	25		
Married	1	25		
Divorced	1	25		
Income/week[a]				
Less than $100	1	25		
Between $400- $600	2	50		
Employment Status[a]				
Yes	1	25		
No	2	50		
Medicaid Status				
Yes	4	100		
Health insurance from work, or from other				
Yes	1	25		
No	3	75		
Current Physical Health Self-Rating[a]				
Poor	1	25		
Fair	1	25		
Good	1	25		
Current Mental Health Self-Rating[a]				
Very Poor	1	25		
Poor	1	25		
Fair	1	25		