

[Comparing Gay Identity Development Theory to Cognitive Development: An Empirical Study](#)

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Marszalek, J. F., III, [Cashwell, C. S.](#), Dunn, M. S., & Heard, K. (2004). Comparing gay identity development theory to cognitive development: An empirical study. *Journal of Homosexuality*, 48, 103-123. DOI: 10.1300/J082v48n01_05

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Abstract:

The relationship between gay identity development and cognitive development, as outlined by Ivey's Developmental Counseling Therapy Model, was explored. The Gay Identity Questionnaire and the Standard Developmental Counseling Interview were administered to 78 gay men. Results suggested that there is a relationship between gay identity development and cognitive development. In addition, the findings provide evidence that gay identity development can be categorized by concrete and abstract frames of reference.

Keywords: Gay identity development, cognitive development, Cass, Ivey

Article:

Since Cass (1979) first published her prominent model on gay identity development, numerous gay identity development models have been proposed to describe the process of becoming aware of, and eventually accepting, a gay identity. Cass's (1979) Homosexual Identity Formation (HIF) model set the groundwork for future gay identity development models (Troiden, 1984); has long been viewed as one of the most comprehensive models, because it integrates both psychological and sociological perspectives of gay identity (Levine & Evans, 1991); and applies to both gay men and women. Although the HIF model is over twenty years old, it continues to be the most frequently cited model in the literature on gay identity development.

CASS'S HOMOSEXUAL IDENTITY FORMATION MODEL

Cass (1990) proposed a six-stage model to describe gay identity development: (a) identity confusion, (b) identity comparison, (c) identity tolerance, (d) identity acceptance, (e) identity pride, and (f) identity synthesis. Movement from a stage of less acceptance to a stage of more acceptance involves a paradigm shift and changes in emotions, cognitions, and behaviors. Cass acknowledged that all individuals do not necessarily progress through every stage of her model because of the influence of environmental factors. Environmental factors are events, societal norms, family beliefs, and other factors that influence an individual's identity development. For example, a gay person living in an area with extremely negative attitudes toward gay men may have a difficult time accepting his gay identity without support from others. Consequently, Cass believed that several courses of development were possible within each stage, including identity foreclosure. Identity foreclosure occurs when individuals experience cognitive conflict regarding their sexual orientation identity and cannot accommodate new information (feelings, behaviors, or cognitions) related to being gay. The inability to accommodate new information leads to a stalling of their gay identity development (Cass, 1990). (For a more thorough discussion of Cass's HIF Model see Cass [1979, 1984, 1990]).

Some theorists have attempted to integrate gay identity models into one general model (Levine & Evans, 1991; McCarn & Fassinger, 1996). Each of the integrated models cited are four stage models. For example, Levine and Evans (1991) compared the following gay identity stage models: Plummer (1975), Lee (1977), Cass (1979), Troiden (1979), Coleman (1981/1982), and Minton and McDonald (1983/1984). They divided them into the categories of social models (Coleman, 1981/1982; Lee, 1977), psychological models (Minton & McDonald,

1983/1984; Plummer, 1975; Troiden, 1979), and psychosocial models (Cass, 1979) and suggested that they all roughly corresponded to four main developmental levels: awareness, self-labeling, community involvement and disclosure, and identity integration.

McCarn and Fassinger (1996) proposed a lesbian identity development model drawn from other gay, lesbian, racial, and gender identity development models. Their model differed from other identity models in that it had “two parallel branches that are reciprocally catalytic but not simultaneous: individual sexual identity and group membership identity” (p. 521). McCarn and Fassinger argued that the identity development process involved both the formation of an identity within the self and the formation of an identity with a minority group. They viewed the identity development process as being comprised of four phases of development with each phase occurring from an individual perspective and from a member of a group minority perspective. The four phases they identified were (a) awareness, (b) exploration, (c) deepening/commitment, and (d) internalization/synthesis.

Fassinger and Miller (1996) conducted a study with 34 gay men to determine if McCarn and Fassinger’s (1996) lesbian identity development model also could be applied to gay men. Participants were asked to sort items into categories of individual and group identity development. Following the initial sort, participants were asked to assign items to one of eight categories, representing the four phases from each type of development. Fassinger and Miller used a Q-sort statistical technique to assess the sorting activity. They reported that 84% of participants correctly sorted items based on individual or group development, and participants correctly sorted 90% of the items into the correct phases. Although participants were able to distinguish between group and individual items, no evidence was presented demonstrating that these aspects of identity are independent.

Interestingly, like Levine and Evans (1991) and McCarn and Fassinger (1996), Cass (1984) acknowledged that gay identity development might be a four stage process rather than a six stage process. In a study to validate her model, Cass (1984) stated that the differences among individuals’ mean scores for stages one/two and stages five/six were slight. Consequently, she suggested that identity development might be a four-stage process rather than a six stage process; however, she stated that a discriminant analysis yielded support for a six stage model.

It is conceivable that all gay models discussed above have merit. Ivey (1993) stated that there are an infinite number of possibilities to define the developmental process, a process that has varying degrees of vertical (i.e., development from one stage to another) and horizontal (i.e., development within a stage) development. Consequently, all theorists may be describing a similar process. The differences may lie in whether theorists view particular developmental tasks as horizontal developmental tasks or vertical. The similarities may lie in the overall process rather than in the number of stages.

IVEY’S DCT MODEL AND GAY IDENTITY DEVELOPMENT

Walters and Simoni (1993) noted parallels between gay identity development models and racial identity development models. Ivey (1993) stated that his Developmental Counseling Therapy (DCT) model has parallels with Atkinson, Morten, and Sue’s (1989) Minority Identity Development Theory (MIDT), a model that outlines the identity development of Blacks and other minorities.

The MIDT parallels Cass’s (1990) HIF model. Major tenets of both models are that minorities experience both internal and external conflict regarding their identity. The internal conflict is experienced in the struggle between nonacceptance of their identity versus acceptance of their identity, and external conflict is experienced in the eventual positive perception of themselves as a minority versus the often negative societal view of their minority group (Ivey, 1993). In addition, Marszalek and Cashwell (1998) proposed that each of the stages of Cass’s (1979) HIF model has parallel stages with Ivey’s (1990) DCT model. This proposed parallelism is discussed in more detail below, following a description of the DCT model.

Ivey’s DCT Model

The DCT model is both a theoretical description of cognitive development and a counseling model that draws from Piaget's (1965, 1973) cognitive development model and Platonic philosophy. In his DCT model, Ivey (1990) suggested that the cognitive development model that Piaget outlined for children can be applied to the cognitions of adolescents and adults. In addition to describing the cognitive development of adults, the DCT outlines a developmental counseling approach whereby counselors evaluate the cognitive level of clients and systematically select appropriate counseling interventions to facilitate client development. (For a more thorough discussion of using the DCT model to facilitate gay identity development in the counseling process see Marszalek and Cashwell [1998]).

Ivey's (1990) DCT model is composed of four main cognitive levels with two subdivisions within each level. According to Ivey, one level is not superior to another. Unlike Piaget, each level denotes an alternative perspective that is as valuable as another. However, like Piaget, Ivey recognized that not all individuals will reach higher levels of cognition.

Sensorimotor level. The first level of the DCT is the sensorimotor level. When individuals experience a traumatic event, such as death, they focus on the pain and sadness of the event and are initially unable to describe the event concretely. They are operating from an early sensorimotor subdivision level in which they focus on their senses in understanding their current experiences. Focusing on one's body while sitting in the sun or during a massage is a positive example of the sensorimotor level (Ivey, 1990, 1993).

Ivey (1990, 1993) identified Piaget's second stage, preoperational thinking, as a late sensorimotor level and stated that it is characterized by irrational thoughts such as "should" or "ought" (e.g., "I ought to be perfect"). This level is also characterized by magical thoughts such as "I won't even think about the possibility of rain, because then it might rain and ruin this beautiful day." As individuals begin to make the transition to the next stage there may be an initial ability to describe their behavior, affect, and cognitions.

Concrete-operational level. Individuals are operating from a concrete-operational level when they describe their experiences in concrete, detailed language. For example, "At this moment I feel happy" or "I am taking a test today." The ability to think abstractly is not yet present. Individuals at a late concrete-operational level use "causal, if/then thinking" (p. 32). For example, "I feel happy because I finished my test" or "If I finish my test, I will be happy" (Ivey, 1990, 1993).

Formal-operational level. When individuals are in the formal-operations level, they use abstract thinking to describe or make sense of their emotions and experiences. In an early formal-operational level, individuals reflect on their concrete descriptions of events and are able to recognize patterns. For example, "Every time I take a test I get nervous" and "Every time I have to study for a test I think about failing." Individuals in a late formal-operational level recognize "patterns of patterns" (p. 296). They have the capacity to comprehend that patterns of thoughts, behaviors, and emotions can be related. For example, "I seem to get nervous in various situations and these situations seem to be related to my thinking of failing at something" (Ivey, 1990, 1993).

Dialectic/systemic level. Adults in Ivey's dialectics stage understand that their view of the world (i.e., their knowledge) is influenced by their dialectic with the environment; in other words, they understand that they do not live in a vacuum and that they cannot avoid being influenced by the environment in which they exist. Piaget's (1965, 1973) last stage in his cognitive development model was formal operations. Ivey (1990, 1993) theorized that adults are capable of abstract reasoning that extends beyond Piaget's formal-operations stage. He used Plato's concepts of knowledge and intelligence to define this post-abstract thinking of the dialectic level.

Adults in the dialectics level understand that their knowledge and understanding of their experiences is constantly fluctuating in a process that Ivey (1990) termed dialectic deconstruction. Knowledge or beliefs that previously seemed fixed are deconstructed, leading to new points of view. New perspectives may lead to the beginning of another cycle through development, because this new knowledge is initially processed at less complex cognitive levels. Consequently, for those individuals who are capable of thinking at a late dialectic

level, higher levels of thinking lead to new insight. This newfound insight is frequently reprocessed at pre-operational and concrete thinking levels before individuals process it at a more abstract level (Ivey, 1990, 1993).

Integrating Ivey's DCT Model with Cass's HIF Model

Marszalek and Cashwell (1998) hypothesized that each of the stages of Cass's (1979) HIF model has parallel stages with Ivey's (1990) DCT model. They suggested the following stages to describe gay identity development through an integration of Cass's HIF model and Ivey's DCT model.

Pre-identity confusion/early sensorimotor. Adults in this first stage focus on their senses in relation to sexual orientation. Individuals have little sense of their self in relation to their sexual orientation. They cannot separate themselves from feelings and beliefs they have acquired from their surrounding environment that they are heterosexual. They may vaguely realize that there is a physical sensation, an emotion, or behavior that is different from other individuals in their environment, but they only sense these differences. Gay men who have progressed past this stage often state they always knew they were different but could not define their feelings. This stage could last for years and/or could be an early sensory (but not conscious) recognition that something about them is different from people around them (Cass, 1990; Ivey, 1990; Marszalek & Cashwell, 1998).

Identity confusion/late sensorimotor. Adults in the second stage concentrate on their behavior, affect, and cognitions in realizing that they might be homosexual. There is an initial amount of concrete thinking because they are beginning to define the behaviors, affects, and/or cognitions related to their sexual orientation. The realization that they might be gay causes confusion, because previously they had assumed they had heterosexual feelings and behaviors. This assumption may have been strengthened by individuals' environments that either directly or indirectly defined them as heterosexual. Individuals in this second stage may have low self-esteem and negative feelings about being gay (Cass, 1979). They may use irrational or magical thinking to deny that they are gay (i.e., "I must be going through a phase. I'm not really attracted to same sex individuals; I'm probably just admiring same sex individuals who have the type of body I would like to have."). In essence, individuals in stage two are not able to think concretely enough to define their thoughts and emotions as homosexual (Cass, 1990; Ivey, 1990; Marszalek & Cashwell, 1998).

Identity comparison/early concrete-operational. Although stage two individuals are confused about and not yet able to define their same-sex feelings and thoughts, stage three individuals are able to acknowledge that their attractions could be homosexual. Individuals in this stage are increasingly able to concretely express feelings of same-sex attraction; however, they do not yet state that they are definitely gay. Accepting a gay identity would require more abstract thinking beyond a concrete description of feelings, behaviors, and cognitions (Cass, 1990; Ivey, 1990; Marszalek & Cashwell, 1998).

Identity tolerance/late concrete-operational. In stage four, individuals use causal, if-then logic to reason that if they have same sex feelings, thoughts, or actions then they are probably gay. They tolerate this new understanding of themselves by acknowledging the existence of same-sex feelings but not necessarily viewing these feelings positively. Individuals may view their homosexual feelings as inferior to heterosexual feelings. They may engage in behavior that is homosexual but still not make a commitment to a gay identity. Accepting a gay identity requires more abstract thinking (Cass, 1990; Ivey, 1990; Marszalek & Cashwell, 1998).

Identity acceptance/early formal-operational. Individuals make a commitment to themselves that they are gay in stage five. They accept a gay identity by recognizing patterns such as "When I fall in love or when I am attracted to someone, they are of the same sex." Individuals in stage five are using abstract logic to make the connection that if they have homosexual feelings and behaviors, they are gay. As they reflect on their sexual orientation identity, stage five individuals become progressively more accepting of their same-sex feelings and the idea of being gay (Cass, 1990; Ivey, 1990; Marszalek & Cashwell, 1998).

Identity pride/late formal-operational. Individuals in stage six reflect on the patterns in their lives and realize how their experiences, thoughts, and feelings in the past have been connected to their gay identities. Many individuals in stage six experience anger as they realize that past patterns such as being closeted were due to the homophobia they internalized from an often homophobic and heterosexist society. In addition, stage six individuals may begin to feel proud of being gay and being a part of a community of others like them. This newfound pride may lead them increasingly to come out to others. They may experience a desire to discuss their coming out experiences and reflect on how their coming-out experiences relate to those of others in the gay community (Cass, 1990; Ivey, 1990; Marszalek & Cashwell, 1998).

Identity synthesis/early dialectic. In stage seven, individuals integrate their gay identities into their overall identities. They may focus not only on their gay or lesbian identities, but also on their gender identities, cultural identities, or religious identities. Stage seven individuals realize that they have a variety of identities that are intertwined. Individuals have less anger as they are able to look at other people's reaction to their sexuality in the context of the situation. For example, if they encounter someone who is homophobic, they may initially experience anger, but realize that not all heterosexuals are homophobic. They may include in their network of friends not only gay men, but also gay affirming heterosexuals. Individuals also may contemplate existential issues such as "How does my gay identity fit into the context of my world?; How does my being gay affect my relationships with other people?; What does it mean for me to be gay?" (Cass, 1990; Ivey, 1990; Marszalek & Cashwell, 1998).

Late dialectic/systemic and deconstruction. The final stage marks the end of one cycle of cognitive awareness and the beginning of another cycle. Although Cass (1979, 1984, 1990) did not identify a stage beyond identity synthesis, a late dialectic stage could be viewed as a late identity synthesis stage. According to Ivey, individuals in a late dialectic stage are able to "think about thinking about thinking" (Ivey, 1990, p. 16). In this stage, individuals gain new insight into being gay by realizing that their understanding of their sexual orientation and how it relates to their overall identity is not fixed. They realize that throughout their lives they can have insight into their inner-selves that leads to new awarenesses and new knowledge. New insight leads to a spiraling of the model as new insight is processed from a sensorimotor level. For example, individuals in a late dialectic stage may be confronted with a situation that triggers a realization that there are parts of the self that still harbor internalized homophobia. As they process this information, they may recycle through another developmental cycle by initially experiencing feelings at a sensorimotor level (Ivey, 1990; Marszalek & Cashwell, 1998).

Testing an Integration of Ivey's DCT and Cass's HIF Models

There is no empirical research on the question of whether or not there are parallels between Ivey's (1993) DCT model and Cass's (1990) HIF model. The study described here sought to fill a void in the literature by providing empirical evidence on whether or not there is such a parallelism, as proposed by Marszalek and Cashwell (1998). It was hypothesized that there are statistically significant relationships between the levels of the DCT model and the stages of the HIF model.

METHODOLOGY

Participants

Participants were recruited through the gay community centers in Broward and Palm Beach counties, Florida. An announcement of the study and a packet containing the study's instruments and cover letter were placed at the community centers. Counselors, volunteers, and staff members were given copies of the announcement, packets of instruments, and cover letters to give to clients, social group members, support group members, and other contacts who wished to participate in the study. Participants also were encouraged to give copies of the research packet to friends.

Although efforts were made to secure a diverse group of gay men, the majority of the 78 participants were white. This disparity is due to the disproportionate number of gay white men as compared to other minority groups within the gay male population that attended groups at the community centers. Of the participants, just

under 25% ($n = 21$) self-identified as racial minorities with 13 Hispanic (16.7%), 2 African-American (2.6%), 3 Asian-American (3.8%), 1 Hawaiian (1.3%), and 2 (2.6%) unidentified participants.

Participants were diverse in terms of age and education. Participants' ages ranged from 15 to 67 with a mean age of 33 ($M = 33.26$, $SD = 10.50$). The majority of the participants had at least a college degree with the number of years of education completed ranging from 1 to 22 ($M = 15.28$, $SD = 3.08$).

Instruments

Gay Identity Questionnaire. Participants' stages on the HIF model were assessed through the Gay Identity Questionnaire (GIQ) (Brady & Busse, 1994) which, like Cass's (1984) Homosexual Identity Questionnaire (HIQ), is based on the HIF model. The GIQ contains 45 statements about sexuality for participants to mark true or false, as compared to the 210 multiple choice items of Cass's HIQ (1979). The GIQ is less time consuming and is easier to score (Brady & Busse, 1994).

Of the 45 statements, three are used to validate that participants are gay and the remaining 42 are used to assess participants' stages. Seven statements under each stage are distributed randomly throughout the questionnaire. Participants read each statement and circle either true or false. Participants receive one point for each statement marked *true* and zero points for each statement marked *false*. The seven statements for each stage are then summed. The stage with the highest sum determines the stage for that participant. Brady and Busse (1994) stated that a dual stage is possible when participants score an equal number of points in two stages (e.g., HIF stage 5/6).

To establish the validity of the GIQ, Brady and Busse (1994) administered a background questionnaire to assess participants' demographic and psychosocial characteristics, and the GIQ to a "developmentally heterogeneous sample of [225] men with same-sex thoughts, feelings, and behaviors" (p. 6). They found a positive relationship between participants' HIF stage level and their psychological well-being and stated that "these findings support a central construct of the HIF model which describes the importance of psychological factors in the evolution of a homosexual identity" (p. 10).

Brady and Busse (1994) reported that the GIQ's interitem consistency scores for stages three to six ranged from $r = .044$ to $r = 0.78$. However, for stages three, four, and six interitem consistency scores ranged from $r = 0.71$ to $r = 0.78$; for stage five, $r = 0.44$. They did not account for the low reliability score for stage five. The interitem consistency scores were not available for stages one and two because there were too few subjects in the pilot tests of the GIQ. Brady and Busse hypothesized that subjects in HIF stages one or two might not yet identify themselves as gay and, therefore, would be difficult to recruit for studies. Brady and Busse's hypothesis is similar to Ivey's (1990) statement that clients usually enter counseling at the early concrete-operational level (level three) of the DCT.

An internal consistency analysis of the GIQ based on the data yielded from this study yielded a standardized item alpha of 0.60. Alphas for the groupings of questions associated with each of the six HIF stages ranged from $\alpha = 0.4517$ to $\alpha = 0.79$. Interestingly, like the reliability scores reported by Brady and Busse (1994), scores for stages four ($\alpha = 0.79$) and six ($\alpha = 0.79$) were strong, and the score for stage five ($\alpha = 0.48$) was weak. Considering the fact that, in this study and the study by Brady and Busse (1994), participants in HIF stages four and six far outnumbered participants in stage five, one explanation is that HIF stage five does not represent a distinct vertical development stage, but represents a process of horizontal development between HIF stages four and six.

Standard Cognitive-Developmental Interview (SCDI). Participants' cognitive-developmental levels on Ivey's (1990) DCT model were assessed using an abbreviated form of the SCDI (Ivey, 1993). The full SCDI is a structured interview of 45 to 90 minutes through which an interviewer asks participants a series of questions related to a specific topic. The interviewer begins with a general question about the topic and then asks questions based on each of the DCT levels (Ivey, 1993).

Ivey (1993) stated that it is possible to rate clients' overall DCT level based on a 50 to 100 word response to a general question and that this assessment may be based on either a verbal or written response to a question (Ivey, personal communication, 1997). In fact, in her 1989 study of 20 depressed clients, Rigazio-DiGilio (as cited in Ivey, 1993) found an interrater reliability of 0.90 when raters scored the DCT model stage levels of clients based on their first 100 words. Rating clients' levels based on their initial comments to a general question enables raters to assess clients' current DCT level on a particular issue. Raters score responses by assigning clients' statements with the number that represents the stage level of the DCT model. After clients' statements are scored, raters determine the principal cognitive-developmental levels of clients based on the percentages of clients' statements at each level (Ivey, 1993).

Because of the strong reliability of the shortened version of the SCDI and because a written response by participants is an acceptable alternative method to an oral interview in assessing stage level on the DCT, the shortened version of the SCDI was used in the form of a writing exercise. Participants were asked to provide approximately 50-100 words (3-5 sentences) based on the following direction: "Please write as much as you can about what occurs for you when you focus on being gay." This direction is consistent with the SCDI and was adopted to apply to gay identity (Ivey, personal communication, 1997).

Using the shortened, written version of the SCDI reduced the amount of time necessary for participants to complete the research packet and provided participants with a greater degree of anonymity as compared to an interview. Consequently, individuals had a greater degree of comfort and were more likely to participate.

Procedures

The researcher recruited participants by asking individuals to participate in a study on "what being gay means to you." Individuals who expressed an interest in participating were given a written explanation stating what their participation would involve, that their confidentiality would be protected by the researcher, and that they could withdraw from the study at any time.

Participants completed the instruments in the research packet at the community centers or at locations convenient and acceptable to them. A drop-box was placed at both community centers for participants to return their packets. Also, participants were given the option of mailing their completed research packets to the researcher.

The GIQ was scored, according to the guidelines established by Brady and Busse (1994). Following the SCDI classification system (Ivey, 1993), two raters proficient in the SCDI classification system scored the writing exercise responses with a DCT model level. The raters obtained an interrater reliability of 0.82. The raters were the primary researcher and a doctoral level counselor, both experienced in rating statements based on the DCT model (Ivey, 1990, 1993). Both Ivey and Rigazio-DiGilio have stated that two raters is sufficient provided they are well trained in the SCDI classification system (personal communication, February 4, 1998). In order to avoid contamination of data, the instruments in each research packet were coded and separated, and participants' SCDI responses were rated before interpreting their responses on the GIQ.

Raters were trained following the SCDI classification system (Ivey & Rigazio-DiGilio, 1993). This classification system is used to rate SCDI responses and outlines criteria to use in rating responses into one of eight subdivisions of the four main DCT levels. In order to assure that raters were proficient in rating responses on the SCDI, raters completed several training tasks.

First, raters reviewed Ivey's (1990, 1993) publications on his DCT model, including the section on the SCDI classification system. Second, raters practiced rating individual statements using the "Practice Rating Interview" in Ivey's (1993) *Developmental Strategies for Helpers*. Ivey stated that, although it is difficult to obtain high interrater reliability based on single statements, he "endorse[d] this task as a good training method" (p. 307). Third, raters also practiced rating longer statements in Ivey's (1993) "Assessing Developmental Level" Chapter.

Raters practiced rating statements until they were able to obtain at least 75% agreement with the answers provided by Ivey in these practice sections.

Fourth, the SCDI was administered to 30 gay male participants to provide SCDI responses for a training session for the raters. Although the GIQ was not administered, this training session with the SCDI was conducted following the guidelines outlined above for the primary study. Individually, raters rated SCDI responses in groups of five.

Fifth, after rating a group of five responses, raters compared their ratings and assessed the level of interrater agreement. When there was disagreement on specific responses, the raters discussed their rationale for assigning ratings and assigned a mutually agreed upon level. Finally, raters continued to rate in groups of five until they were able to obtain at least 80% agreement. The raters were considered proficient when they could classify 50-100 word responses with at least 80% accuracy and agreement.

RESULTS

Descriptive Statistics

Descriptive statistical analyses were conducted to obtain information on participants' demographics, HIF model stages, and DCT model levels.

Gay Identity Questionnaire. Participants tended to be accepting of their sexual orientation. Scores on the GIQ ranged from one to six with a mean score of almost five ($M = 4.73$, $SD = 1.04$). The majority of the participants had responses on the GIQ indicative of HIF stages four (acceptance) through six (pride). Just 5 participants (6.4%) had GIQ responses indicative of HIF stages one (confusion) through three (tolerance) with four of these participants (5.1%) falling in stage three. Only four participants (5.1%) had split-stage scores such as stage 5.5.

Standard Cognitive Developmental Interview. Participants also tended to think abstractly about their sexual orientation, as indicated by their written responses on the SCDI. Although 18 (23.1%) participants gave DCT stage two responses (concrete operational) and 6 (7.7%) gave DCT stage one responses (sensorimotor), 54 (69.3%) participants gave abstract responses ranging from formal operational to dialectic.

Statistical Tests

A Pearson correlation statistical analysis was conducted to assess the relationship between participants' GIQ scores and SCDI scores. The Pearson correlation was not significant for an alpha level of 0.05, $r = .068$, $p = ns$. One explanation for the lack of significant findings is the problem of restricted range. The problem of restricted range occurs when there is a limited range on one or both of the variables or when there is a large degree of homogeneity among participants. When this problem occurs, a relationship may exist between two variables but not be measurable through a correlational technique (Evans, 1996).

In this study, the range of values was restricted on the HIF model and the DCT model variables because the GIQ scores ranged from only one to six and the SCDI scores ranged from only one to four. In addition, participants in this study were homogenous, because their distribution of scores clustered among the upper stages of the HIF and DCT models. Consequently, the lack of statistically significant results using correlational techniques does not mean that one or more relationships do not exist between the variables. Therefore, to assess if any statistically significant results existed that were masked by the restricted range problem, alternative analyses were used to further explore the relationship between participants' GIQ scores and SCDI scores.

Another means to measure if an individual's stage on one model will parallel a stage on the other model is to determine the number of participants assigned to a particular DCT level (based on their SCDI score) who are also assigned to a particular HIF stage (based on the GIQ score). If the frequency count of participants in hypothesized parallel stages of the DCT and HIF is greater than chance alone, then there is statistical significance to offer positive support for the hypothesis. To determine if there is statistical significance for

frequency counts greater than chance alone, an appropriate statistical analysis is a chi-square test. According to Evans (1996):

A chi-square test compares observed frequency counts ... to expected frequency counts.... If the observed frequencies differ from the expected frequencies by more than an amount predicted by the theory of chance variation, then the chi-square is statistically significant. A significant chi-square statistic usually means that the distribution of outcomes across categories has been reliably altered by some variable. (p. 448)

A chi-square test is a logical alternative to correlational techniques in this study, because one type of chi-square test, the chi-square test of association, can be used to assess the relationship between two variables. According to Evans (1996), data for the variables is placed on a contingency table of observed and expected frequencies to determine if a correlation exists between the variables; “a correlation exists within a contingency table to the extent that a particular level of one variable is associated with a particular level of a second variable more often than we would expect on the basis of chance alone” (Evans, 1996, p. 453).

First, a chi-square test of association was used to assess the relationship between participants’ GIQ scores and SCDI scores. A chi-square test of association of the GIQ and SCDI scores yielded a 7 X 4 contingency table (i.e., seven GIQ scores and four SCDI scores) (see Table 1). The chi-square test of association indicated that a relationship did exist between the HIF and DCT model variables; however, this relationship was not statistically significant, $\chi^2(18) = 15.665$, $p = ns$. In addition, because only 5 participants scored below four on the GIQ, none of the individual cells for GIQ stages one through three had observed or expected counts above three. Consequently, one of the main assumptions of chi-square (i.e., expected frequencies for all cells is greater than or equal to five) was violated (Evans, 1996).

TABLE 1. Chi-Square Contingency Table of Observed Frequencies of Participants’ DCT Model Levels as a Function of Participants’ HIF Stages

DCT Level	HIF Stages								Totals
	1.0	2.0	3.0	4.0	4.5	5.0	5.5	6.0	
1	0	0	0	5	0	1	0	0	6
2	0	0	1	5	0	5	2	5	18
3	1	0	1	11	1	3	0	8	25
4	0	0	2	12	0	4	1	10	29
Totals	1	0	4	33	1	13	3	23	78

$\chi^2 = 15.67$, $df = 18$, $p = ns$

A second chi-square test of association of the relationship between scores on the GIQ and SCDI was conducted in order to compare the upper (stages four through six) and lower (stages one through three) HIF stages with the respective concrete (levels one and two) and abstract (three and four) levels of the DCT. In drawing on parallels of Piagetian and Platonic concepts of cognitive development, Ivey (1993) stated that the four levels of the DCT may be defined as concrete (sensorimotor and concrete operations) and abstract (formal operations and dialectic). According to Ivey, “the concrete world is composed of what we can see, hear, and feel—a world of events, situations, and action. The abstract world is concerned with ideas—things that cannot easily be defined in clear-cut, concrete language” (p. 10).

This comparison yielded a 2 X 2 contingency table, and the chi-square analysis was not statistically significant, $\chi^2(1) = 0.292$, $p = ns$. The expected frequency assumption, however, was broken in the HIF one through three cells, because the expected and observed counts were less than ten. According to Evans (1996), expected frequencies for all cells should be at least ten when the degree of freedom is one. HIF stages four to six did relate to DCT levels three to four at a frequency greater than chance alone.

Next, chi-square goodness-of-fit tests were conducted to determine if statistically significant distributions existed among HIF stages and DCT. As participants in the upper stages of the HIF represented almost 90% of the total participants in the study, a chi-square goodness of fit test was conducted for participants in the upper stages of the HIF to determine the rate at which they were in the upper stages of the DCT. Participants in HIF levels four through six were also in DCT levels three through four at a rate better than chance alone. The chi-square analysis was statistically significant, $\chi^2(1) = 9.99, p < 0.01$ (see Table 2).

A second chi-square goodness of fit test for the same group of participants (HIF stages 4-6) was conducted to determine the rate at which they were in each of the four DCT stages. This chi-square also yielded statistically significant results, $\chi^2(3) = 13.74, p < 0.01$ (see Table 3). Participants in HIF levels four through six were also in DCT levels three and four at a rate better than chance alone and in level one at a rate far below chance.

TABLE 2. Chi-Square Goodness of Fit Table of Observed and Expected Frequencies of Participants' (HIF Stages 4-6) in Upper and Lower Tiers of the DCT Model

DCT Level	Observed N	Expected N
1/2	23	36.5
3/4	50	36.5
Totals	73	73

$\chi^2 = 9.99, df = 1, p < 0.01$

TABLE 3. Chi-Square Goodness of Fit Table of Observed and Expected Frequencies of DCT Model Levels for Participants in HIF Model Stages Four Through Six

DCT Level	Observed N	Expected N
1	6	18.3
2	17	18.3
3	23	18.3
4	27	18.3
Totals	98	98

$\chi^2 = 13.74, df = 3, p < 0.01$

DISCUSSION

Statistically significant results were obtained leading to some interesting conclusions and implications.

Participants' HIF Stages

One result of this study was that, as expected, there were few participants in HIF stages one through three. Brady and Busse (1994), in their study of 225 gay males validating the GIQ, also had few participants in the first three stages of the HIF model. They noted the difficulty of recruiting gay participants at early stages of development who have not yet accepted or defined their sexual orientation identity. Consequently, it may not be possible to find participants in the initial stages of the HIF unless conducting a study with a large, randomized sample of the general population.

Participants' DCT Levels

A second result of this study was that a majority of participants were found to be in DCT levels three and four. In this study, 69.3% of participants were in DCT levels three (formal operations) and four (dialectic) and 23.1% (concrete-operational) were in level two. Only 7.7% were in level one (sensorimotor). It is conceivable that most people who have not defined their sexual orientation from an upper concrete operations level or higher have not yet identified as gay.

Participants' HIF Stages and DCT Levels

A third result of this study was that participants in HIF stages four through six were found to be in DCT levels three through four at a rate better than chance alone. An explanation for this parallel between the upper and lower stages of the HIF and DCT models is Ivey's (1993) categorization of the DCT levels into two broad categories: concrete and abstract.

For example, some gay clients may view their homosexuality from a concrete frame of reference, focusing on labeling of sexual behaviors, feelings, and sensations as homosexual; however, these clients may not connect these concrete details with the more abstract concept of a gay identity. As clients move into late concrete operations and early formal operations they may view their homosexuality from a more abstract frame of reference, making the connection that they have a gay identity.

Similarly, Brady and Busse (1994) suggested that the HIF model stages might be categorized into two broad stages: Stage I (consisting of HIF stages one through three) and Stage II (consisting of HIF stages four through six). According to Brady and Busse, "the key differences between Stage I and Stage II are whether or not an individual has resolved a coherent self-identification as homosexual and has a sense of where they belong as homosexuals" (p. 13). Their hypothesis would support the explanation that when gay men experience a cognitive shift in thinking and connect feelings, behaviors, and sensations with a gay identity, they move to a new level of thinking (i.e., concrete to abstract).

CONCLUSION

The results discussed above indicate that parallels do exist between the DCT and HIF models, offering initial support for the integrated model proposed by Marszalek and Cashwell (1998). However, there were several limitations of this study. First, the results cannot be generalized beyond the participants in this study. The participants were not recruited from a large, national randomized population, and the majority of the participants were gay white males. Additional research is needed with a more diverse gay population.

Second, the majority of the participants were in the upper HIF stages and in the upper DCT levels. It might not be possible to compare the DCT and the HIF on the first few stages unless using a large, randomized sample of the general population. Research is needed with a large randomized population to obtain participants in all stages of the HIF model and all levels of the DCT.

Third, an internal consistency analysis of the GIQ based on the data yielded from this study yielded a weak standardized item alpha ($\alpha = 0.60$). Reliability scores for HIF stage five in this study and those reported by Brady and Busse (1994) were low. The validity of the GIQ in assessing participants in the lower stages of the HIF is unclear. More research needs to be conducted with the GIQ to further assess its reliability and validity. Further, more research needs to be conducted to develop other means to assess gay identity development.

In conclusion, the results of this study indicated that, as with the DCT model, the HIF model can be categorized by concrete and abstract frames of reference. Follow-up studies need to be done with a larger, more diverse gay population. In addition, more research will need to be conducted to learn more about the relationship between early stages of the HIF and DCT models. Future studies of the parallels between the DCT and HIF models can provide further insight into the processes of gay identity and cognitive development.

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