Self and Identity

Measuring identity multiplicity and intersectionality: Hierarchical Classes Analysis (HICLAS) of sexual, racial, and gender identities

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Measuring Identity Multiplicity and Intersectionality: Hierarchical Classes Analysis (HICLAS) of Sexual, Racial, and Gender Identities

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We propose an innovative approach for measuring identity multiplicity and intersectionality—Hierarchical Classes Analysis (HICLAS) of an Assessment of Multiple Identities. This method allows researchers to assess characteristics of individual identities and model implicit interrelationships between multiple identities held by an individual. We found support for the validity of this approach through analysis of sexual, racial, and gender identities among 40 lesbian, gay, or bisexually identified (LGB) participants. As hypothesized, poorer mental health indicators were significantly associated with greater negative valence of sexual identity and greater negative self-complexity in HICLAS. HICLAS also allowed us to discern subgroup differences indicative of intersectionality (e.g., in this LGB sample, more African American participants than White participants showed interconnected sexual and racial identities).

The idea that individuals simultaneously hold multiple identities has long been represented within social-psychological theory and research. William James (1890) maintained that the "empirical self" comprised a material, social, and spiritual self, and that each of these components contained its own set of multiple selves. Identity multiplicity is also evident in the work of Mead (1934), who underscored the

importance of social interactions with others in the development of varied self-concepts. The multiplicity of identity continues to be evident within contemporary theoretical work on identity. The role-identity model (McCall & Simmons, 1978) and Stryker's identity theory (1980; Stryker & Statham, 1985) posit that individuals maintain a hierarchy of multiple identities, and that particular identities vary in their degree of prominence within this hierarchy. Social identity theory (Hogg & Abrams, 1988; Tajfel & Turner, 1979) also incorporates identity multiplicity by noting that varied intergroup comparisons produce multiple identities.

Research indicates that individuals do commonly characterize themselves in terms of multiple identities (Rosenberg, 1997; Rosenberg & Gara, 1985) across several domains of self-representation (Sedikides & Brewer, 2001). These constellations of identities include *personal identities*, unique traits and self-characterizations that help distinguish oneself from others; *relational identities*, dyadic relationships and social roles that one holds with respect to others; and *collective identities*, statements of group membership on the basis of shared characteristics or ascribed attributes (Andersen & Chen, 2002; Ashmore, Deaux, & McLaughlin-Volpe, 2004; Brewer & Gardiner, 1996; Sedikides & Brewer, 2001). Although individuals maintain varied identities concurrently, the prominence and expression of any particular identity may shift across time and social context (Deaux & Major, 1987; Deaux & Martin, 2003; Ethier & Deaux, 1994; Ellemers, Spears, & Doosje, 2002).

Recently, the multiplicity of identity has been further underscored through the concept of *intersectionality*. As originally advanced by several African American feminist authors (Crenshaw, 1996; Hill Collins, 1995, 1998; Hooks, 1989), intersectionality represents the idea that the crossing of *multiple forms of oppression* with regard to gender, race/ethnicity, class, sexuality, etc., produces distinct sets of perspectives and consequences among individuals. The central tenets of inter-sectionality are: "(a) no social group is homogenous, (b) people must be located in terms of social structures that capture the power relations implied by those structures, and (c) there are unique, non-additive effects of identifying with more than one social group" (Stewart & McDermott, 2004, pp. 531 – 532). In extending the concept of intersectionality to the domain of identity, we would expect that the crossing of *identification with multiple oppressed groups* would produce distinct sets of perspectives and consequences for individuals. For example, African American lesbian women will present a different set of perspectives and experiences than either White lesbian women or African American heterosexual women (Crenshaw, 1996). When considered from a cognitive perspective, the intersectionality of identity could be understood as a form of concept combination, in that two joined concepts can produce a concept conjunction that reflects shared elements of the constituent concepts as well as emergent qualities resulting from their union (Hampton, 1987, 1997; Smith & Osherson, 1984; Storms, De Boeck, Van Mechelen, & Ruts, 1998).

Identity multiplicity and intersectionality contain particular relevance for research with individuals who may encounter multiple forms of oppression along the lines of gender, race/ethnicity, and sexuality. Identity development models have traditionally offered separate treatments of sexual identities (Cass, 1979, 1984; Coleman, 1982; Troiden, 1989) and racial identities (Cross, 1991, 2001; Phinney, 1990). Although there are important differences in these models, they generally posit that individuals must undergo a process of identity acquisition that involves attaching greater positive valence to a particular identity and successfully integrating the identity into one's self-concept. Greater positive valence and integration of sexual and racial identities are therefore regarded as desirable outcomes that are associated with better

psychological adjustment. However, identity multiplicity and intersectionality suggest that individuals who identify with both sexual and racial/ethnic minority groups will experience a unique combination of stressors and adaptations related to the concurrent development and articulation of *both* identities (Crawford, Allison, Zamboni, & Soto, 2002). As a result, when thinking about race, researchers should also consider gender, sexuality, and other identities that may be the focus of oppression or discrimination. This is because the simultaneous experience of all these identities results in different meanings and experiences than what could be captured by consideration of race alone.

Despite the significance accorded to identity multiplicity and intersectionality, current quantitative measures of sexual, racial/ethnic, and gender identity in the social psychological literature cannot readily accommodate these concepts. Existing measures exclusively assess aspects of a single identity. Measures have been developed regarding gay and lesbian identity (e.g., Brady & Busse, 1994; Mohr & Fassinger, 2000; Savin-Williams & Diamond, 2000), racial and ethnic identity (e.g., Contrada et al., 2001; Cross & Vandiver, 2001; Phinney, 1992; Sellers, Rowley, Chavous, Shelton, & Smith, 1997; Williams, Spencer, & Jackson, 1999), and gender identity (e.g., Gurin & Townsend, 1986; Henderson-King & Stewart, 1994; Henley, Meng, O'Brien, McCarthy, & Sockloskie, 1998). Although these assessments examine various or even multiple dimensions of identity, none addresses more than a single identity. Furthermore, these identity measures rely on direct self-reports from participants, which can be influenced by social desirability and self-presentational concerns (Ashmore et al., 2004).

The singular focus of existing measures of sexual, racial, and gender identity presents barriers to understanding the multiplicity and intersectionality of identity, even when these measures are used in combination with one another. For example, Crawford et al. (2002) administered Phinney's (1992) measure of ethnic identity and a separate measure of gay identity to a sample of African American gay and bisexual men. These two measures allowed them to specify four responses to the intersection of sexual racial identities: *assimilation* (high racial identification and low sexual identification), *separation* (low racial identification and high sexual identification), *integration* (both forms of identification were high), and *marginalization* (both forms of identification were low). Although this work importantly incorporated assessments of dual identities, the basic formulation of high/low identification does not allow for the possibility that one's racial and sexual identities could either be *compartmentalized* or *synthesized*. Baumeister, Shapiro, and Tice (1985) described identity compartmentalization as one means for resolving conflict between multiple identities. Alternatively, Deaux and Perkins (2001) have advanced the idea of identity synthesis by noting that identities may be "inextricably linked to one another through shared attributes or components" (p. 302).

To better accommodate the multiplicity and intersectionality of identity, researchers must adopt methods that conceptualize individuals at intersections of multiple identities. One promising approach in this regard is to analyze participant reports of multiple identities through a clustering procedure known as Hierarchical Classes Analysis (HICLAS; DeBoeck & Rosenberg, 1988; Van Mechelen, De Boeck, & Rosenberg, 1995). HICLAS allows researchers to model the implicit interrelationships between multiple identities held by an individual. This approach requires a measure in which participants first characterize themselves in terms of multiple personal, relational, and collective identities, and then describe the qualities they associate with each of these identities. On the basis of commonalities and distinctions

in the attributes that a participant reports for each identity, HICLAS produces a representation of the participant's overall identity that reveals the interrelationships and hierarchical arrangements of specific identities. This approach draws on the assumptions of implicit personality theory (Bruner & Tagiuri, 1954) and holds that identities are implicitly linked if their descriptions demonstrate a pattern of co-occurrence (Gara & Rosenberg, 1981). The results of HICLAS therefore reflect participants' implicit identity theories, i.e., the results help reveal the connections, disjunctures, and other qualities that individuals experience around their multiple intersecting identities.

To more clearly illustrate this method, we have presented a hypothetical example in Figure 1. In this greatly simplified case, a participant has reported four identities (Gay, Puerto Rican, Man, and Supervisor) and has rated each of these identities on a short attribute list (assertive, friendly, warm, worried, tense, and distressed). The application of HICLAS to this data would produce a hierarchical representation of this participant's identities as diagrammed in Figure 1. "Man" appears in the lower portion of the model, as it is only described by two attributes ("warm" and "worried"). The identities "Supervisor," "Gay," and "Puerto Rican" are all superordinate with respect to "Man," because they each incorporate the two attributes associated with "Man" ("warm" and "worried") as well as additional descriptors. "Gay" and "Puerto Rican" fall into the same cluster because they are described by the same attributes ("assertive," "friendly," "warm," and "worried"), whereas "Supervisor" holds its own cluster because it contains a different and unique set of descriptors ("tense," "distressed," "worried," and "warm"). The resulting model therefore represents an implicit organization of the participant's identities, as delineated through the content of their descriptions.

Identity Data:

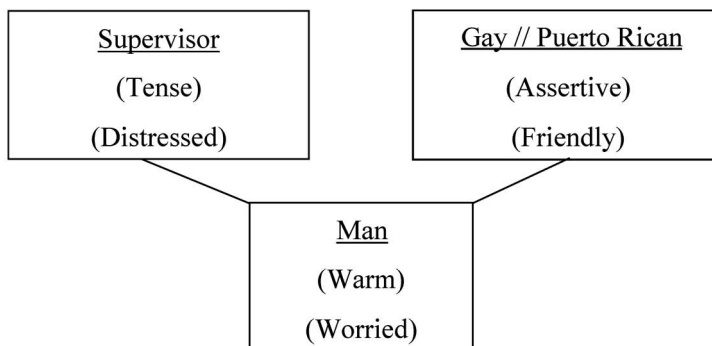| Identity	Attributes Describing each Identity					
	Assertive	Friendly	Warm	Worried	Tense	Distressed
Gay	+	+	+	+		
Puerto Rican	+	+	+	+		
Man			+	+		
Supervisor			+	+	+	+

Identity Model:

FIGURE 1 A simplified example of identity data and the resulting HICLAS identity model.

The HICLAS approach provides the ability to assess multidimensional aspects of identity. In a review of collective identity multidimensionality, Ashmore et al. (2004) noted that commonly assessed dimensions of identity include identity evaluation and importance. Our work taps these constructs through the concepts of identity valence and prominence. V*alence* refers to the positive or negative evaluation of a particular identity. This construct can be measured by examining the terms used to describe that identity (e.g., in the example above, the attributes applied to "Supervisor" are primarily negative in valence). *Prominence* refers to the implicit importance of a particular identity within one's self-concept, which can be conceptualized as the degree to which an identity subsumes a number of other identities. Prominence can be evaluated by determining the location of a certain identity within an identity model (e.g., "Gay," "Puerto Rican," and "Supervisor" each subsume "Man" and are therefore more prominent).

We can also assess several elements that stem from identity multiplicity through HICLAS. *Identity integration* represents the degree to which a particular identity shows close relationships to other identities. In the HICLAS approach, integration can be measured through the proportion of one's identities that show implicit connections to a certain identity (e.g., in our example, "Supervisor" is directly linked to one other identity, whereas "Man" is directly linked to all three other identities). This measure therefore reflects the degree to which a particular identity is described similarly to other identities. If a certain identity were described very differently from other identities, then it would be rated as less integrated. We can sharpen this focus more narrowly through the concept of an *identity interrelationship*, which examines whether two particular identities demonstrate an implicit connection with each other, i.e., they are described in very similar terms.

HICLAS also allows us to measure forms of self-complexity. Self-complexity refers to the extent of cohesiveness or differentiation within one's self-concept. This construct has been defined as "the number of aspects that one uses to cognitively organize knowledge about the self, and the degree of relatedness of these aspects" (Linville, 1985, p. 97), and it can be assessed by counting the number of identity and attribute clusters within an identity model (e.g., the simple example above has three clusters). Studies indicate, however, that partitioning self-complexity into components characterized by positive and negative valence can have special utility for predicting mental health and well-being. Research employing HICLAS has consistently found that individuals with greater complexity of negative self-aspects within their identity models demonstrate greater and more persistent depressive symptoms and clinical depression (Gara et al., 1993; Gara, Woolfolk, & Allen, 2002; Woolfolk, Novalny, Gara, Allen, & Polino, 1995; Woolfolk et al., 1999). We therefore have used HICLAS to determine *negative self-complexity* by assessing the number of identity and attribute clusters within an identity model that are not characterized by positive valence.

The association between negative self-complexity and depression may sound counter-intuitive in relation to the widely noted work of Linville (1985, 1987), who proposed that greater self-complexity should confer a stress-buffering effect over time. It is important to note that Linville never posited a direct relationship between self-complexity and depression, and she did not examine self-complexity in concert with valence. There are theoretical reasons to believe that greater self-complexity—and particularly negative self-complexity—may be associated with poorer mental-health outcomes. From a cognitive perspective, the presence of many differentiated negative self-concepts in tandem with a relatively

undifferentiated positive self may inhibit the ability of positive events associated with one self-aspect to transfer to other self-aspects through the spreading activation principle (Gara et al., 2002). In this way high negative self-complexity attenuates positive mood and lengthens the amount of time taken to recover from episodes of depressed mood, which can range in length from brief bouts of dysphoria to full-scale major depression (Gara et al., 1993; Woolfolk, Gara, Allen, & Beaver, 2004). From a developmental perspective, greater complexity may reflect the presence of incongruent self-concepts and a lack of personal coherence. Such dissonance may be particularly common and acute among sexual minorities who simultaneously develop multiple identities that may vary in their degree of stigmatization and social acceptance. In certain populations, such as those in which self-development is extraordinarily challenged by severe abuse or neglect, negative self-complexity can also become highly elevated along with the risk for depression (Gara, Rosenberg, & Herzog, 1996). Finally, from a social perspective, the ongoing maintenance of complex, diverse, and perhaps conflicting identities could additionally create interpersonal strains and added demands for an individual's time and attention. These possibilities may help to explain why the empirical literature on self-complexity since Linville's research is in fact characterized by heterogeneous findings and strong debate over the relationship of complexity to mental health (see, e.g., Koch & Sheppard, 2004; Rafaeli-Mor & Steinberg, 2002; Woolfolk et al., 1995, 2004). A recent meta-analysis of this literature subsequently affirmed the existence of a weak but positive association between self-complexity and depression (Rafaeli-Mor & Steinberg, 2002).

Overall, the use of HICLAS therefore permits the assessment of some commonly assessed dimensions of specific identities (valence, prominence), as well as novel dimensions regarding the relationships between multiple identities (integration, interrelationships) and the larger self-concept (negative self-complexity). HICLAS has been used successfully in research on identity and mental health (primarily with clinical samples to date), and it has yielded measures that have good psychometric properties (Allen, Woolfolk, Gara, & Apter, 1999; Gara et al., 2002; Woolfolk et al., 1995, 1999). Among examples of identity research with HICLAS, Massey and Ouellette (1996) found that lesbian-, gay-, and bisexually-identified individuals who associated their highly prominent role identities with heterosexuality showed lower self-esteem than those who did not associate their highly prominent identities with heterosexuality.

When applied to identity assessment, HICLAS can offer important advantages over the use of common identity measures. In allowing researchers to model relationships between multiple identities, this approach uniquely allows researchers to recognize the multiplicity of identity and understand whether particular target identities are combined, compartmentalized, or interconnected. HICLAS also allows researchers to infer identity interrelationships on the basis of implicit descriptions rather than through explicit self-reports from participants. This procedure may therefore be less vulnerable to social desirability concerns than measures that ask participants to explicitly describe connections between their identities. HICLAS can additionally accommodate co-existing positive and negative appraisals of a particular identity, which may not be adequately captured through the semantic differential scales of many identity measures.

We address two aims in this paper. Our first aim was to demonstrate some evidence about the validity of our identity measure and attendant HICLAS analysis. To accomplish this, we used data collected from a sample of lesbian, gay, and

bisexual individuals to compare HICLAS-derived sexual identity characteristics with other measures of sexual identity and mental health. We expected the following:

1A. Consistent with theoretical models and clinical observations, more positive *valence* and greater *integration* of sexual identity with other identities (which have been described as optimal resolution of gay and lesbian identity development) will be associated with better mental health.

1B. Consistent with research using HICLAS with other populations, greater *negative self-complexity* in identity models will be associated with poorer mental health.

Our second aim was to demonstrate the utility of our identity measure and the attendant HICLAS analysis for assessing identity multiplicity and intersectionality. To accomplish this, we broke our sample of lesbian, gay, and bisexual individuals into four subgroups defined by racial and gender identification (African American women, African American men, White women, and White men) and then compared their sexual, racial, and gender identity characteristics. We expected to see variation in identity characteristics across these groups, because intersectionality holds that the crossing of multiple identities produces unique subjectivities and consequences. We specifically hypothesized the following:

2A. Because both sexual and racial identities are associated with oppression and discrimination in African American women and men, their sexual and racial identities will be experienced as sharing more common attributes and thereby be more *interconnected* than are the sexual and racial identities of White men and women.

2B. Because of their social significance, identities on which oppression and discrimination is brought to bear (i.e., Black, female) will be more *prominent* in the identity representations than privileged identities (i.e., White, male).

Method

Study Design

Data were collected as part of Project Stride, an ongoing research study through which we are investigating associations between stress, identity, and mental health among diverse groups defined by sexual, racial/ethnic, and gender identity in New York City. We report on a subgroup of study participants as described below. Respondents completed a comprehensive face-to-face interview that included self-administered measures, interviewer-administered paper and pencil instruments, and computer-assisted interview sections. The mean length of time to complete the full assessment battery was 3 hours and 49 minutes ($SD = 1.0$ hour). Participants received $80 for participation.

Sample

Study respondents were recruited through direct contact with study personnel in diverse locations in New York City, with a specific focus on venues in which individuals who identify as lesbian, gay, and bisexual (LGB) congregate (e.g., particular coffee houses, bars, bookstores, special events, interest groups, and social organizations). A representative case quota sampling method was used (Shontz, 1965) to ensure sufficient representation of participants in intersecting cells defined

by sexual identity (LGB and heterosexual), racial/ethnic identity (Black, Latino, and White), and gender identity (male and female).

Prospective participants completed a short screening questionnaire to determine their eligibility for the study. They were eligible if they self-identified as: (a) LGB or heterosexual; (b) White, African American/Black, or Latino/Hispanic; and (c) male or female. Participants may have used various related terms to describe these identities. In addition, eligible study participants were between the ages of 18 and 59, were able to speak conversational English, and had resided in New York City for two years or more. Transgendered persons were not eligible for this study.

For the present analysis we selected the first 40 LGB study participants who provided balanced groups by race (African American and White) and gender (male and female). The sample therefore consisted of 10 African American women, 10 African American men, 10 White women, and 10 White men. Most of the sample (87.5%) labeled their sexual identity as lesbian/gay or used a related term (e.g., homosexual); the remaining 12.5% of the sample identified themselves as bisexual. The mean age of the sample was 34 years ($SD = 9.3$), and participant ages ranged from 21 to 58. A minority of the sample reported an educational level no greater than a High School/General Equivalency degree (15%); more participants had attained at least some college (60%) or some post-graduate education (25%). The preponderance of the sample was currently employed (97.5%). The median annual household per capita income was $21,043, and this statistic ranged from $125 to $250,000. Slightly more participants reported being in a relationship (57.5%) than not (42.5%). There were no significant differences among the four sample subgroups on any of the demographic variables we assessed.

Measures

Identity

Assessment of Multiple Identities (AMI). Participants reported up to 12 personal, relational, and collective identities in response to the question, "Who am I?" (Kuhn & McPartland, 1954). Among these 12 identities, participants were asked to specify their gender, racial/ethnic, and sexual identities (as described above, self-identification in these categories was an eligibility criterion). To help participants consider the multiplicity of identity when completing this exercise, they viewed a diagram that listed numerous categories of potential personal, relational, and collective identities (e.g., relationship status, employment, religious affiliation, community memberships, recreational interests, personality and personal qualities, health and medical conditions). Following the elicitation of identities, participants rated each identity on a set of 70 descriptive attributes. This was accomplished by having the study interviewer write each elicited identity at the top of an assessment page, and then participants rated "the extent to which each of the following words describes me as a/n [elicited identity]." The attribute list included terms such as "talented," "guilty," "unhappy," "attractive," and "dependable," and participants indicated whether each attribute "does not apply" (0), "applies to some extent" (1), or "applies to a great extent" (2) to a certain identity.

The list of descriptive attributes was derived from the five-factor model of personality (Costa & McCrae, 1992), because participants commonly used personality-trait terms in free-response studies of identity (Rosenberg & Gara, 1985). HICLAS was originally applied to a method of identity assessment that

elicited identity attributes from participants through a free-response format (Rosenberg & Gara, 1985). In that format, a variety of identity attributes were elicited from participants, including personality traits, emotional terms, behavioral descriptions, and values and goals. This method took many hours to complete, and a great deal of this time was devoted to the elicitation of free-response descriptions of identities. Since such free-response methods are unwieldy for use in a larger-scale study, various fixed list of attributes were explored (Woolfolk et al., 1995). Personality-trait terms were chosen for these attribute lists because they had populated most of the clusters observed in free-response studies (Rosenberg & Gara, 1985), whereas other terms were used more restrictively in this regard. Research findings suggest that the present 70-item list of identity attributes represents a satisfactory substitute for a free-response list. Gara et al. (2002) found that the present list replicated findings obtained from free-response applications such as the relationship of complexity to depression (Gara et al., 1993), and that identity complexity measures derived from the use of the present list showed good psychometric properties.

By measuring up to 12 participant identities and their associated descriptions through the AMI, we were able to conduct HICLAS analysis and subsequently characterize each participant in terms of five identity measures: identity *valence*, *integration*, *prominence*, *interrelationships*, and *complexity*. We have provided conceptual definitions for these constructs in the introduction section, and their specific operationalizations are reported in the statistical analysis section below.

Mental Health Indicators

Center for Epidemiological Studies Depression Scale (CES-D). This 20-item scale assesses frequency of depressive symptoms over the week prior to the interview (Radloff, 1977; Roberts & Vernon, 1983). Items include, "I had crying spells," and reverse-coded items such as, "I enjoyed life." Participants rate whether they experienced each symptom or mood state less than 1 day, 1–2 days, 3–4 days, or 5–7 days over the previous week. The scale demonstrated excellent reliability in the study sample ($\alpha = .92$).

Internalized Homophobia. This 10-item scale inquires about the extent to which LGB men and women do not accept their sexual orientation and seek to avoid homosexual feelings (Meyer & Dean, 1998; Meyer, Rossano, Ellis, & Bradford, 2002). In response to questions such as, "How often have you wished you weren't gay?", participants indicate the frequency with which they experienced such thoughts during the prior year on a 4-point Likert scale ranging from "often" to "never." The scale showed good reliability ($\alpha = .84$).

Collective Self-Esteem. Grounded in social identity theory (e.g., Tajfel & Turner, 1979), the 16-item Collective Self-Esteem Scale measures evaluative aspects of one's sense of belonging in one's communities (Luhtanen & Crocker, 1992). The measure contains four subscales: membership esteem (e.g., "I am a worthy member of the social groups I belong to"), private collective esteem (e.g., "I feel good about the groups that I belong to"), public collective esteem (e.g., "Overall, my social groups are considered good by others"), and importance to identity (e.g., "In general, belonging to social groups is an important part of my self-image"). Participants rate each item on a 7-point Likert scale (from "strongly agree" to "strongly disagree").

Each subscale includes reverse-scored items and showed good reliability ($\alpha = .78, .80, .70$, and $.73$, respectively).

Social Well-Being.   This 15-item measure assessed social health and the appraisal of one's circumstances and functioning in society (Keyes, 1998). The measure consists of five subscales: social integration (e.g., "I don't feel I belong to anything I'd call a community"), social acceptance (e.g., "I believe that people are kind"), social contribution (e.g., "I have something valuable to give the world"), social actualization (e.g., "The world is becoming a better place for everyone"), and social coherence (e.g., "The world is too complex for me"). Participants rated each item on a 7-point Likert scale ranging from "strongly agree" to "strongly disagree." Each subscale included reverse-scored items and demonstrated varying degrees of internal reliability in this study ($\alpha = .77, .40, .45, .62$, and $.33$, respectively).

Psychological Well-Being.   This 20-item measure examines multiple dimensions of psychological well-being and positive functioning (Ryff, 1989). The measure contains six subscales: self-acceptance (e.g., "When I look at the story of my life, I am pleased with how things have turned out so far"), positive relations with others (e.g., "I have not experienced many warm and trusting relationships with others"), autonomy (e.g., "I tend to be influenced by people with strong opinions"), environmental mastery (e.g., "I am good at managing the responsibilities of daily life"), purpose in life (e.g., "I live one day at a time and don't really think about the future"), and personal growth (e.g., "For me, life has been a continuous process of learning, changing, and growth"). Participants indicate their degree of agreement or disagreement with each item on a 7-point Likert scale. The subscales generally showed low levels of reliability ($\alpha = .52, .54, .46, .54, .25$, and $.54$, respectively).

Statistical Analyses

We used the conjunctive variant of HICLAS (Van Mechelen et al., 1995) to hierarchically classify the identities reported by each participant. HICLAS allowed us to model the implicit interrelationships among the identities nominated by the participant on the basis of commonalities and distinctions in the attributes used by the participant to describe these identities. HICLAS contains similarities to factor analysis (Boolean method) and block modeling, but it uniquely allows for an explicit representation of the potentially hierarchical and overlapping interrelationships among identities. Because HICLAS requires a binary data matrix, participant ratings of their identity attributes were dichotomized for the purpose of analysis (0 "does not apply" vs. 1 "applies to some extent" or 2 "applies to a great extent"). More recently, hierarchical classes models have been developed that can accommodate ordinal data (Leenen, Van Mechelen, & De Boeck, 2001), as well as three-way, three-mode data arrays (Ceulemans & Van Mechelen, 2005).

We used HICLAS software (Van Mechelen et al., 1995) to analyze the identities and identity attribute ratings provided by the participants. The software follows an iterative process of differentiation to identify clusters of identities and their corresponding attributes. Each level of differentiation is termed a "Rank." At the lowest level of differentiation (Rank 1), all identities and attributes are combined into a single, unified cluster. Each successive increase in Rank breaks the identities and attributes into increasingly differentiated and hierarchical sets of clusters.[1] The analysis reported here employs HICLAS results at Rank 4, which has previously

demonstrated consistently high levels of goodness-of-fit ($>.80$) and good psycho-metric properties for the modeling of identity interrelationships (Allen et al., 1999; Gara et al., 2002; Woolfolk et al., 1995, 1999). It is important to note that the resulting identity models may not include an identity if it was described by few or no attributes, and it therefore demonstrated little or no commonality with the description of other identities.

Identity valence. Valence was defined as the percentage of individual attributes used to describe a target identity that had a positive valence.[2] It was calculated as the number of positive attributes associated with the identity divided by the total number of attributes associated with the identity. The valence statistic for each target identity could therefore range from 0 to 100%.

Identity integration. Integration referred to the degree to which a target identity showed direct connections to other identities within the identity model. Integration was defined as a proportion, calculated as the number of identities connected to a target identity divided by the total number of identities. The integration statistic for each target identity could thus range from 0 to 100%.

Identity prominence. Prominence referred to the location of a target identity within the hierarchical model of identity interrelationships. An identity could be positioned at different tiers within the model, depending on the degree to which it is elaborated by attributes (identities characterized by a greater number of attributes will be located higher within the hierarchical model). The prominence of a target identity was coded on a range from 0 (indicating that the target identity was dropped from the model) to 4 (indicating that the identity was at the highest possible level within the model).

Identity interrelationships. Based on the identity model for each participant, each pair of target identities was rated as either connected or not connected. If connected, one identity could be superordinate, subordinate, or overlapping with respect to the other. If not connected, the two target identities either fell in different and unconnected clusters, or one or both identities dropped from the model altogether.

Negative self-complexity. HICLAS identity models may contain a highly complex structure with many clusters of identities and attributes, or a comparatively simpler structure with fewer clusters (a Rank 4 HICLAS commonly produces between 5 and 15 clusters). In addition, each cluster may vary in the degree to which it is composed by attributes of positive, negative, or neutral valence. Our measure of negative self-complexity referred to the number of identity and attribute clusters within the identity model that were not dominated by positive valence attributes. More specifically, this was operationalized as the number of clusters in which either two thirds or more of the attributes were negative or neutral in valence, or there was no dominant attribute valence (e.g., an equal number of positive and negative attributes).

Hypothesis testing. We first conducted a correlation analysis between our HICLAS-based identity measures to assess whether they were independent from one another. To test Hypotheses 1A and 1B, we correlated HICLAS-derived identity variables (sexual identity valence and integration, as well as identity model

complexity) with other measures of sexual identity and mental health. To test Hypothesis 2A and 2B, we first divided our sample of LGB-identified individuals into four subgroups based on racial (African American vs. White) and gender (Man vs. Woman) identification. We then conducted chi-square analyses to assess subgroup differences in the connectedness of sexual and racial identities (Hypothesis 2A), and we also performed analyses of variance (ANOVA) to test for subgroup differences in the prominence of target identities (Hypothesis 2B).

Results

Intercorrelations of HICLAS-based Identity Measures

To help establish whether our HICLAS-based identity measures were distinct from one another, we examined the correlations between our four continuous identity measures (valence, prominence, integration, and complexity). We found only one significant correlation between these measures: more negative sexual identity valence was associated with greater negative self-complexity, $r = -.48$, $p < .01$.

Relationships between HICLAS Identity and Measures of Identity and Mental Health

Sexual identity valence and integration.   To help establish the construct validity of our identity assessment, we correlated HICLAS sexual identity valence and integration with several sexual identity and mental-health measures (Hypothesis 1A). As expected, a more positive sexual identity valence was associated with better mental health indicators (see Table 1). These results showed that more positive valence of sexual identity was related to lower levels of internalized homophobia and fewer depressive symptoms, as well as a higher sense of private collective self-esteem, greater psychological well-being as represented by autonomy, environmental mastery, and acceptance of others, and more positive relations with others on the social well-being measure. Greater sexual identity integration with other identities was not strongly related to positive mental-health measures in this small sample, but these relationships were generally in the expected direction (see Table 1).

The valence and integration of gender and racial/ethnic identities were not a focus of our study hypotheses. However, we found that these measures demonstrated associations with our mental-health measures that were similar to those observed for sexual identity valence and integration (results not reported here).

Negative self-complexity. We next examined the correlation of HICLAS complexity with other identity and mental-health measures (Hypothesis 1B). As expected, greater complexity of negative components within identity models was associated with poorer mental health indicators (see Table 1). Negative self-complexity was positively correlated with depressive symptoms, and it was negatively correlated with two forms of collective identity self-esteem (membership and public) and two aspects of social well being (social integration and actualization).

Group Differences in Identity Interrelationships and Characteristics

Identity interrelationships. We next sought to demonstrate the ability of our identity measure and attendant HICLAS analysis to discern subgroup differences

TABLE 1 Correlations Between HICLAS Identity Characteristics and Other Measures

Identity measure	CES-D	Int Hom	Collective self-esteem				Social well-being					Psychological well-being					
			Membership	Private	Public	Importance	Integration	Acceptance	Contribution	Actualization	Coherence	Acceptance	Positive relations	Autonomy	Environmental mastery	Purpose	Personal growth
Valence of sexual identity	−.35*	−.35*	.24	.44**	.30	.18	.23	.32*	.16	.28	.25	.21	.40*	.39*	.31*	.02	.25
Integration of sexual identity	.04	.13	.05	.22	.09	.09	.16	.23	.01	.11	.15	.13	.13	.08	.10	.14	−.17
Negative self-complexity	.43**	.10	−.42**	−.28	−.46**	−.18	−.34*	−.18	−.30	−.39*	−.24	−.16	−.27	−.18	−.26	−.14	−.27

Notes: CES-D = Center for Epidemiological Studies Depression Scale; Int Hom = Internalized Homophobia. *p < .05; **p < .01.

that were indicative of intersectionality. To accomplish this, we divided our sample of lesbian, gay and bisexual individuals into four subgroups on the basis of racial and gender identification, and then compared these groups in terms of HICLAS-derived identity interrelationships and characteristics.

Table 2 reports the proportion of study participants in each subgroup with HICLAS identity models that contained an implicit connection between pairs of target identities—that is, those that showed a connection between sexual and racial identities, between racial and gender identities, and between sexual and gender identities. As expected in Hypothesis 2A, our HICLAS approach demonstrated that the identity models of African American men and African American women were more likely to contain connected sexual and racial identities than the identity models of either White men or White women, $\chi^2(3) = 10.4$, $p < .05$. In addition to this finding, supplemental analyses showed that a connection between racial and gender identities was more common among African American men, African American women, and White women than among White men, $\chi^2(3) = 9.6$, $p < .05$. There were no significant differences among subgroups in terms of the connectedness of sexual and gender identities.

Sexual identity prominence. Table 3 reports the mean prominence of the three target identities (sexuality, race, and gender) across the four participant subgroups. As expected in Hypothesis 2B, the HICLAS models showed that racial and gender identities were more prominent in African American women, African American men, and White women than they were in White men. We found significant subgroup differences in the prominence of both racial identity, $F(3, 36) = 10.8$, $p < .001$, and gender identity, $F(3, 36) = 5.4$, $p < .01$, and post hoc analyses showed that racial and gender identity was significantly less prominent in White men than in the other three participant subgroups. The prominence of sexual identity was similar across the four subgroups of LGB participants.

Although we did not form explicit hypotheses about target identity integration and valence, we also examined subgroup differences on these variables (see Table 3). In terms of identity integration, the HICLAS results showed that sexual, racial, and gender identities were less integrated in White men than in the other subgroups, $F(3, 36) = 2.4$, $p = .083$, $F(3, 36) = 6.0$, $p < .01$, and $F(3, 36) = 4.1$, $p < .05$, respectively. In terms of identity valence, no significant differences were found in gender identity, but more negative valence of sexual and racial identities was evident among African American women compared to African American men, $F(3, 36) = 2.8$, $p = .054$ and $F(3, 36) = 3.2$, $p < .05$, respectively.

TABLE 2 Percentage of Participants with Connections Between Two Target Identities Across Four Participant Subgroups

	African American		White	
	Women	Men	Women	Men
Sexual and racial identities[a]	70%	80%	30%	20%
Racial and gender identities[b]	50%	70%	70%	10%
Gender and sexual identities[c]	50%	70%	50%	30%

Notes: [a]$\chi^2(3) = 10.4$, $p = .015$; [b]$\chi^2(3) = 9.6$, $p = .022$; [c]$\chi^2(3) = 3.2$, $p = .362$.

TABLE 3 Mean Prominence, Integration, and Valence of Three Target Identities Across Four Participant Subgroups

	African American		White	
	Women	Men	Women	Men
Prominence of identity (range 0 to 5)				
Sexual	3.2_a	3.7_a	3.7_a	3.5_a
Racial	3.6_a	3.5_a	3.3_a	1.0_b
Gender	3.7_a	4.2_a	3.9_a	2.5_b
Integration of identity (range 0 to 100)				
Sexual	35_a	53_b	44_{ab}	32_a
Racial	40_a	44_a	37_a	10_b
Gender	38_{ab}	54_a	53_a	25_b
Valence of identity (range 0 to 100)				
Sexual	60_a	80_b	73_{ab}	74_{ab}
Racial	59_a	82_b	69_{ab}	71_{ab}
Gender	63_a	72_a	67_a	71_a

Note: Means in the same row that do not share subscripts are significantly different at $p < .05$ in the LSD comparison.

Discussion

We have introduced an innovative identity assessment that allows participants to report and characterize multiple identities. To date, use of this method has been limited to clinical samples or small quantitative survey research on identity. Analysis of this data through HICLAS allowed us to develop a model of the implicit interrelationships between identities for each participant. Through this method, we could assess key characteristics of specific identities, as well as interrelationships among multiple identities. These HICLAS-derived identity measures were generally independent from one another, showed expected associations with other measures of identity and mental health, and demonstrated important variations across participant subgroups by race and gender identity. It is important to note that we did not conduct these analyses to infer population parameters or definitively characterize the populations tapped in this study, but rather to demonstrate support for the validity and utility of our methodological approach.

We found support for the predictive validity of our HICLAS-derived identity measures. Sexual identity development theories specify positive identity valence and integration as optimal outcomes of identity development and suggest that these factors are associated with better psychological adjustment and mental health (Cass, 1979, 1984; Coleman, 1982; Troiden, 1989). We therefore proposed in Hypothesis 1A that greater positive valence and integration of sexual identity (as determined through HICLAS) would correspond to better mental health outcomes (as determined through existing measures). We found support for this hypothesis, in that participants who demonstrated more positive sexual identity valence showed fewer depressive symptoms, lower internalized homophobia,

higher private collective self-esteem, and greater forms of psychological and social well-being. The valence and integration of racial/ethnic and gender identities were not a focus of our analysis, but these measures showed relationships with mental health outcomes that were similar to those observed for sexual identity valence and integration. This is not unexpected, since theories of racial and gender identity development would also suggest that positive valence and greater integration should correspond to well-being, and many participants additionally demonstrated close associations between their sexual, racial, and gender identities (intersectionality).

In Hypothesis 1B, we anticipated a relationship between greater negative self-complexity within HICLAS identity models and greater depressive symptoms. This prediction grew from a set of cognitive, developmental, and social arguments that could theoretically link complexity with depression, in addition to the results of previous studies using HICLAS (Gara et al., 1993, 2002; Woolfolk et al., 1995, 1999) and a recent meta-analysis regarding self-complexity and mental health (Rafaeli-Mor & Steinberg, 2002) that affirmed this relationship. This hypothesis was supported. These findings regarding Hypotheses 1A and 1B collectively indicate good predictive validity for our measures, in that the HICLAS identity results corresponded to other theory-based and empirical findings in expected ways.

In addition to demonstrating evidence for the predictive validity of our approach to identity assessment and analysis, the results show the unique advantage that HICLAS affords for assessing the multiplicity and intersectionality of minority identities. Intersectionality suggests that the crossing of multiple oppressed identities will produce unique forms of identification and subjectivity. We therefore proposed in Hypothesis 2A that the sexual and racial identities of African American men and women should be more interconnected than those of White men and women, because both of these identities may be subject to discrimination and prejudice. This hypothesis was supported, in that HICLAS identity models allowed us to determine that a significantly greater proportion of African American participants showed close connections between their sexual and racial identities than White participants. Put another way, our use of this measure allowed us to demonstrate that African American participants were more likely than White participants to describe their sexual and racial identities in highly similar terms. The general congruence of these identity descriptions among most of the African Americans in this sample suggests an implicit interrelationship or synthesis of their sexual and racial identities. Such a synthesis underscores the notion of intersectionality, in that the crossing of two marginalized collective identities (sexual and racial) may forge a singular identity as a gay African American. In cognitive terms, this could also be considered an instance of concept conjunction (Hampton, 1987, 1997; Smith & Osherson, 1984; Storms et al., 1998) within the domain of identity.

The ability of our identity measure to accommodate identity multiplicity and intersectionality was also evident in our comparison of identity prominence among the sample subgroups. Based on the tenets of intersectionality, we proposed in Hypothesis 2B that identities that are targets for oppression and discrimination (i.e., Black, female) would be more prominent in the HICLAS identity models than privileged identities (i.e., White, male). We found support for this hypothesis, in that HICLAS allowed us to show that African American women, African American men, and White women had more prominent racial and gender identities than White men. The HICLAS results showed consistent differences between White men and other

subgroups in terms of their racial and gender identity characteristics. The racial and gender identities of White men were not only less prominent, but also less integrated and interconnected than the other subgroups. It may be that the combined privilege associated with Whiteness and male gender, even within this LGB sample, allowed these participants to leave their racial and gender identities comparatively unexamined or taken for granted. By contrast, racial identity prominence among White women was roughly the same as African American women and men; it may be that the experience of an oppressed gender identity helps to foster greater awareness of privileged racial identity among White women. These findings underscore the importance of attending to identity intersectionality, in that the combination of two identities (either White man or White woman) resulted in unique forms of subjectivity.

It is important to note a possible alternative explanation for our study hypotheses and interpretation of study results. The focus of intersectionality upon intersecting and mutually sustaining forms of oppression led us to propose, for example, that oppressed identities would be more prominent than privileged identities. Although the study allowed us to assess the relative prominence of oppressed and privileged identities, it could not truly assess the reasons for any such pattern. It is possible that the greater prominence and interrelationships observed among minority identities in this study was a result of their social distinctiveness, rather than the experience of oppression. McGuire and colleagues (McGuire & McGuire, 1980, 1988; McGuire, McGuire, Child, & Fujioka, 1978; McGuire, McGuire, & Winton, 1979) have found that contexts of social distinctiveness are associated with greater salience of particular identities (e.g., race, gender, and handedness). We nonetheless believe that the conduct of oppression may be, at a minimum, a reinforcing factor in highlighting minority identities. We note with some interest that White women showed greater prominence of racial identity, and it is difficult to see how a distinctiveness principle could account for this. Instead, the intersectionality of related identities that were subject to oppression may have heightened self-awareness of racial identity among lesbian women who were White.

When compared with most existing identity measures, the primary limitation of the HICLAS approach is the logistical difficulties associated with data collection and analysis. HICLAS requires the collection of a data matrix of identities and their associated attributes. As operationalized here, this involves participants reporting and then separately rating twelve identities across a fixed list of 70 attributes, which can take 30 or more minutes to complete. The process of conducting HICLAS on these data is also time-consuming. A separate HICLAS analysis must be performed for each individual participant, and then summary statistics must be derived from each participant's identity model in order to characterize dimensions of particular identities and their interrelationships with one another. These statistics are then compiled and compared across the full sample. Although there is complexity in the application of HICLAS to identity assessments, we argue that such an approach is needed to adequately account for the complexity of identity.

The intricacy of the HICLAS approach can bring to mind the Q-sort methodology employed by authors such as Linville (1985, 1987) and Showers (1992; Showers & Kling, 1996), but there are important differences. In both the HICLAS and the Q-sort approach, study participants characterize various self-aspects in terms of a set of attributes. In the HICLAS method, however, Q-sorts are not used but rather complexity is derived from co-occurrence patterns in a participant's ratings of a series of identities with respect to each item of a carefully

chosen set of predicates. HICLAS consequently permits the hierarchical modeling of multiple identity interrelationships on the basis of shared attributes. This approach facilitates the concurrent assessment of a broader set of measures (e.g., valence, prominence, integration, interrelationships, complexity) than the singular application of the Q-sort to self-complexity (Linville) or compartmentalization (Showers). Furthermore, while our assessment of self-complexity bears conceptual similarity to that of Linville's (1985, 1987), it uses a different analytic method and has been refined to incorporate the valence of complex self-aspects. In tapping both the valence and organization of self-knowledge, this complexity measure bears closer correspondence to Showers' conception of compartmentalization (Showers, 1992; Showers & Kling, 1996), which examines the degree to which positive and negative self-aspects are either compartmentalized or integrated. Negative self-complexity remains a conceptually different measure, however, as it encompasses self-aspects that are not only predominately negative in valence (indicative of compartmentalization to Showers), but also those characterized by mixed valence (indicative of integration to Showers).

One limitation that is shared by the HICLAS method and existing quantitative measures of sexual, racial/ethnic, and gender identity is the reliance on a decontextualized and static conception of identity. Social context can importantly influence the salience of particular identities and the interplay of multiple identities (Deaux & Major, 1987; Deaux & Martin, 2003; Ellemers et al., 2002). For example, an individual who identifies as gay may hold strikingly different cognitions regarding his/her gay identity within varied contexts (e.g., with gay friends, at work, among family, at church, in a relationship; Narvaez, Meyer, Kertzner, Ouellette, & Gordon, 2007). Like existing identity measures, our present method of identity assessment does not accommodate this contextual variation because it asks participants to think generally about their identities, rather than to consider identities within key contexts. The complex and contextual experience and enactment of intersectional identities can be effectively explored through qualitative research (Narvaez et al., 2007), but researchers could also address contextual variation in identity through a modification of our assessment procedure. Participants could be asked to describe the qualities of a particular identity within either specific situational contexts (e.g., my gay identity in the context of work, family, or a relationship) or temporal contexts (e.g., as a child, adolescent, or adult). HICLAS can then be used to model the interrelationships between various contextualized aspects of a target identity, or even contextualized aspects of multiple identities.

The HICLAS method offers several advantages for the assessment of identity when compared to existing measures of sexual and racial/ethnic minority identity. Short Likert scales that tap specific aspects of single identities may be easier to administer and analyze, but these measures cannot readily model the important intersections and interrelationships that may occur between identities. HICLAS assesses dimensions of identity that can be found in existing scales (e.g., valence, prominence) but it adds the capacity to model the interrelationships between multiple identities. It also allows respondents to simultaneously characterize identities in both positive and negative terms; this ambivalence would be more difficult to capture in a semantic differential scale. HICLAS also allows researchers to infer, rather than directly inquire about, the content and interrelationships of identities. This is helpful when assessing identities that are subject to prejudice and discrimination, because social conventions may pressure a person to present his or her minority identity as more positive or more important than it may be experienced

in everyday life. We acknowledge that participants who complete our identity assessment may chose to describe any given identity in socially desirable terms. However, since most of the HICLAS-based measures used in this study (prominence, integration, interrelationships, negative self-complexity) are based on the implicit patterning of descriptions across identities, these measures may be less vulnerable to the influence of social desirability than explicit queries regarding a person's identities and their potential interrelationships. Moreover, respondents can feel conflicted about directly ranking prominent social identities. For example, almost half of a sample of gay and lesbian African American respondents refused to complete such a ranking task (Battle, Cohen, Warren, Fergerson, & Audam, 2002). The authors noted, "it is possible that respondents saw all of their identities and corresponding communities as important and necessary to their survival and therefore refused to prioritize any of them" (p. 21). Such ranking tasks do not typically allow respondents to state that social identities are integrated and therefore indistinguishable, as we have shown here regarding racial and sexual identity.

Identity theorists and researchers have increasingly called for the development and use of methodologies that accommodate identity multiplicity and intersectionality (Deaux & Stewart, 2001; Stewart & McDermott, 2004; Stryker & Burke, 2000). Recognition of identity multiplicity and intersectionality is particularly critical for research with groups that experience multiple forms of discrimination and oppression along the lines of sexuality, race, and gender. These factors may importantly mediate relationships between minority stress and mental health outcomes in these groups (Meyer, 2003; Thoits, 1999). We believe that HICLAS represents a promising enhancement to the assessment of identity among multiply-marginalized populations.

Notes

1. The methods employed in this study produce a data matrix [M], which represents an [i × a] identity attribute matrix where "i" is the number of identities and "a" is the number of attributes. HICLAS subsequently decomposes the M matrix into both an [i × r] binary matrix [S] and an [a × r] binary matrix [P] such that "M = SP", with "r" being the rank of the solution. In many cases, more than one such decomposition exists, but it can be shown that a set-theoretical one always exists, and it is the latter that is selected by HICLAS (DeBoeck & Rosenberg, 1988; Rosenberg & Gara, 1985; Van Mechelen et al., 1995). In general, a minimization equation does not exist to obtain the best decomposition of M in any given rank r, so an estimate of S and P is calculated using an alternating least squares approach. Estimates of S and P are calculated for ranks 1, 2, 3 and so on, as is a measure of the goodness of fit of these decompositions of M in relation to the actual data. Goodness of fit is a monotonic function (never decreasing) of rank. Significance levels are not calculated in the HICLAS analysis of any given participant's data since the observations in his or her matrix are not independent of one another. In the present paper, any significance levels reported are based on between-subjects analyses of HICLAS based indices.

2. To determine the valence of the 70 attributes used in the identity assessment, we conducted a pretest survey of twelve project staff members (a group that was diverse in gender, race/ethnicity, and sexual orientation). These individuals rated the character of each attribute as negative (0), neutral (1), or positive (2). Based on this survey, we assigned attributes as negative, positive, or neutral. Attributes were judged to be negative if their mean ratings were between 0.0 to 0.666, neutral if their mean ratings were between 0.667 and 1.333, and positive if their mean ratings were between 1.334 and 2.0. Overall, 36 attributes were judged as negative (e.g., nervous, selfish,

dishonest), 30 as positive (e.g., joyful, intelligent, friendly), and only 4 as neutral (e.g., introverted, reserved, shy). If the results of HICLAS indicated that a particular target identity was dropped from the participant's identity model (because the participant ascribed no or very few attributes to that identity), then target identity valence could not be directly calculated. In cases where this occurred, we replaced this missing data by assigning the sample's mean valence for that target identity.

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