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Genetic counselors' implicit racial attitudes and their relationship to communication

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Abstract

Objective—Implicit racial attitudes are thought to shape interpersonal interactions and may contribute to health care disparities. This study explored the relationship between genetic counselors' implicit racial attitudes and their communication during simulated genetic counseling sessions.

Methods—A nationally representative sample of genetic counselors completed a web-based survey that included the Race Implicit Association Test (IAT). A subset of these counselors (n=67) had participated in an earlier study in which they were video recorded counseling Black, Hispanic and non-Hispanic White simulated clients (SC) about their prenatal or cancer risks. The counselors' IAT scores were related to their session communication through robust regression modeling.

Results—Genetic counselors showed a moderate to strong pro-White bias on the Race IAT (M=0.41, SD=0.35). Counselors with stronger pro-White bias were rated as displaying lower levels of positive affect (p<.05) and tended to use less emotionally responsive communication (p<.10) when counseling minority SCs. When counseling White SCs, pro-White bias was associated with lower levels of verbal dominance during sessions (p<.10). Stronger pro-White bias was also associated with more positive ratings of counselors' nonverbal effectiveness by White SCs.

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Conclusions—Implicit racial bias is associated with negative markers of communication in minority client sessions and may contribute to racial disparities in processes of care related to genetic services.

Keywords

Implicit attitudes; Race/ethnicity; Genetic counseling; RIAS; Patient-provider communication

1. Introduction

The Institute of Medicine's report, *Unequal Treatment*, established that racial and ethnic disparities in care quality are widespread and exist across conditions and in regard to screening, diagnosis and treatment (Smedley et al, 2003). Furthermore, the report suggests that 'strong, but circumstantial' evidence exists for the role of the health care provider's unconscious (implicit) attitudes and biases about race and ethnicity in contributing to health care disparities.

Contemporary work defines implicit attitudes as "introspectively unidentified (or inaccurately identified) traces of past experience that mediate favorable or unfavorable feeling, thought or action toward social objects" (Greenwald and Banaji, 1995). These attitudes are thought to shape interpersonal interactions and may result in unintentional discriminatory actions, particularly in cognitively demanding situations such as health care interactions (Dovidio et al, 2008). Research suggests that implicit attitudes are malleable in the face of appropriate strategies and interventions and therefore have state-like characteristics in addition to trait-like characteristics (in that bias may be fairly stable in the absence of intervention) (Blair, 2002). Despite interest in the role of implicit attitudes in health care relationships, there have been relatively few studies in this area.

One such study directly investigated the association between medical visit communication and physicians' implicit racial attitudes as measured by a general race and a compliance race Implicit Association Test (IAT) (Cooper et al, 2012). The researchers found that physicians who demonstrated a stronger general race or compliance-related pro-White bias were more verbally dominant and less patient-centered when with black patients and that Black patients were judged by blind raters as sounding less affectively positive in these visits. When with White patients, physicians with a pro-White bias were more patient-centered and more affectively positive. Interestingly, both Black and White patients rated physicians with strong pro-White bias more poorly than others on dimensions of interpersonal care. This finding was consistent with that of Penner and colleagues who reported that physicians' pro-White implicit bias was associated with lower ratings of physician warmth and friendliness by Black patients (Penner et al, 2010).

As in other health care contexts, racial disparities have also been documented in awareness of, access to and use of genetic services, including genetic counseling (Sheppard et al, 2013; Mai et al, 2014; Pagán et al, 2009; Armstrong et al, 2002; Armstrong et al, 2005; Hughes et al, 1997). The present study was designed to explore the possible role that implicit racial attitudes of genetic counselors might have in session communication with clients of diverse race and ethnicity; in particular, a focus was placed on aspects of communication that have

been associated with patient-centered communication styles (measures of verbal dominance, socioemotional and psychosocial communication characteristics, and biomedical information-giving) (Cooper et al, 2003). It was hypothesized that: (1) genetic counselors with a greater pro-White bias will be more verbally dominant, use less partnership-building and rapport-building communication, provide less psychosocial information, and receive lower global ratings of positive affect when counseling minority clients compared with White clients, (2) genetic counselors with a greater pro-White bias will receive more negative ratings of communication and satisfaction from minority clients compared with White clients, and, (3) genetic counselors with a greater pro-White bias will report being less effective following counseling sessions with minority compared with White clients.

2. Methods

2.1 Study design and population

The study combined a sub-set of primary cross-sectional data from an internet-based survey with secondary data obtained from a previous study of genetic counseling communication entitled, “The Genetic Counseling Video Project” (GCVP) (Roter et al, 2006). Genetic counselors who had graduated from an accredited training program were eligible for participation in both the current study and the previous GCVP study. Counselors for the primary data collection portion of the study were recruited through the National Society of Genetic Counselors’ (NSGC) email listserv and by personal emails to those genetic counselors that had participated in the GCVP study and who had agreed to be re-contacted.

In 2010, both newly recruited genetic counselors and genetic counselors from the GCVP completed a survey on a secure website provided by Project Implicit®. The survey instrument consisted of a questionnaire that included closed-ended questions followed by a Race Implicit Association Test (IAT). The questionnaire collected information related to genetic counselor demographics, previous experience taking IATs, exposure to diverse populations and self-rated performance in communicating with minority clients in practice (data not shown). The current analyses focused only on those participants who both completed the new online survey with the Race IAT and participated in the GCVP.

GCVP Study

The GCVP study was originally conducted to gain insight into routine communication processes associated with the delivery of prenatal and cancer genetic counseling within the context of simulated client sessions. The 177 counselors who participated in the study were broadly representative of NSGC membership (Roter et al, 2006), and video recordings of 152 of these sessions (96 prenatal and 81 cancer genetic counselors) were of sufficient quality for use in the initial study. The counseling sessions were videotaped at the annual NSGC meetings in 2003 and 2004.

Allowing for individual preference, counselors chose to conduct either a prenatal or cancer session and were then randomly assigned to one of six female simulated clients (SCs), accompanied or not by a male simulated spouse of the same race/ethnicity. The SCs were Black, non-Hispanic White or Hispanic, and all were cross-trained to portray two cases: (1)

a woman seeking pre-amniocentesis counseling based on advanced maternal age (with or without a spouse present) and (2) a woman with a family history of breast and ovarian cancer seeking information about BRCA1/2 genetic testing (with or without a spouse present). The Hispanic SCs spoke in accented English. Following the videotaped sessions, both the counselors and the simulated clients completed post-session questionnaires with items rating the communication experience.

The current study and the GCVP study were both reviewed and approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board (IRB). A waiver of signed consent was granted by the IRB allowing participants to indicate that they viewed an informed consent statement and agreed to the study procedures prior to entering the 2010 online survey. See Figure 1 in the Appendix for a study flow diagram.

Study Variables

Measure of implicit racial attitude: The independent variable of interest for this study is the genetic counselor's implicit racial attitude reflected in the Race IAT score measured in 2010. The IAT score reflects an indirect measure of implicit attitudes that has been used in diverse populations, including health care professionals (Green et al, 2007; Greenwald et al, 1998; Sabin et al, 2008). The instrument measures the association between a target concept (Black/White race) and an attribute (pleasant/unpleasant words) by considering the length of time it takes to associate the target and attribute (response time). The IAT score is calculated by computing the standardized difference in mean response time in sorting the targets to positive or negative attributes. The scores range from +2 to −2, with zero indicating no relative preference between White and Black race, and a positive score indicating an implicit preference for White race. The IAT categorizes the strength of the test-taker's implicit bias based on the following cutoff scores: No bias (<0.15); slight bias (0.15–0.35); moderate bias (0.35–0.65); strong bias (>0.65). The *slight, moderate*, and *strong* labels correspond to results meeting the conventional criteria for small, medium, and large effect sizes of Cohen's *d* (Greenwald et al, 2003).

Although the Race IAT has not been previously used in a population of genetic counselors, this measure has shown good internal consistency ($\alpha = 0.80$), reasonable but lower test-retest values ($r = 0.60$), and substantial evidence of construct and predictive validity in other populations (Perugini, 2005). In particular, the predictive validity of the IAT has been shown to significantly exceed the predictive validity of self-report measures on socially sensitive topics, such as racial attitudes (Greenwald et al, 2009), and appears to be less influenced by social desirability or self-presentation bias than measures of explicit attitudes (Brauer et al, 2000; Fazio and Olson, 2003). The Race IAT has been shown to be somewhat sensitive to both intervention and to contextual effects within an experimental design. While some degree of bias may be a stable characteristic, or trait, many have argued that implicit biases may also have a state-like component (Gshwendner et al, 2008; Blair, 2002). The discrepancy between high internal consistency values and moderate test-retest reliability further suggests that the IAT taps both trait and state-like characteristics (Schmukle and Egloff, 2004).

Genetic Counseling Communication: The counseling session videotapes derived from the GCVP in 2003/2004 were coded with the Roter Interaction Analysis System (RIAS), a widely used method for coding medical interaction in many contexts, including genetic counseling (Roter et al, 2006; Roter and Larson, 2002). Interaction is unitized into complete thoughts and each expression is assigned to mutually exclusive and exhaustive codes that can be combined to reflect categories of exchange. The current analysis uses the following communication categories: (1) verbal dominance (defined as the ratio of genetic counselor to client utterances); (2) partnership -building (part of the socioemotional and psychosocial communication characteristics, including statements asking for opinion, paraphrase and interpretation, checking for understanding, and cues of interest); (3) rapport-building (part of the socioemotional and psychosocial communication characteristics, including statements of concern, reassurance, legitimation, empathy, and self-disclosure); (4) psychosocial information-giving (also part of the psychosocial communication characteristics, including statements related to habits, self-care and prevention, social and work relationships, and feelings and emotions); and (5) biomedical information-giving (including statements related to medical history, condition and symptoms, testing, procedures, and therapeutic regimens).

The RIAS coders also rate the emotional tone of the dialogue on a 6-point scale (1 = low or none to 6 = high) on global dimensions of positive and negative affect.

Reliability of RIAS coding of the genetic counseling sessions reported in the GCVP study was high (average Pearson correlation across all code categories between random sets of coders > 0.90) (Roter et al, 2006).

Simulated Client Measures (from 2003/2004)—*Client rating of counselor affective demeanor* was based on a semantic differential scale including 15 pairs of statements representing opposite descriptors of counselor affective attributes (i.e. sensitive-insensitive, friendly-aloof, dominant-submissive) and was measured on a 10 cm line (Cronbach's alpha = 0.95), with lower scores indicating more positive ratings of affective demeanor.

Client rating of satisfaction with communication was measured on a 6-point Likert scale that included 14 items regarding informational, interpersonal, and collaborative aspects of communication (Cronbach's alpha = 0.96), with higher scores indicating greater satisfaction.

Client rating of nonverbal effectiveness was measured on a 6-point scale (not at all effective to very effective) for the following behaviors: eye contact, smiles, head nods, appropriateness of facial expressions, body lean, seating position, use of touch, responsiveness to non-verbal cues, and effective use of pauses and silence (Cronbach's alpha = 0.91).

Exploratory factor analysis with varimax rotation was performed with each of these scales, demonstrating that each loaded on its own factor.

Counselor Self-ratings (from 2003/2004)—*Counselor rating of satisfaction with communication* was derived from a larger number of items included in the post-session questionnaire. Results of an exploratory factor analysis with varimax rotation yielded a three factor solution including the following subscales: *interpersonal rapport* (8 items, Cronbach's

alpha = 0.83), *meeting the informational needs of the client (informativeness)* (3 items, Cronbach's alpha = 0.74), and *feeling that sufficient detail was received from the client (detail)* (3 items, Cronbach's alpha = 0.76) (Roter et al, 2006). The first two of these sub-scales were included as outcomes in the current analyses. For each subscale, higher scores indicated greater satisfaction (Roter et al, 2006).

Items from the genetic counselor and client post-session ratings are included in an appendix.

2.3 Statistical analyses

Data were analyzed using Stata (Version 10, StataCorp, College Station, Texas). Genetic counselors of all racial/ethnic backgrounds were analyzed together, as there were insufficient numbers of minority counselors for meaningful statistical analyses. All numerical variables, including questionnaire responses and IAT scores, were explored using descriptive statistics to characterize the sample of genetic counselors. Because of data outliers, robust regression models were used to explore the relationships between IAT scores, communication and other outcome variables. In these analyses, Race IAT score was the independent variable and communication and session ratings were the dependent variables. The following covariates were included in the analyses: scenario (prenatal/cancer) and years of practice. Given the computerized nature of the Race IAT, there were concerns about the effect of age on test scores. For this reason, the relationship between IAT scores and counselor age was explored but no relationship was found (data not shown). Because evidence suggests that taking the Race IAT more than once can reduce the level of bias observed, it is recommended that previous experience on the IAT be recorded and used as a covariate in any analyses (Greenwald et al, 2003). However, past IAT experience was not significantly related to IAT scores in the current study population, and this variable was not included in subsequent analyses. Finally, because prenatal and cancer pre-test genetic counseling scenarios have been shown to differ on key communication variables in this particular study population, all regression analyses controlled for scenario (Roter et al, 2006).

To investigate differences in these relationships by simulated client race/ethnicity while maximizing statistical power, visits were stratified into two groups: those performed with non-Hispanic White simulated clients and those performed with Black or Hispanic simulated clients. Given that non-Hispanic Whites are in a socially dominant position in the United States compared to both Blacks and Hispanics, the latter two groups were combined on the premise of social dominance theory, which posits that individuals may be biased against members of groups with relatively low social power. While the Black:White Race IAT specifically examines biases against Blacks relative to Whites, some interpretations suggest that results on this measure may be indicative of bias against members of less powerful groups or perhaps against members of social "out-groups" (Greenwald et al, 2009). Furthermore, health care providers have shown similar levels of implicit bias toward Blacks and Hispanics on separate Race IATs measuring implicit bias against Blacks and against Hispanics compared with Whites (Blair et al, 2010; Blair et al, 2012).

Prior to starting data collection in 2010, power calculations were performed. Given the number of former participants in the Genetic Counseling Video Project that were expected to respond to the study request, it was estimated that there would be approximately 50

participants in the group counseling Black or Hispanic simulated clients. It was predicted that this would allow for 81% power to detect a medium effect (Cohen's f^2 of 0.17) of implicit attitudes on a single aspect of communication. This would mean that the Race IAT would explain 13% of the variance in the outcome, with other covariates in the model explaining 10% of the variance in the outcome, setting alpha to a conventional 0.05. To increase the chance of finding possible associations, statistical significance was noted at the $p < 0.10$ level, given the exploratory nature of this research.

3. Results

3.1 Recruitment and sample characteristics

Of the 160 counselors who had participated in the GCVP study and had consented to be contacted for a subsequent study, 73 completed the Race IAT in 2010, and 70 of those had interpretable IAT scores. Of these, 67 (41.9% overall) participants had complete post-session questionnaire data from 2003/2004 (after imputing missing data from individual scales that were missing no more than two data points) and 60 (37.5% overall) participants had complete communication variables based on analyses of the videotapes of the genetic counseling visits from 2003/2004. Counselors who completed the IAT did not differ in demographic characteristics from the larger sample of 160 GCVP counselors, but there was a marginally significant trend in which the genetic counselors in the current sub-sample included slightly more psychosocial information-giving within their visits than the overall GCVP sample (9% of talk in the current sample compared to 8% of talk in the full sample; p=.053). In addition, participants in the current study sub-sample of 60 were not statistically significantly different from the sample of 67 except that participants in the smaller sub-sample were significantly more likely to have more years of practice experience and were less likely to hold NSGC membership.

As reflected in Table 1, counselors were predominantly female (94.0%), White (92.5%) and not of Hispanic/Latino ethnicity (98.5%). Most counselors (79.1%) were between the ages of 31–50 and more than half had been practicing for more than 15 years, with none in practice for less than 5 years. The majority of counselors reported a primary practice focus of prenatal (42%) or cancer (31%). Participants reported coming from all six NSGC regions of practice.

3.2 Race IAT scores

Overall, the GCVP genetic counselors showed a moderate to strong preference on the Race IAT for Whites over Blacks (referred to hereafter as a pro-White bias) (*M:* 0.41; *SD:* 0.35). There was a wide range of scores (range: −0.51 to 1.28), with the majority (76%) holding some degree of pro-White bias. Based on conventions published by Greenwald et al, 23.9 % of participants held a strong pro-White bias, 25.4% held a moderate bias, 25.4% held a slight bias, and 23.9% held no bias (with about half of these,11.9%, holding a slight-moderate degree of pro-Black bias). Most participants (84%) had not taken the Race IAT before participation in this study. Non-GCVP genetic counselors completing the same online survey showed comparable scores on the Race IAT (*M:* 0.44; *SD:* 0.45; *range:* −1.54 to 1.41).

3.3 Session communication

Descriptive statistics for all RIAS-coded communication variables and client/counselor ratings can be found in Table 2. On the whole, the genetic counselors were verbally dominant, using almost five times as many statements as SCs. Most of their talk (45%) was devoted to biomedical information giving with only nine percent spent on psychosocial information giving. The SCs were moderately satisfied with the counseling sessions, as is evident by mean satisfaction scores in the middle of the scales. The counselors' self-ratings similarly fell in the middle of the scales. There were no statistically significant differences in communication characteristics based solely on the race/ethnicity of the simulated client, either in this sub-sample or in the larger sample (data not shown; Roter et al, 2006).

3.3.1 The relationship of Race IAT with verbal communication and global affect—Table 3 displays results from the robust linear regression models with each RIAS communication variable, including coders' ratings of counselors' global affect, as the dependent variables (in separate analyses). Counselors with a stronger pro-White bias tended to show lower levels of rapport-building talk ($p<.10$) and were rated by coders as displaying significantly lower levels of positive affect than other counselors in sessions with minority SCs. Counselors with a stronger pro-White bias were significantly less verbally dominant than other counselors when in sessions with White SCs. There were no significant relationships between counselors' Race IAT scores and their use of partnership-building or information giving.

Table 5 (in the Appendix) presents adjusted means of each of these communication outcomes by varying levels of pro-White bias, stratified by simulated client race, in order to demonstrate the magnitude of the effect.

3.3.2 The relationship of Race IAT with simulated client ratings of communication and counselor self-ratings of performance—Table 4 presents the results from robust regression analyses with each of the client and counselor ratings of session communication as the dependent variables. Greater pro-White implicit bias was significantly related to more positive ratings of the counselor communication by White SCs. The stronger the counselor's pro-White bias, the more positive the White SCs tended to be in their ratings of the counselor's nonverbal effectiveness ($p<.10$).

No statistically significant relationships were found between genetic counselors' IAT scores and any aspect of their own self-ratings of performance.

Table 6 (in the Appendix) presents adjusted means of each of these ratings outcomes by varying levels of pro-White bias, stratified by simulated client race, in order to demonstrate the magnitude of the effect.

4. Discussion and Conclusions

4.1 Discussion

The study results show moderate to strong pro-White implicit attitudes among genetic counselors, similar to findings from studies examining implicit attitudes in physicians and

other counseling professionals (Boysen et al, 2009; Green et al, 2007; Sabin et al, 2008; Sabin et al, 2009). Studies investigating physicians' implicit attitudes report mean IAT scores ranging from 0.18 in pediatricians (Sabin et al, 2008) to 0.39 among a sub-sample of 2,353 self-reported physicians (Sabin et al, 2009). Sabin and colleagues (2009) also found moderate pro-White (M= 0.35) implicit attitudes among a larger, unselected volunteer sample of 344,469 individuals who accessed the *Project Implicit*® website. With the exception of the pediatricians' scores, scores in the current study were not significantly different from means reported in other populations.

The finding from the current study is not unexpected, given that the majority of the sample was White and nearly 80% of White Americans show an in-group preference on the Race IAT (Baron and Banaji, 2006). More noteworthy than documenting a pro-White bias among genetic counselors is that the counselors' IAT scores were differentially related to their manner of counseling in sessions with White and minority simulated clients. These results are important and provide new insight into the relationship between implicit attitudes and communication processes during genetic counseling interactions.

Counselors with a greater pro-White bias tended to engage in less emotionally responsive communication (rapport-building) and showed less positive global affect in sessions involving minority clients. In contrast to the patterns seen with the minority SCs, stronger pro-White bias tended to be associated with lower verbal dominance in sessions with White SCs. Verbal dominance has been considered to be an important indicator of patient-centeredness (Ishikawa, 2013). Lower verbal dominance has been linked empirically to greater patient-centered care in primary care contexts, which in turn, is associated with better health outcomes (Roter et al, 1997; Stewart, 1995). Moreover, lower levels of verbal dominance were associated with higher ratings of satisfaction with communication among simulated clients within the genetic counseling context (Roter et al, 2006), and verbal dominance has been used as a key indicator of communication in other studies in the pre-test genetic counseling context (Pieterse et al, 2005; Butow et al, 2004). Within the Genetic Counseling Video Project itself, mean verbal dominance scores varied from 5.9 in the most information-heavy models of communication to 3.6 in the most emotion-focused models of communication (Roter et al, 2006). Notably, lower levels of verbal dominance were associated with higher ratings of satisfaction with communication among simulated clients (Roter et al, 2006).

Findings from our study are consistent with those of Cooper and colleagues (2012) in primary care reporting that physician pro-White bias was associated with negative communication markers when with Black patients. The researchers also reported a pattern of negative evaluations of the doctor by Black patients but mixed positive and negative evaluations by White patients. In a somewhat similar vein, in the current study, the non-Hispanic White SCs rated the nonverbal effectiveness of the stronger pro-White counselors more positively than other counselors, although there was no association evident in the ratings of the minority SCs.

No relationship between counselors' implicit attitudes and their self-ratings of session communication was established. Given that implicit attitudes exist outside an individual's

full awareness, it is not entirely surprising that counselors' attitudes were not related to their own ratings of communication (Greenwald and Banaji, 1995). While no associations were found among counselor self-ratings of communication, this discovery is significant as it suggests counselors may be unaware of communication differences in sessions with minority clients. This finding supports the need to increase awareness of implicit racial attitudes and their potential to impact communication among this group of health care professionals.

These findings have implications for the training of genetic counselors and other genetics professionals. Based on pilot studies in other areas, interventions targeted at increasing genetic counselors' awareness and subsequently, minimizing bias, may improve racially discordant counseling sessions and reduce the disparities that exist in the delivery of genetics services (Steed, 2014). Increasing awareness of implicit racial attitudes involves more than making an individual aware of the attitude itself, referred to as content awareness. There are two additional levels of awareness that are of equal importance for conscious consideration: (1) source awareness – the causal origin of the attitude, and (2) impact awareness - the influence the attitude may have on psychological processes, such as communication and behavior (Gawronski et al, 2006). As suggested by Burgess and colleagues (2007), techniques such as the process of taking the Race IAT can increase content awareness and enhance internal motivation to reduce bias. It is also possible that implicit attitudes may be overcome through training focused on increasing mindfulness, nonverbal sensitivity, or patient-centeredness, areas that all address increasing attentiveness to personhood. Evidence also exists that prejudice-reduction interventions based on fostering cooperation across racial groups to reach a common goal can be effective (Blincoe et al, 2009).

Lastly, efforts to increase the racial and ethnic diversity across the genetic counseling profession cannot be overlooked, given that race-concordance in healthcare interactions has been associated with more positive communication markers, including higher patient ratings of satisfaction, more positive judgments of physicians' participatory decision-making, and more patient positive affect (Cooper et al, 2003; Cooper et al, 1999; Saha et al, 1999). As continuing diversification of the genetic counseling profession is likely to occur slowly and evidence from other studies shows that pro-White bias may also be demonstrated by some members of minority racial groups, additional interventions to reduce the effects of bias may continue to be necessary. Developing strong relationships through patient-centered communication may be able to transcend issues of race and ethnicity.

Limitations—Limitations of the current study include its reliance on a self-selected sample of genetic counselors that had previously participated in the GCVP study. These counselors may be more interested in communication and/or disparities and racial bias than other counselors. If this is the case, then our results may underestimate the relationship between implicit bias and communication. However, the study population's demographic and geographic characteristics are generally representative of the national population of genetic counselors.

The simulated nature of the counseling sessions is both a strength and limitation. In a previous analysis of these data, the SCs were found to perform consistently over the study period (Erby et al, 2011), counselors reported that the sessions resembled their actual

practice to a large degree, and the SCs appeared similar to actual clients with whom they work (Roter, 2006). In addition, the strength of this method was the ability to vary client race while keeping other aspects of client presentation the same. The six to seven year time gap that exists between the original GCVP communication data collection and the current study presents another limitation, given counselors' implicit attitudes may change over time (Gshwendner et al, 2008; Blair, 2002). Moreover, while providers, including genetic counselors, may each have their own specific communication "style" that could be relatively stable over time (Ellington et al, 2005), communication patterns have also been shown to be subject to change through additional training and intervention (Roter et al, 2012; Cooper et al, 2011; Levinson et al, 1993). Given possible temporal shifts in both communication and implicit bias over time, any links between implicit bias and communication that may have existed at the time of the simulated communication tasks may have been reduced by the passage of time and concomitant shifts in implicit bias between data collection points. Therefore, this limitation would have diminished rather than increased the ability to establish a relationship between attitudes and communication behaviors.

Due to the relatively small sample size, clients were grouped into two categories (White versus minority) for analysis, which may have obscured differences in communication between Black and Hispanic clients. Furthermore, the measure used to account for bias, the Race IAT, is limited by its ability to measure implicit attitudes toward one racial category in comparison to another. Therefore, a pro-White bias relative to Blacks may not influence behavior toward racial/ethnic groups outside the Black community. Nevertheless, research suggests that implicit attitudes are, in part, the result of social dominance sensitivity (Dunham et al, 2008). Given that non-Hispanic Whites are in a socially dominant position in the United States compared to both Blacks and Hispanics, it is reasonable to hypothesize that Whites showing a pro-White bias on the Race IAT would generalize to attitudes representing Hispanic clients.

Given that only 43 (rather than the expected 50) GCVP participants were in the group counseling minority clients, the alpha level was set at 0.10 for this exploratory, hypothesis-generating set of analyses. A post-hoc analysis demonstrated that, under these conditions, there was 80% power to detect a medium effect of Race IAT on a communication variable (Cohen's f^2 of 0.15; Race IAT explaining 12% of the variance in the outcome). Because of this limitation in power, it was not possible to perform analyses stratified by the type of genetic counseling scenario (prenatal vs. cancer).

Given that the majority of participating genetic counselors were White, it was not possible to disentangle the role of genetic counselor race from the role of race concordance/discordance within this study (all minority genetic counselors were assigned to race-discordant simulated clients).

It is also noted that the clients in the current study were actors who were exposed to many different genetic counselors in a relatively short period of time. It is possible that their ratings of individual sessions are not as sensitive as ratings would be from actual clients.

The IAT cutoff scores may be interpreted as arbitrary, with more research needed to link the diagnostic thresholds for the IAT to observable behavior (Blanton & Jaccard, 2006). Nevertheless, the IAT has been shown to be a reliable and valid measure of implicit attitudes that could predict discriminatory behaviors in some individuals.

4.2 Conclusion

Acknowledging these limitations, the current findings provide important initial insight into the role of implicit attitudes in communication within the genetics context. The results suggest that pro-White bias is related to more negative communication, both verbal and nonverbal, in interactions with minority clients, which has the potential to affect client outcomes such as genetic test decision-making. Counselors do not appear to be aware of this effect, based on self-ratings of the counseling sessions. Given the malleability of implicit attitudes, interventions aimed at increasing awareness of such attitudes among genetic counselors may improve communication in racially discordant counseling sessions.

Future studies should examine the relationship between implicit attitudes and actual patient outcomes. In addition, such research should include Race IATs that examine preferences relative to other minority groups, as a better understanding of the impact of implicit racial attitudes in genetics service delivery across minority population groups is equally important.

Finally, considering that counseling sessions are frequently conducted during times of heightened emotional distress and uncertainty, and clients are especially vulnerable and dependent on their counselors for help in making life-altering decisions, recognition and address of implicit bias must be considered both a professional and an ethical obligation.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Genetic Counselor Characteristics

Counselor Characteristics	n (%) (n=67)
Race	
White	62 (92.5)
Asian	4 (6.0)
Multiracial *	1 (1.5)
Ethnicity	
Hispanic/Latino	1 (1.5)
Gender	
Female	63 (94.0)
Male	4 (6.0)
Practicing Years	
5–10	9 (13.4)
10–15	21 (31.3)
15–20	12 (17.9)
20–25	16 (23.9)
25+	9 (13.4)
NSGC Member	
Yes	63 (94.0)
No	4 (6.0)
NSGC Region **	
Region 1 CT,MA,ME,NH,RI,VT,CN Maritime Provinces	3 (4.5)
Region 2 DC,DE,MD,NJ,NY,PA,VA,WV,PR,VI,Quebec	9 (13.4)
Region 3 AL,FL,GA,KY,LA,MS,NC,SC,TN	17 (25.4)
Region 4 AR,IA,IL,IN,KS,MI,MN,MO,ND,NE,OH,OK,SD, WI,Ontario	12 (17.9)
Region 5 AZ,CO,MT,NM,TX,UT,WY,Alberta,Manitoba, Sask.	9 (13.4)
Region 6 AK,CA,HI,ID,NV,OR,WA,British Columbia	17 (25.4)
Age	
31–35	12 (17.9)
36–40	14 (20.9)
41–45	14 (20.9)
46–50	13 (19.4)
51+	13 (19.4)
Area of Practice (Over Career)	
Prenatal	42%
Pediatrics	15%
Cancer	31%
Adult	6%
Other	5%

* Defines individuals who selected more than one racial category

** Refers to the NSGC's categorization of geographic regions in the United States and Canada

Table 2

Descriptive Statistics of Communication Variables from GCVP Study

Variable	N	Mean	Standard Deviation	Range	Total Possible Score
Verbal Communication*					
verbal dominance	60	4.96	2.24	1.92 – 16.56	–
partnership-building	60	0.17	0.06	0.07 – 0.32	–
rapport-building	60	0.06	0.03	0.01 – 0.18	–
psychosocial information giving	60	0.09	0.04	0.03 – 0.21	–
biomedical information giving	60	0.45	0.10	0.20 – 0.66	–
RIAS Coder Global Affect Ratings					
positive global affect	60	19.28	2.47	15.0 – 25.0	30.0
negative global affect	60	9.57	0.81	8.0 – 12.0	24.0
Client Ratings					
counselor affect**	67	3.19	1.70	0.42 – 7.47	10.0
satisfaction w/comm.	67	3.62	1.27	1.14 – 5.93	6.0
nonverbal behaviors	67	3.90	1.02	1.6 – 5.6	6.0
Genetic Counselor Ratings					
rapport	67	2.43	0.60	1.13 – 3.75	5.0
informativeness	67	1.99	0.65	1.0 – 4.0	5.0

*verbal dominance (defined as the ratio of genetic counselor to client utterances); partnership-building (including statements asking for opinion, paraphrase and interpretation, checking for understanding, and cues of interest); rapport-building (including statements of concern, reassurance, legitimation, empathy, and self-disclosure); psychosocial information-giving (including statements related to habits, self-care and prevention, social and work relationships, and feelings and emotions); biomedical information-giving (including statements related to medical history, condition and symptoms, testing, procedures, and therapeutic regimens).

**Higher scores represent more positive ratings for all variables except client rating of counselor affect which was reversed scored. Higher scores indicate more negative ratings of affect.

Table 3

Results of a series of multiple regressions relating implicit racial bias (higher scores on the Race IAT) to individual communication outcomes, stratified by simulated client race

Dependent Variable	***Standardized Coefficients*** [a]		
Verbal Communication	**All clients (n=60)**	**White clients (n=17)**	**Minority clients (n=43)**
verbal dominance	−0.01	**−0.39** [+]	0.05
partnership-building	0.05	0.27	−0.06
rapport-building	**−0.19** [+]	−0.10	**−0.25** [+]
psychosocial information giving	−0.15	−0.18	−0.15
biomedical information giving	0.12	−0.01	0.20
RIAS Coder Global Affect Ratings			
positive global affect	−0.21	0.26	**−0.40** [*]
negative global affect	−0.11	−0.23	−0.08

[a] Covariates include scenario (prenatal/cancer) and years of practice

[+] $p \leq 0.10$

[*] $p \leq 0.05$

Table 4

Results of a series of multiple regressions relating implicit racial bias (higher scores on the Race IAT) to genetic counselor and client ratings of communication, stratified by simulated client race

Dependent Variable	***Standardized Coefficients*** [a]		
Client Ratings	**All clients (n=67)**	**White clients (n=17)**	**Minority clients** [b] **(n=50)**
counselor affect [c]	−0.02	−0.36	0.14
satisfaction with communication	−0.04	0.28	−0.14
nonverbal behaviors	0.08	**0.33** [+]	−0.03
Genetic Counselor Ratings			
rapport	−0.05	−0.12	−0.06
informativeness	−0.14	0.02	−0.24

[a] Covariates include scenario (prenatal/cancer) and years of practice

[b] n=29 GCs assigned to Black SCs; n=21 GCs assigned to Hispanic SCs

[c] Higher scores represent more positive ratings for all variables except client rating of counselor affect and liking of client, which were reversed scored. Higher scores indicate more negative ratings of affect and indicate less agreement to liking of client, respectively.

[+] $p \leq 0.10$

[*] $p \leq 0.05$