

## **A Welcome from the Editor-In-Chief**

The Georgetown Undergraduate Journal of Health Sciences (GUJHS) is proud to announce the January issue. After a three year hiatus, we would like to welcome the public to view the scholarly work of brilliant, undergraduate students doing research in the health sciences. Their work ranges from psychology to health systems, showing the range of research going on at Georgetown and the overall broad nature of the health sciences. Welcome and enjoy the issue! We hope to continue displaying the variety of health science research done at Georgetown University and to champion undergraduate research in general.

The GUJHS is always open to inquiries about submitting or working on our staff. If you are interested in submitting research or becoming an on-staff writer, please e-mail [thegujs@gmail.com](mailto:thegujs@gmail.com).

All the best,

Rohit K. Mukherjee  
Editor-in-Chief, GUJHS

# Childhood Sexual Abuse and Determinants of Risky Sexual Behavior in Men Who Have Sex with Men

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## Abstract

The persistent prevalence of HIV infection among men who have sex with men (MSM) within the United States warrants examination of the social-sexual factors that contribute to the spread of HIV within this population. We reviewed 15 studies correlating disproportionately high childhood sexual abuse (CSA) and victimization during sexual development with adult sexual risk behavior and HIV amongst MSM. CSA prevalence amongst MSM ranged from 14.9%-47% and was significantly associated with alcohol use, risky sexual behavior, partner violence, and depression. Additionally, cultural marginalization and victimization of MSM during childhood and adolescent sexual development directly contributed to negative health outcomes associated with HIV infection amongst MSM. We conclude that CSA and other forms of childhood victimization contribute to negative adult health outcomes and sexual behavior patterns that augment the spread of HIV amongst MSM. Further research is necessary to understand how health interventions can be tailored to address the affects of CSA and victimization on the HIV epidemic in the United States.

## Background

The Centers for Disease Control and Prevention (CDC) reports that gay, bisexual, and other men who have sex with men (MSM) represent only 4% of the United States male population while accounting for more than half (53%) of all new HIV infections and almost half (48%) of people living with HIV in the US (CDC, 2010). There are many social, economic, and demographic factors that contribute to the spread of HIV in the United States, but HIV clearly remains a major public health concern largely due to male-male sexual behavior. Indeed, the high and persistent prevalence of HIV infection amongst MSM begs the question: why does HIV persist amongst this population? Here we examine the social-sexual roots of the HIV/AIDS epidemic in American MSM to understand why, 30 years after the discovery of HIV, MSM continue to be infected with HIV at such a disproportionate rate.

At the core of this American health disparity is the failure of current HIV/AIDS prevention measures. The cause of HIV has been understood for decades, so why does the disease continue to spread? The two most common HIV/AIDS prevention strategies – condom use and sexual abstinence – both depend on an

individual's appraisal of the risk of HIV infection and the subsequent judgment as to whether that risk should influence sexual behavior. Unfortunately, neither of these prevention strategies has been reliable: individuals still choose engage in risky sexual behavior and the prevalence of HIV infections continues to increase (CDC, 2010). Clearly, the danger of HIV infection is not the only factor that plays a role in the decision to have unsafe sex.

In their book, *Global AIDS: Myths and Facts*, Irwin et al. (2003) propose that certain social and economic factors, what they call 'structural forces', dictate the establishment of sexual behavior patterns. These sexual 'habits' in turn override a person's individual agency – an individual's willingness and ability to change their behavior in spite of the perceived risk for HIV infection. They suggest that these factors, structural forces and individual agency, are distinct components of the sexual decision-making process, besides the threat of infection, that control an individual's capacity to practice preventative behavioral change in the threat of HIV infection.

Indeed, current epidemiological evidence suggests that adult sexual behavior is both determined and

predicted by experiences during childhood and adolescent sexual development (Purcell, 2008). This review summarizes data that correlate several particular structural forces – the marginalization and victimization of gender-nonconforming behavior in the US during early childhood and adolescent sexual development – and the resultant restriction of individual agency in MSM. According to this body of evidence, childhood and adolescent victimization negatively affects childhood and adolescent sexual development for many MSM, debasing individual agency regarding risky sexual behavior as an adult.

Childhood and adolescent sexual development is admittedly a broad, complex process incorporating a diverse set of experiences that determine a spectrum of adult sexual behaviors. Particularly, childhood sexual abuse (CSA) has been shown to dictate the unsafe sexual behavior patterns that put MSM at a disproportionate risk for HIV infection. And while CSA is only one of many childhood and adolescent experiences that determine adult sexual behavior, it can nonetheless serve as a measure of traumatic events that precipitate rapid sexual development and awareness (Purcell, 2008). Three characteristics of CSA make it an important indicator for the broader connection between childhood and adolescent victimization and adult sexual risk behavior amongst MSM.

First, similar to that of HIV, the prevalence of CSA is disproportionately high amongst MSM. Table 1 lists data from 12 studies reporting CSA prevalence ranging from 14.9%-47% (O’Leary, 2003 & Wilson, 2008). Indeed, in another review, Purcell et al. (2008) reported that CSA prevalence amongst MSM to be twice as high as amongst male heterosexual counterparts. CSA prevalence amongst MSM is comparable to that of CSA within the overall female population (Purcell, 2008). CSA stands out as a shared traumatic childhood experience amongst MSM, making it the subject of many attempts to understand the connection, if any, between it and adult sexual behaviors in MSM.

Second, CSA contributes directly to both immediate and delayed health outcomes related to sexual identity. Males are born into a society where heterosexual social expectations dictate behavior from an early age. Expressed or suspected same-gender sexual orientation conflicts with these cultural norms, and subsequently becomes the focus of both external and internalized victimization (Wolitski, 2008). Indeed, CSA has direct negative physical outcomes – bullying and physical

abuse - but CSA also contributes to an internal conflict between a male’s personal identity and the social expectations of men. Purcell et al. (2008) suggest that male-male sexual abuse contradicts cultural norms that cast males as aggressive abusers and women as helpless victims. CSA therefore dismantles a male victim’s sense self-reliance and self-protection constructed from the social expectations associated with manhood. According to Purcell et al. (2008) a male victim of CSA, regardless of sexual orientation, is cast in a culturally feminine role that directly conflicts with male cultural norms. Consequently, CSA and childhood victimization is suspected to contribute to a negative, conflicted self-perception that influences future sexual development and decision-making.

Third, CSA is a relatively measurable phenomenon. Legal and societal definitions of CSA are codified in law and public awareness such that the occurrence and severity of CSA can be quantified, whereas other measures that assess forms of childhood victimization are less defined making them harder to measure. Additionally, epidemiological data and standards pertaining to CSA are much more established than other measures of childhood victimization. Thus, for the purposes of this review, CSA is the metric of choice for measuring childhood victimization. Nonetheless, every study included in this review utilizes a distinct definition of CSA, suggesting that CSA as a measure of victimization is nonetheless varied. We attempt to account for these differences by describing how the particulars of the definition of CSA affect correlations with adult sexual behavior. Recognizing the challenges associated with CSA as a measure, we also include additional work that utilizes new measures of victimization during childhood and adolescent sexual development. While we use CSA as a specific measure of victimization during childhood sexual development, we acknowledge that CSA must also be considered within the larger context of an individual’s sexual development to understand the impact such abuse will have on adult sexual life.

This review examines the current evidence that correlates childhood sexual abuse (CSA) and adult sexual risk behavior amongst MSM. We find no causal connection between CSA and sexual risk behavior and HIV seroconversion. Current research does establish that CSA is one of many structural forces that is correlated with and mediates a milieu of negative adult health outcomes related to HIV seroconversion in MSM – namely unsafe sex. Further, we discuss the

broader implications of these CSA data in the context of social and cultural marginalization of MSM and the impact of childhood victimization on the persistence of the HIV epidemic in American MSM.

## Methods

We present an appraisal of the current body of research that correlates CSA and sexual development with adult sexual risk behavior. We conducted a literature search using the PubMed article database of the National Library of Medicine. Search terms included but were not limited to: CSA, MSM, sexual risk behavior, HIV, childhood/adolescent development, and male socialization. Both primary studies and secondary reviews were identified upon an initial search. Subsequent searches used keywords from the initial search findings. We also examined the reference lists from identified studies to find additional publications that fit our research aims. Studies were subsequently vetted using the following inclusion criteria: date of publication, study type, and bias controls.

Only primary research studies published within the decade (2000–2010) were included, except Lenderking et al. (1997), Jinich et al. (1998), and Bartholow et al. (1994). These studies were included either due to the strength of their sampling or data (Lenderking, 1997 & Jinich, 1998), or because the results are a part of a limited set of studies that examine factors involved in early sexual development beyond CSA (Bartholow, 1994). Limiting our search by publication date ensured the most current science.

We initially sought longitudinal data that could be employed to establish cause-and-effect relationships between the study variables. Unfortunately, due to the extensive nature of the life-course data required to assess the direct association between *childhood* sexual development/abuse and *adult* sexual behavior, we found no longitudinal research in our search that covered the entire life-course of study participants. Consequently, we included cross-sectional studies for analysis even though these data depend heavily on self-reports of CSA and are subject to the associated biases.

Finally, recognizing that data from these cross-sectional studies depend on self-reports of CSA, we sought data sets that controlled for selection bias and recall bias. This could either be through the increasing sample size or by confirming self-reported experiences of abuse. Only one study, Wilson et al. (2008)

confirmed cases of CSA via police reports. The limited pool of potential eligible studies based on date of publication meant that we chose to include studies that did not confirm CSA like Wilson et al. (2008). The results of our search are the 15 studies described in Table 1.

## Results

We review fifteen studies examining the potential causal pathways between CSA and negative adult health outcomes that fit the inclusion criteria (Table 1). These studies assess the relationships between a range of childhood sexual development experiences and adult sexual behaviors. These include the relationship between CSA and many adult sexual behaviors (12 studies), psychosocial health indicators (2), harassment and discrimination (1), and age of gay-related development (1). All 15 studies rely on retrospective, cross-sectional data (7 of 12 were nested in existing longitudinal cohorts). Two studies assessed sexual development milestones over time – sexual initiation, ‘coming out’, regular sex with men – but these studies still rely on retrospective data (Friedman, 2009 & Bartholow, 1994). We identified one study (Mimiaga et al., 2009) that used a longitudinal study design to examine changes during participants’ adult lives, but childhood experiences were outside the study period disqualifying any direct connections between the CSA and adult behavior.

The use of retrospective data limits the formation of direct cause and effect relationships between CSA and risky sexual behavior as an adult. Consequently, we synthesize the many correlations described by these studies to provide better picture of how current epidemiological evidence correlates CSA and childhood victimization with adult sexual decision-making. Because the definition of CSA varied across studies, we first assess how differences in CSA definition affect any correlation between CSA and adult behavior. We subsequently examined the direct statistical correlation between CSA and adult sexual risk behavior. Further, we assessed mediating and moderating factors to better understand how CSA and childhood victimization impacts adult risky sexual behavior and HIV seroconversion. Finally, several studies attempt to utilize novel measures of childhood and adolescent victimization. We include a discussion of how these studies contribute to understanding the relationship between CSA and adult sexual behaviors that contribute to HIV seroconversion in MSM.

<u>STUDY</u>	<u>Population</u>	<u>Assesment method and type of data</u>	<u>Predictive Variable(s) - Definition of development related victimization</u>	<u>Dependent Variable</u>	<u>Prevalence of CSA</u>	<u>Significant Results</u>
<b>Friedman et al. (2008)</b>	MSM (18-40); N=1,383; Urban Men's Health Study (UMHS)	Telephone interviews; retrospective/self-reported	Age of gay-related development (GRD)	Poor adult health outcomes: forced sex, sexual risk behavior, partner abuse, adult victimization, HIV serostatus	Did not measure directly	Adolescent Victimization and Adult Health Outcomes - 189% more likely to experience gay-related victimization if experienced gay-related harassment before the age of 17; parental physical abuse led to increased likelihood of depression, partner abuse (57%), gay-related victimization (47%), attempted suicide as adult (90%); Forced sex before age of 18 associated with greater odds of depression (103%), partner abuse (107%), engaging in unprotected receptive anal intercourse (45%), being HIV seropositive as adults (45%).
<b>Kalichman et al. (2004)</b>	MSM; N=60; attending a gay pride festival in Atlanta, GA	Self-administered survey at site of recruitment: gay-pride festival; retrospective/self-reported	CSA: at age 16 or younger forced or pressured to have sex by another man at least 5 years older	1) HIV status; 2) sexual risk behavior (unprotected anal intercourse); 3) treatment for STD; 4) payment for sex	15%	1. CSA endorsed more symptoms of borderline personality disorder; 2. CSA positively associated with greater risk of being HIV+; 3. CSA associated with having undergone treatment for substance abuse; 4. CSA associated with unprotected anal intercourse with two or more partners in previous 6 months
<b>Chuang et al. (2006)</b>	HIV+ men & women with history of alcohol problems; N=348 (79% men); HIV-Alcohol Longitudinal Cohort	In-person interview; retrospective/self-reported	1. Violence history; 2. alcohol and drug consumption (past 30 days); 3. depressive symptoms (past week, Depression Scale); 4. Sexual risk behaviors (past 6 months, Risk Assessment Battery); 5. Physical violence; 6. Sexual violence	Condom use (inconsistent or consistent): not using condoms at all sexual encounters in the past 6 months vs. using condoms at all sexual encounters	26% of whole cohort, 39% in women, 22% in men	1. MSM and heterosexual men equally likely to report lifetime violence (82% vs. 77%); 2. MSM more likely to experienced sexual violence (57% vs. 24%) and CSA than heterosexual men (34% vs. 18%); 3. CSA positively associated with inconsistent condom use (OR 2.25).
<b>O'Leary et al. (2003)</b>	HIV+ MSM, N=456; Seropositive Urban Men's Study (SUMS)	In-person interview, paper and pencil questionnaire; retrospective/self-reported	CSA: pressured, forced, or intimidated into doing something sexual; under age of 16;	HIV transmission risk behavior (90 days prior): UAS* with any partner of HIV- or unknown status	14.90%	Addition of mediators to model associating CSA and receptive anal sex reduced beta from 0.72 to 0.57. A beta of 0.57 was statistically significant.
<b>Wilson et al. (2008)</b>	Substantiated cases of childhood abuse and neglect; matched; N=1575 (total start), N=603 with HIV test	Not Given	CSA/neglect confirmed by official records processed in 1967-1971	HIV status - self reports and tested ELISA and Western blot	47%	1. CSA/Childhood neglect positively associated with prostitution (abuse/neglect OR 2.35, neglect OR 2.45, physical abuse OR 2.45, sexual abuse 2.38); 2. no significant CSA-HIV+ association; 3. no sexual behaviors associated with being HIV positive; 3. Constructed structural equation models linking CSA to early sexual contact to prostitution to HIV+, each connection is significant except any the path to HIV+ status not significant; 4. CSA/Childhood neglect positively associated with early sexual contact (abuse/neglect 1.75, neglect OR 1.76, physical abuse OR 2.06, sexual abuse 2.17).

<b>Raymond et al. (2009)</b>	Men who identified as gay, bisexual, or had male partner in last 12 months; N=521; National HIV Behavior Surveillance (NHBS)	Time location sampling, on-site in-person interview; retrospective/self-reported	Harassment, discrimination, connectedness to community, comfort with sexuality at ages 12-14, 15-18, 19-24, and 25 and up	HIV status - tested via blood sample, ELISA and Western blot	Did not measure	1. HIV- vs HIV+ reported significantly lower discrimination (12-18 yrs) (WRS 6703.5), lower discomfort with sexuality (WRS 6886.5); 2. Black men significantly more likely than white men to be HIV+ rate; 3. Black HIV+ experience less: discrimination (WRS 200), harassment (WRS 205), discomfort with sexuality (WRS 204.5).
<b>Lenderking et al. (1997)</b>	MSM; N=327	Interview during cohort study visit; retrospective/self-reported	CSA: sexual experience with person at least 5, or 10, years older for children >13 and 13-16 respectively	1. HIV status; 2. Risky sexual behavior; 3. Behavioral intentions (behavior used in order to have sex); 4. Substance abuse	35.50%	1. CSA positively associated with unprotected receptive anal intercourse (OR 1.53), more than 50 lifetime partners (OR 1.81), lying to have sex (2.08); 2. CSA was only predictor of receptive anal intercourse (OR 2.00); 3. HIV status did not predict unprotected anal intercourse.
<b>Paul et al. (2001)</b>	MSM; N=2881; Urban Men's Health Study (UMHS)	Telephone interviews (live person & automated); retrospective/self-reported	CSA: self-reported coercive sexual episodes; by age 17; also reported coercive sexual episodes after 17	Sexual risk behavior: sexual acts with non-primary and serodiscordant partners	20.60%	Serodiscordant sexual risk: adverse familial experiences (two vs zero) (OR 2.97), CSA severity (6+ times) (OR 3.17), One-night stands (OR 7.18), abusive relationship in past 5 years (OR 1.95), Anal sex under the influence of drugs (OR 1.97), HIV status (OR 3.5) all were associated with serodiscordant sexual risk; Associations with non-primary partner sexual risk: adverse familial experiences (1vs0 OR 1.55; 2vs0 OR 2.01; 3vs0 2.24); CSA severity (6+ times vs never OR 2.87); One-night stand (yes vs no OR 11.28); Anal sex under influence of drugs (OR 2.56); HIV+ (OR 2.26); Interaction between adverse familial experiences and CSA on non-primary partner sexual risk: no adverse familial experiences - any CSA significantly contributes to risk (OR 1.76); two experiences, CSA severity must increase to affect (6+ times vs never or 1-5 times OR 5.54 and 7.11).
<b>Brennan et al. (2007)</b>	Homosexual and bisexual men; N=862; Twin Cities' Men's Health and Sexuality Study	Self-administered survey at site of recruitment: gay-pride festival; retrospective/self-reported	CSA: forced to have unwanted sexual activity "as a child or adolescent", frequency reported	1. HIV status; 2. Sexual risk behavior: exchanged sex for payment, current use of sex-related drugs, ever had an STI, unsafe sex	15.50%	CSA frequency (once, sometimes, regularly) positively associated with: 1. exchanging sex for payment (regularly OR 6.98 & once 3.93); 2. use of sex-related drugs (regularly OR 6.37); 3. HIV+, ever had an STI, unsafe sex no association with CSA at any frequency.
<b>Welles et al. (2009)</b>	HIV+ MSM; N=593 (Seattle, Washington DC, Boston, New York, Los Angeles, Houston)	Group setting; self-reported on paper questionnaires	CSA: self-reported forced sexual activity with older person as a child or adolescent (dichotomous, Y/N); frequency	Sexual risk behavior: SDUAS** and sex without a condom	47%	Frequency of abuse (Often, Sometimes, Once/Rarely) positively associated with total sexual contact (RR 1.28, 1.25, 1.23 respectively), total acts of anal intercourse (often RR 1.36 & once/rarely RR 1.19), total acts of unsafe anal intercourse (RR 1.49 & 1.97 often and sometimes respectively); Frequency of abuse (Often, Sometime, Once/Rarely) negatively associated with total acts of anal intercourse (Sometimes RR 0.9), total acts of unsafe anal intercourse (Once/rarely RR 0.74).
<b>Mimiaga et al. (2009)</b>	MSM; N=4295; EXPLORE study	ACASI; retrospective/self-reported	CSA: sexual experience with person at least 5, or 10, years older for children >13 and 13-17 respectively	1. HIV serostatus; 2. Sexual risk behavior: UAS* and SDUAS**	39.70%	1. CSA positively associated with depression (OR 1.38-1.60 depression score 26%-100%), heavy alcohol use (OR 1.26), crack use (OR 2.47), amphetamine use (OR 1.23), low self-efficacy (OR 1.45), poorer communication skills around safe sex (OR 1.55), and loer safe sex norms (OR 1.55); 2. CSA associated with HIV seroconversion (Hazard ratio 1.3); 3. CSA positively associated with sexual risk behaviors: UA (OR 1.24) and SDUA sex (OR 1.3).

<p><b>Stall, R. (2003)</b></p>	<p>MSM; N=2881; Urban Men's Health Study (UMHS)</p>	<p>Telephone interviews (live person &amp; automated); retrospective/self-reported</p>	<p>CSA: at age 16 years forced or frightened to do something sexual by person 10 years older or more</p>	<p>1. HIV serostatus; 2. Sexual risk behavior</p>	<p>Not reported</p>	<p>1. CSA predicts: depression (OR 1.91), partner violence (OR 1.90), CSA (OR 1.9); 2. Depression predicts polydrug use (OR 1.37), partner violence (OR 1.6); 3. Polydrug use predicts partner violence (OR 2.21), depression (OR 1.43); 4. partner violence predicts polydrug use (OR 2.24), depression (OR 1.61), CSA (OR 1.99); 5. high-risk sexual behavior predicts CSA (OR 1.29), polydrug use (OR 1.88), partner violence (1.64); 6. HIV+ status predicts poly drug use (OR 2.05) &amp; partner violence (OR 1.64), NOT depression or CSA; 7. Greater number of health problems significantly and positively associated with HIV infection and current high-risk sexual practices.</p>
<p><b>Jimich et al. (1998)</b></p>	<p>MSM; N=1941; Community AIDS Mobilization Project; Portland, OR &amp; Tucson, AZ</p>	<p>Questionnaire by mail; telephone interviews; retrospective/self-reported</p>	<p>CSA: sexual experience with person at least 5, or 10, years older for children &gt;13 and 13-15 respectively; frequency and severity recorded</p>	<p>1.HIV serostatus; 2. Transmission/Sexual risk behavior: UA* and SDUA**, partner type, &amp; frequency</p>	<p>35% self-reported CSA; 28% fit criteria defined by study</p>	<p>1. CSA positively associated with transmission risk behavior (9.5% vs. 5.7%), UA* sex with non-primary partner (21.4% vs. 15%), abused men not in a primary relationship more likely to engage in transmission risk behavior than nonabused (11.2% vs. 5.9%), more likely to report being HIV+ (20.5% vs. 15.9%); 2. Behavior comparison: abused men reported more sexual events (mean = 8.9 vs 7.1), male partners (mean= 2.4 vs. 1.8), sexual encounters with nonprimary male sexual partner (mean = 2.5 vs. 1.7), sexual episodes while feeling the effects of recreational drugs (mean = 0.57 vs. 0.34) in the last 30 days. 3. Level of coercion with CSA positively associated with: UA sex with non primary partner in last 12 months (15% nonabused men vs. 20% no or mild coercion vs. 24% strongly coerced or physically forced); HIV-positive report (16% nonabused vs. 19% no/mild coercion vs. 22% strong coercion/physical force). 4. Increase in severity of CSA associated with depression severity (mean score = 5.3 vs. 5.22 vs. 6.42); 5. CSA correlated with higher distress/guilt following unprotected sex (mean score = 5.67 vs. 4.53).</p>
<p><b>Sikkema et al. (2009)</b></p>	<p>HIV+ adults with history of CSA; N=256 (MSM = 124)</p>	<p>Self-administered assisted interview; retrospective/self-reported</p>	<p>CSA: self-reported sexual abuse prior to turning 18 years old</p>	<p>Sexual risk behavior: unprotected sex or serodiscordant sex</p>	<p>N/A; 90% experienced penetrative sexual abuse</p>	<p>1. MSM unprotected sex positively associated with alcohol use (OR 4.11), marijuana use (OR 3.81), cocaine use (OR 2.53) behavioral difficulties (OR 2.44), negatively associated with social support seeking (OR 0.49), spiritual coping (OR 0.31), and avoidant coping (0.48); 2. Men and women serodiscordant sexual behavior positively associated with marijuana use (OR 3.33 &amp; impact of shame on behavior (OR 3.34), negatively associated with active coping (OR 0.38).</p>
<p><b>Catania et al. (2008)</b></p>	<p>MSM; N=879; Urban Men's Health Study III; San Francisco</p>	<p>Initial telephone interview followed by mailed, self-administered questionnaire</p>	<p>CSA: any unwanted sexual experience (forced or unforced) before age 18. Definition of sexual abuse borrowed from <i>Paul et al., 2001</i>.</p>	<p>High-risk sex: unprotected serodiscordant sex.</p>	<p>22%</p>	<p>Primary partner model; Pathway: CSA-Motivation-Coping-Risk Appraisal-Risk Behavior. Severity of CSA associated with higher levels of depressive mood; Secondary partner model; Pathways: 1) CSA-Motivation-Scripts-Skills-Risk Behavior; 2) CSA-Motivation-Coping-Risk Appraisal-Risk Behavior. Severity of CSA positively associated with affective distress (depressiveness), greater anger, less "other-directedness," and less frequent use of behavior escape avoidance coping.</p>

\*UAS - unprotected anal sex \*\*SDUAS - Serodiscordant Unprotected Anal Sex

***Measuring CSA – Definitions affect study findings***

Study definition of CSA affected the prevalence of CSA amongst MSM across the included studies. Every study used *post hoc* questionnaires and/or interviews to elicit recall of CSA and any experiences in a participant's childhood were categorized as sexual abuse by the study definition. Only one study (Wilson et al. 2008) subsequently confirmed cases of CSA and neglect by examination of official police records. The concern with this type of retrospectively recalled information is twofold: 1) it requires a participant to recall traumatizing and painful experiences; and 2) it is limited to the study definition of CSA. Reliable *post hoc* self-reporting requires both an accurate memory and a willingness to remember; both of which might be altered or cause harm in a case where a participant has blocked, suppressed, or accentuated memory of a traumatizing event.

Furthermore, regardless of what a participant perceives as abuse, the study definition arbitrarily validates or invalidates a participant's memory. Subtle differences in the participants' and investigators' definitions generate drastically different results. For instance, Jinich et al. (2008) reported that 35% of participants self-reported CSA experiences, but that 80% of those reports matched the study definition of CSA (28% prevalence).

A major challenge with directly comparing these studies is variation amongst study definitions of CSA. These definitions incorporated a variety of factors: age differences between victim and abuser, behaviors of the abuser, whether force was used or penetration occurred, and perception of the victim. Three studies (Jinich, 1998; Lenderking, 1997; & Mimiaga, 2009) relied exclusively on any sexual experience where the age difference between abuser and victim fell outside a given range, commonly 5 years if the child is under age 13, and 10 years if the child is between age 13 and 16. Generally, studies from the past decade also incorporated the use of force or coercion into the definition of CSA implicating that CSA impacts sexual development through unwanted or unsolicited nature of abuse. Notably, the studies that utilize age differences between abuser and victim to define CSA (Jinich et al., 1998; Lenderking, 1997; and Mimiaga, 2009) are three of four studies that report CSA prevalence in MSM above 30%. Only study reported a higher prevalence of CSA, but Welles et al. 2009 (47%) used an HIV positive MSM population that is already expected to have an elevated prevalence of

CSA. Studies that incorporated force or coercion into their definition of CSA reported relatively lower prevalence rates – between 14.9% and 22% (O'Leary, 2003 & Catania, 2008). Differences in CSA definition produce a range of difference prevalence assessments.

***CSA and adult health outcomes in MSM***

Both risky sexual behavior and risk for HIV infection are associated with CSA. Both are important adult health outcomes related to the HIV epidemic, but the former assesses behavior while the latter is a pathological consequence of that behavior. Risk behavior has a range of additional health outcomes beyond HIV seroconversion making it an important outcome to study for the sake of understanding a root cause of many diseases.

While the definition of CSA varied across studies, adult sexual risk behavior was operationalized and measured upon two basic parameters: whether sex was unprotected (with or without a condom) and whether sex was occurred between serodiscordant partners (sex between an HIV negative man and a man who is HIV positive or of unknown serostatus). These two types of sexual behaviors were considered 'unsafe' or risky behaviors, putting a man at risk for HIV infection. Additionally, several studies sought to determine the direct correlation between CSA and being HIV positive.

Every study found a statistically significant association between CSA and risky adult sexual behavior – regardless of CSA definition. Indeed, a higher frequency of CSA correlated with a higher frequency of sexual contact overall. Welles et al. (2009) found CSA that occurred "often" is associated with total sexual contact (RR=1.28) and total acts and unsafe anal intercourse (RR=1.36 & RR=1.49). Paul et al. (2001) confirms these results, finding that the occurrence of CSA 6 or more times increases the chance that MSM will engage in serodiscordant sexual risk behavior (OR=3.16). These data suggest that there is a dose-response relationship between CSA and risky adult sexual behavior amongst MSM – more frequent abuse as a child correlates with increased sexual contact and greater risk for exposure to HIV.

In another study, Chuang et al. (2006) asked HIV positive men and women with a history of alcohol abuse to report specifically on condom use; because the sample was comprised of both heterosexual and MSM participants, Chuang et al. (2006) were able to compare the influence of CSA history on sexual behavior between heterosexual men and MSM. MSM



and heterosexual men were equally likely to report lifetime violence (violence experienced over the course of their entire life), but MSM were statistically significantly more likely to experience sexual violence and CSA than their heterosexual peers (Chuang, 2008). CSA was also positively associated with inconsistent condom use (OR=2.25) for both populations. The generalizability of this study by Chuang et al. (2006) is limited in that it uses a very specific population with preexisting risk factors for sexual risk behavior – HIV positive men with a history of alcohol abuse). Nonetheless, MSM experienced higher CSA and inconsistent condom use compared to their heterosexual counterparts. Collectively, these data confirm that MSM are more likely to have experienced CSA than heterosexually men, and that abused MSM are at a greater risk of HIV infection than non-abused MSM.

Jinich et al. (1998) divided sexual behavior between primary and secondary partners to examine whether relationship status changed the willingness to engage in risky sex. They also found that abused men were more likely to engage in HIV transmission risk behavior and more sexual events than non-abused peers. Furthermore, Jinich et al. found that men with no primary partner reported higher rates of HIV transmission risk behavior.

Studies have not agreed on the association between CSA and being HIV-seropositive. In a sample of MSM attending a gay pride festival, Kalichman et al. (2004) found a statistically significant difference between the percent of CSA victims that reported being HIV positive (40%) and non-CSA victims (19%). Jinich et al. (1998) also present similar data (20.5% vs. 15.9%) suggesting that MSM with a history of CSA are a more likely to be HIV positive. Paul et al. (2001), in a population based survey, actually calculated an odds ratio (OR) that placed abused MSM at a high risk of being HIV positive (OR=2.26). Contrary to these results though, additional studies that found no association between HIV serostatus and CSA experience (Wilson, 2008 & Lenderking, 1997). Notably, Wilson et al. (2008) also failed to demonstrate an association between any sexual behavior and HIV serostatus.

The strongest evidence connecting CSA and HIV seroconversion come from the only prospective longitudinal study design included in this review. Mimiaga et al. (2009) completed a self-reported CSA inventory of MSM and then followed men for two years, testing HIV serostatus and measuring sexual

risk behaviors as a part of the EXPLORE cohort study. This study design enabled Mimiaga et al. (2009) to compute a statistically significant hazard ratio associating CSA with HIV seroconversion over the two-year study time (HR = 1.3). These results are the strongest evidence to date that demonstrates the association of CSA with HIV seroconversion. Nonetheless, Mimiaga et al. (2009) used retrospective data to measure CSA thus failing to draw a causative connection between childhood and adolescent development and adulthood risk for HIV. Conflicting results amongst all of these studies suggests that methodological differences impede any comparisons, that further research is necessary to elucidate this relationship, and that the relationship between CSA and HIV serostatus influenced by many other factors that influence study findings.

#### ***Moderators of the CSA-adult sexual risk behavior relationship***

Many studies in Table 1 examine whether characteristics of abuse significantly moderate the severity of adult sexual health outcomes. While characteristics of both CSA victim and abuser, such as age of the victim, gender of the abuser, and relationship between the two participants, are suspected to influence the power of CSA to affect adult behavior, few studies examined these moderators. Better understood is the influence of characteristics of the abuse – including frequency and whether force or coercion was used – shapes the severity of CSA and correspondingly, been found to moderate the correlation between CSA and adult sexual risk behavior.

Indeed, the frequency of CSA is positively correlated with sexual risk behavior. Brennan et al. (2007) found that a history of a single CSA experience predicted exchanging sex for payment (OR=3.93) while the risk increased when CSA was a regular experience (OR=6.98). Welles et al. (2009) describe a similar relationship: the risk ratio (RR) for increased total sexual contact increases with frequency of abuse (once/rarely RR=1.23, sometimes RR=1.25, often RR=1.28).

Another study demonstrated that the association between CSA frequency and sexual risk behavior was more complex than a linear relationship. Paul et al. (2001) separated CSA from the influence of adverse familial experiences (parental substance abuse, physical abuse, inter-parent violence). Paul et al. (2001) compared the number of co-occurring adverse

familial experience types and CSA on adult sexual behaviors. The study found that the number and type of adverse familial experiences, independent of CSA, is positively associated with an increase in risk for non-primary partner sexual behavior in MSM (1 vs. 0 adverse familial experiences, OR=1.55; 2 vs. 0, OR=2.01; 3 vs. 0, OR=2.24).

Additionally, Paul et al. (2001) described a statistically significant interaction between adverse familial experiences and CSA frequency that affects non-primary partner sexual risk (unprotected insertive or receptive anal intercourse with a man who is not his primary partner in the past year). The number of adverse familial experiences determined the CSA frequency required to predict an increase in non-primary sexual risk: 1-5 and 6+ CSA experiences both significantly contributed to sexual risk for participants that experienced no adverse familial experiences (OR=1.76 & 2.05 compared to zero CSA), while only the high frequency CSA category (6+ CSA experiences) increased risk for non-primary partner sexual risk (OR=5.54 & OR=7.11 compared to zero or 1-5 CSA experiences) for participants who had experienced two types of adverse familial experiences. Thus, Paul et al. (2001) claim that the severity of the influence of CSA on sexual development and subsequent adult sexual risk behaviors depends on the context of CSA within additional exposure to familial violence.

Besides the frequency of abuse, the level of coercion or force is also shown to influence the severity of CSA. Jinich et al. (1998) found that the severity of CSA as measured by level of coercion experienced corresponded with an increased percentage of MSM who engaged in unprotected anal sex with a non-primary partner in the prior 12 months: 15% of non-abused men, 20% of men that experienced no or mildly coerced, 24% of strongly coerced men. The data from these studies indicate that both the frequency and level of coercion moderate the severity of CSA with sexual risk behavior.

### ***Mediators of the CSA-adult sexual risk behavior relationship***

While no longitudinal data exist to provide a causal pathway between CSA and adult sexual behavior, most studies examined potential mediating factors that act as intermediate behavior steps and choices between the initial trauma of CSA and adult MSM sexual behavior. Investigations that examine the risk for related negative health outcomes of CSA do so in an

attempt to draw a causal pathway from childhood experiences to adult behavior and health status via strategies or outlets developed to cope, suppress, or recapitulate experiences of victimization. Mediating variables that have been significantly associated in the relationship between CSA in MSM and sexual risk behaviors include: alcohol and recreational drug use, psychological factors, and lifetime exposure to violence.

Alcohol and recreational drug use are often the first mediators examined because of their direct connections to changes in behavior. Foremost, alcohol and drug use occludes memory, impairs judgment, and relieves inhibition, enabling and emboldening individuals to behave differently, especially around sex. Kalichman et al. (2004) report that MSM CSA victims are much more likely to have undergone treatment for substance abuse than non-abused peers (28% vs. 9%). Mimiaga et al. (2009) examined the risk of using alcohol and other recreational drugs and found significant risk in abused MSM for heavy alcohol use (OR=1.26), crack use (OR=2.47), and amphetamine use (OR=1.23). Further, Paul et al. (2001) report that abused men are at a greater risk of engaging in anal sex under the influence of drugs (OR=2.56). Indeed, Kalichman et al. (2004) reports that CSA, crack cocaine use, and methamphetamine use are all dramatically associated with unprotected anal intercourse with two or more partners in the previous 6 months (OR=2.11, 3.82, 3.75 respectively). These data describe an elevated risk for substance use and abuse, and risky sexual behaviors under the influence of drugs or alcohol. A strong chain of significant associations connects CSA, substance use and abuse, and sexual behavior, though whether there is a causal link is still unclear.

A slew of psychological factors are known to significantly mediate the relationship between CSA and adult sexual behavior. Both Stall et al. (2003) and Mimiaga et al. (2009) found that CSA is positively associated with depression (Stall, 2003: OR=1.91). Additionally, Mimiaga et al. (2009) describe a positive association between risk for depression score and increased CSA frequency (OR=1.38 – 1.6 for the top three depression score quartiles compared to the bottom quartile as measured by the shortened version of the Center for Epidemiological Studies Depression scale). Similarly, victims of CSA endorse more symptoms of borderline personality disorder (Kalichman, 2004). O’Leary et al. identify three significant mediators of the associating between CSA

and receptive anal sex: suicidality and Brief Symptom Inventory (BSI) definitions of hostility and anxiety (O'Leary, 2003). Both BSI hostility and anxiety were also significantly associated with insertive and receptive anal intercourse (O'Leary, 2003). These data establish an associative relationship between CSA and psychological factors that in turn influence adult sexual behavior.

While these studies indicate that psychological factors significantly mediate the link between CSA and adult MSM sexual risk behavior, they do not illuminate how CSA directly impacts behavior. Indeed, depression, suicidality, hostility, and anxiety logically influence to behavior, but additional evidence better elucidates the connection between CSA influenced psychology and behaviors that contribute to a propensity for sexual risk behavior. Namely, Sikkema et al (2009) and Catania et al. (2008) examined the association between CSA and coping behaviors. In both studies coping is measured as an indicator of how well individuals employ interpersonal relationships to mitigate the impact of CSA on the psychological factors described above (depression etc.). Sikkema found that CSA is negatively associated with social support seeking (OR=0.49), spiritual coping (OR=0.49), and avoidant coping (OR=0.49). Meanwhile, Catania et al. (2008) constructed multiple models pathways between CSA and risk behavior in which coping behaviors are significant mediators. These data demonstrate that psychological factors are not only associated with CSA and sexual risk behavior, but CSA is linked to negative psychological coping behavior; such a link draws a direct connection between the risk for depression, hostility, suicidality, anxiety, etc. and behaviors that influence sexual risk.

A final mediating variable in the relationship between CSA experienced by MSM and adult sexual risk behavior is exposure to lifetime violence. Raymond et al. (2009) and Chuang et al. (2006) both demonstrate a significant connection between CSA and lifetime and adult exposure to violence, discrimination, and harassment; according to these studies, MSM also report more victimization than heterosexual peers. Stall et al. (2003) find a specific positive association between CSA and partner violence (OR=1.9). These studies indicate that the abuse experienced as a child persists into adulthood, suggesting that MSM as a social group are both victims of more violence and that abuse experiences as a child potentially prompts MSM to seek-out more violent relationships as adults. Furthermore, Stall et al.

(2003) also show an independent association between partner violence and depression (OR=1.61); the violence experienced as an adult is therefore connected to the psychological mediators of sexual risk behavior implying adult victimization acts both directly and indirectly on behavior. Whatever the root of the association, violence in adulthood appears to significantly mediate the effect of CSA on adult MSM sexual risk behavior. These data indicate that CSA associated trauma undoubtedly has a lasting impact that contributes to adult substance abuse, psychological disorders, challenges with coping behaviors, and subsequent adult exposure to victimization. These mediating conditions and behaviors are also associated with adult sexual risk behavior thus linking a set of risk factors for HIV seroconversion throughout the life of MSM.

#### ***Gay-related development – Other measures of development that predict adult sexual behavior***

CSA does not completely explain adult sexual behavior, and only a limited set of studies that have associated additional negative experiences during sexual development besides CSA with increased sexual risk behavior as an adult. These studies examine childhood/adolescent sexual development in a fundamentally different manner than the studies that examine the traumatic experience of CSA. Bartholow et al. (1998) and Friedman et al. (2008) attempt to circumvent the need for longitudinal data to establish a causal pathway between development and adult behavior by identifying developmental milestones, determining the age at achievement these milestone, and connecting both measurements to victimization experienced post-achievement; finally, these studies examine the association of all these factors with adult sexual behavior.

Bartholow et al. (1994) provide the initial groundwork for this type of study. The primary study aim was actually to measure the connection between CSA and sexual risk behavior in MSM, but with data on CSA, the study also asked participants to report the age of achieving certain sexual milestones: age that he first thought he was gay (1), first came out (2), first had sex with a male (3), first had sex with a female (4), and began having regular sex with males (5). Bartholow et al. (1994) subsequently separated the participants into three categories based on CSA history: nonabused (NA), first sex was CSA (FSC), or first sex was not CSA (FSNC). The study then calculated the average age of achieving each sexual

milestone for each group. The group for which CSA was the first sexual experience (FSC) reported achieving every sexual milestone at younger ages than the other groups (FSC: 1 = 17.0, 2 = 12.7, 3 = 10.1, 4 = 15.9, 5 = 15.6). The abused group for which first sex was not CSA (FSNC) reported achievement of each sexual milestone at a younger age than the non-abused group (FSNC: 1 = 19.3, 2 = 14.4, 3 = 12.4, 4 = 15.9, 5 = 17.9; NA: 1 = 19.9, 2 = 14.9, 3 = 16.3, 4 = 17.3, 5 = 19.6). Not only were abused groups FSC and FSNC generally younger than NA, but the order of certain milestones also changed. For both abused groups, first sex with a male preceded the consideration of being gay while the order is reversed in the non-abused group. FSNC men also report regular sex with males before (or very soon before) first sex with a female while the order is reversed for both NA and FSC MSM.

These changes in the order of sexual development milestones do not demonstrate any direct connection between development and adult behavior, but do indicate that the context of CSA within an individual's personal sexual development is reflected in development patterns. Bartholow et al. (1994) does show an association between CSA and receptive anal sex with a steady partner (OR=1.31), any unprotected anal intercourse (OR=1.36), exchange of sex for money, drugs, etc. (OR = 2.13), IV drug use (OR=2.53), being VDRL positive (OR=2.56), and testing positive for HIV (OR=1.44). These risks, coupled with the fact that development patterns are different amongst all three abuse groups, suggests that CSA acts through changes sexual development patterns to affect adult behavior. Thus Bartholow et al. (1994) motivate an investigation into how additional experiences during sexual development influence adult behavior and whether the differences in age at achievement of sexual milestones contribute to these experiences.

Friedman et al. (2008) directly examined the effects of experiences pertaining to gay-related development on adult sexual risk behavior. The study describes gay-related development as the combination of developing an identity and achievement of sexual milestones. Subgroups within the MSM cohort with respect to gay-related development were identified using multivariate analysis based upon four variables: 1) age of first awareness of being sexually attracted to other males, 2) age of first same-sex sexual activity, 3) age of deciding that one is gay, and 4) age of first disclosure to another person that one is gay (Friedman,

2008). Three groups were identified based upon age of development (early, middle, and late development) with correspondingly distinct adult health characteristics. The early development group was more likely to experience gay-related victimization (86% more likely), depression (119%), self-report being HIV positive (213%), attempting suicide as an adult (113%) than the late development group. Additionally, the early development group was found to be more likely to experience partner abuse (28% more likely), gay-related victimization (39%), depression (41%), and report being HIV positive (69%) than the middle development group. These data first demonstrate the milieu of negative experiences faced by developing MSM during adolescence. Additionally, the comparison between age-based development groups (early and late, or early and middle) provides direct evidence that the age of development determines the adult health of MSM.

Besides these development related comparisons, Friedman et al. (2008) also examined the overall impact of adolescent victimization and health outcomes in adult MSM. The study found that parental physical abuse during adolescence increased the likelihood that MSM as an adult would experience depression (95% more likely), partner abuse (57%), gay-related victimization (47%), and attempt suicide (90%). Finally, whether an individual experienced forced sex before the age of 18 was associated with greater odds of negative adult health outcomes: depression (103%), partner abuse (107%), engagement in unprotected receptive anal intercourse (45%), and reporting being HIV positive (45%). With these results, Friedman et al. (2008) confirm the earlier discussion of CSA and adult behavior and connect negative experiences during adolescence besides CSA to adult health outcomes that increase the risk of HIV seroconversion.

Together, the results from Bartholow et al. (1994) and Friedman et al. (2008) complicate the association between CSA and adult sexual risk behavior in MSM. CSA, as a traumatic experience that affects downstream sexual identity and behavior, must itself be placed in the larger context of sexual development (Bartholow, 1994). Meanwhile, the age of development predicts, if not determines, risky sexual behavior in adults (Friedman, 2008). Neither study explains the connection between age of sexual development and sexual risk behavior in MSM, nevertheless prompting further investigation into how age and achievement of sexual development

milestones influences adolescent sexual development and consequently adult risk behavior.

## Discussion

### *Roots of the HIV disparity in America*

Irwin et al. (2003) claim that the challenge for future HIV/AIDS prevention programs is the development of prevention methods that account for the structural forces and limitations in individual agency that lead to the choice to have unsafe sex. Indeed, this review synthesizes a data set that indicate that the decision to engage in risky sexual behavior might not be a choice at all; rather, part of adult sexual behavior is both determined and predicted by experiences in childhood and adolescent sexual development. Thus, structural forces and limitations of individual agency established during sexual development establish behaviors that create the current HIV epidemic amongst MSM.

Both anecdotal evidence of marginalization and epidemiological data provide a compelling case for the causal relationship between victimization during childhood/adolescent sexual development and sexual risk behavior and risk for HIV. Nonetheless, no study has demonstrated, through longitudinal observation, that victimization does indeed cause the psychosocial and behavioral outcomes described in this review. A logistical challenge exists in the long-term demands of such a study design and the statistical requirements to characterize such a small subset of the US population. Additionally, if such a study were to be initiated, methodological issues regarding the reporting and categorization of abuse need to be resolved. Often abuse goes unreported because the victim is ashamed or threatened into silence. How any study team would accurately record abuse during a longitudinal study is also a question that must be answered. These challenges make a study of that nature an unrealistic ideal; the causal connection between childhood and adolescent victimization will not be made via a longitudinal study.

While longitudinal studies would be challenging to accomplish, several refinements of current study methods should be implemented to address remaining questions regarding the causal connection between development experience and sexual risk behavior in MSM. Pertaining to CSA directly, Jinich et al. (1998) and others highlight an important distinction between self-reported CSA and abuse as defined by the study that needs to be further understood. Whether perceived abuse has an impact on the psychology of victims is an important piece of the problem of CSA.

Additionally, more studies need to examine the age related differences in socialization experience that Friedman et al. (2008) discuss. This paper claims that victimization during sexual development determines adult behavior. Friedman et al. (2008) are able to connect age at achievement of sexual development milestones with exposure to gay-related victimization; what needs to be determined is whether the greater victimization experienced by these early-developing MSM initiates changes psychology and behavior during adolescence that persist or feed further health outcomes in adulthood. Additional studies need to augment and refine the evidence provided by Friedman et al. (2008).

It is not hard to see that MSM must be exposed to a significant level of marginalization and victimization of gender-nonconforming behavior; this marginalization occurs in American society regardless of sexual identity. Like CSA, these early childhood and adolescent experiences must contribute to the psychological outcomes that determine adult sexual behaviors. The persistent, unequal distribution of HIV infections in American MSM is grounded in social factors and marginalization that shape the proclivity of MSM to engage in the risky sexual behaviors that contribute to the spread of disease.

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## Facial Sexual Dimorphism and Judgments of Personality: A Literature Review

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Facial sexual dimorphism lends itself to myriad facial traits that result from an individual's unique exposure to the sex hormones testosterone and estrogen. The following literature review will discuss psychological research from the late 20<sup>th</sup> century onwards pertaining to facial sexual dimorphism - facial masculinity and femininity - as it relates to the judgment of personality traits, specifically the Big Five personality traits proposed by Goldberg (1993): openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. Research from the past three decades pertaining to facial judgments of personality has investigated correlations of specific personality traits with facial attractiveness as well as symmetry.

Studies on human facial sexual dimorphism have yielded intriguing insights into perceptions of other characteristics, such as attractiveness or trustworthiness, based on facial masculinity or femininity. Specifically, by manipulating the degree of sexually dimorphic facial traits in computerized faces, scientists have been able to study what judgmental differences arise as a result of physical alterations. What is significant about these findings is their evolutionary implications, in particular the facial cues that trigger innate judgments in reaction to a masculine or feminine face. Multiple studies have confirmed the correlations between sexually dimorphic faces and ratings of attractiveness (Smith et al. 2008; Lee et al. 1998; Welling et al. 2008), and many psychologists theorize that such judgments are evolutionarily based. Sexual selection in humans is largely based upon facial cues and their reflection of an individual's reproductive quality. In a recent study, Little et al. (2008) found that symmetry and sexual dimorphism in faces are both judged as more attractive to the opposite sex, leading the researchers to conclude that both qualities are reflective of biological quality, and that such judgments are likely to be the result of sexual selective pressures and mate choice preferences.

However, studies on facial judgments have rarely diverted from focuses on attractiveness and physical characteristics that signal biological quality. It

is quite clear, nonetheless, that in the evolutionary past of humans, judgments of faces would have been influenced beyond solely attraction and mate selection. One can theorize that faces would have revealed other possibly important signals related directly to survival of both oneself as well as one's offspring, such as willingness to cooperate with others or tendencies to be violent (Carré et al. 2009). Given that facial sexual dimorphism is largely caused by exposure to the same hormones - that is, testosterone and estrogen - that also instigate myriad behavioral and emotional effects, it is logical to theorize that facial traits would possibly alter perceptions of behavioral and personal tendencies as well.

Research pertaining to facial ratings and attribution of personality traits is a field of study in psychology with a dynamic history, one used by the Nazis to classify Jewish faces as well as in research studies in the later 20<sup>th</sup> century attempting to classify animals using facial traits. Nonetheless, modern psychological study in this field remains relatively new, with the first major study conducted by Stackelford and Larsen in 1997. The researchers found that individuals with asymmetric faces were rated as more "neurotic," with higher ratings of impulsiveness in both sexes, and emotional instability in male faces (Stackelford & Larsen, 1997). Their findings relate to the judgments of attractiveness in relation to facial symmetry, particularly that those individuals with asymmetric features are more prone to more stress-related events in their lives, and thus are judged as less attractive due to their reproductive disadvantageousness. While these results shed light onto the relation between facial symmetry and one of Goldberg's five dimensions of personality - neuroticism - there remained a lack of research into external judgments of the other four personality traits in relation to facial attractiveness or sexual dimorphism. Noor and Evans (2003) elaborated on and confirmed Stackelford and Larsen's initial findings by studying the correlations between facial symmetry and all five of Goldberg's personality traits. Specifically, they found that facial asymmetry had significant

effects on judgments of neuroticism, agreeableness, and conscientiousness, but not on openness to experience and extroversion; with higher asymmetry, judges rated faces as more neurotic, less agreeable, and less conscientious. In behaviorally descriptive terms, asymmetrical faces were found to be rated as more 'worrying' and 'anxious,' less 'helpful' and 'sympathetic,' and more 'negligent' and 'impulsive,' in the respective order of the three personality traits previously mentioned (Noor & Evans 2003). Those personality traits correlated significantly to particular facial characteristics are arguably more innate and less socially malleable than are the other two traits of openness and extraversion. As such, one would expect those personality traits that have greater genetic influence than social ones, or those that are less prone to change through means of nurture, would be under greater selective pressure, and would thus manifest in facial characteristics with greater frequency than those that are more easily changed with social upbringing.

Research conducted over the past three years have yielded additional findings regarding correlations between facial symmetry and attractiveness to judgments of certain personality traits. However, as previously reiterated, few if any studies have been conducted on judgments of actual personality traits in relation to facial sexual dimorphism. Fink et al., (2006) for instance, acknowledge the prevalence of studies regarding attractiveness and health perceptions of faces, but that more research is still required to better comprehend personality attributions to facial characteristics, particularly within an evolutionary framework. With this idea in mind, Fink et al. conducted research on the facial symmetry and its relation to perceptions of attractiveness, health, and personality traits. The significant contribution of their study was the information related to facial symmetry and personality characteristics when attractiveness was controlled. In particular, the researchers found that extraversion and openness to experience were most strongly associated with facial symmetry. From this data, Fink et al. suggest that outside judgments of an individual may reflect an individual's actual personality, and facial symmetry is an externally indicative correlate to personality (Fink et al., 2006). The authors theorize that facial symmetry, similar to facial sexual dimorphism in that both are based heavily on hormonal and other biological processes, may be reflective of personality traits based on the influence of the sex hormones testosterone and estrogen. Specifically, they argue for the possibility of the effect

of these hormones on both the development processes of the face as well as on sex-dependent personality traits (Fink et al. 2006). This compelling theory predicts that sexual dimorphic facial traits may be evolutionarily indicative of certain personality traits influenced by the same sex hormones responsible for facial sexual dimorphism.

Though only focused on narcissism as Stackelford and Larsen had done before, Holtzman and Strube (2009) propose an evolutionary theory behind the results they obtained on facial attractiveness and narcissism, elaborating on facial judgments in evolutionary terms but still lacking full-dimensional analysis covering all five personality traits. Specifically, the researchers argue that narcissists have greater propensities to pursue short-term mating that are casual and uncommitted, and are further capable of handling the respective consequences that such relationships present (Holtzman & Strube, 2009). Given that short-term mating relationships are more contingent upon attractiveness than are long-term relationships, it is logical to conclude that narcissists, whose relationships rely heavily on attractiveness, would be reproductively successful and thus pass down their facial and personality traits to successive generations. This theory presents one feasible evolutionary explanation behind the development of narcissism and its relation to facial attractiveness. Because symmetry is one element that constitutes attractiveness, it is a narrower window through which to study the correlation to judged personality traits. However, facial attractiveness at a general level constitutes sexual dimorphism, meaning that a sexually dimorphic face, whether masculine or feminine, can arguably be perceived as being attractive as well, but by no means symmetrical. In this sense, the findings by Holtzman and Strube (2009) are relevant and thus important to the topic.

Research conducted by Penton-Voak et al. (2006) is the sole study conducted to date that has found differing personality traits attributed to male and female faces. In their theoretical framework, the authors hypothesize that evolutionary selective forces may be at play in external judgments of personality between the sexes, but do not explicitly discuss facial sexual dimorphism and its relation to judged personality traits. Specifically, the researchers found that judgments on personality on composite faces were most accurate to self-reports for agreeableness and extraversion in both sexes, and emotional stability in only males (Penton-Voak et al., 2006). From these



findings, they introduce several theories to explain the difference in accurate judgments between the male and female faces. Firstly, they attribute stereotypical attributions to particular personality judgments, for instance, that more masculine faces are judged as more dominant and thus, less prosocial (Penton-Voak et al., 2006). Another more evolutionary explanation states that male faces would be more accurately judged for personality as a result of female sexual selective behaviors, considering that mate selection has more repercussions and is thus more significant for females than for males. Specifically, Penton-Voak et al. (2006) argue that when women judge attractiveness in male faces, they have the ability to detect biological quality through facial masculinity – and through that, dominance and narcissism - or prosociality through facial femininity - suggesting warmth and agreeableness - through evolutionary adaptation.

A final relevant study is that conducted by Watson in 1989, in which he found high convergent validity between self and peer assessments of personality, most significantly for extraversion and consciousness. This study discusses two significant topics: it suggests that external judgments of personality by strangers are partially accurate, and that the level of accuracy of the ratings differs depending on certain personality traits. As to why certain traits are more correctly judged than others remains a question left open to evolutionary analysis.

The presented literature review of research from the past two decades discusses studies conducted on facial judgments of attractiveness or symmetry and their correlation with judgments of personality traits. Much research has been conducted on external judgments of personality as they relate to facial asymmetry and neuroticism (Stackelford & Larsen, 1997), facial symmetry and personality (Fink et al., 2006), facial attractiveness and narcissism (Holtzman and Strube, 2009) and judgment accuracy differences between the sexes (Penton-Voak et al, 2006). This body of literature, however, lacks any research conducted on facial sexual dimorphism - that is, facial masculinity and femininity - and its correlation to judgments of personality traits. The implications of such studies would yield many intriguing theories with evolutionary bases on facial judgments, specifically sex differences in faces that possibly correlate with particular personality traits.

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## Improving Quality of Care and Patient Safety Through “Safe Harbor” Tort Reform

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The passage of the Affordable Care Act (ACA) in March 2010 signified the largest reform effort this nation’s healthcare system has ever experienced. While the long-term effects of these changes have yet to be realized, additional steps can be taken to improve the efficiency and equity of the U.S. healthcare system. Among these additional steps is comprehensive reform of the medical liability system.

In addition to the cost cutting-measures outlined in the ACA, system-wide tort reform offers another option for reducing the growth of national health expenditures. Current estimates gauge the total annual cost of the medical liability system to be \$55.6 billion in 2008 dollars, representing 2.4 percent of total national health care spending in 2008 (Mello, Chandra, Gawande, & Studdert, 2010). Although it occupies a relatively small percentage of total spending, in absolute dollars, the cost of the medical malpractice system is far from trivial. Thus, meaningful cost savings can be achieved through the enactment of reform that seeks to reduce the use of defensive medicine and limit the occurrence of frivolous lawsuits.

Aside from contributing to cost-cutting efforts, truly effective tort reform should aim to effectuate the primary goal of the malpractice system: improving patient safety by deterring preventable medical errors. After all, in theory, the liability risk faced by physicians should act as an incentive to practice safer medicine, leading to improved quality of care (G. Dalton, Samaropoulos, & A. Dalton, 2008). In reality, however, the current system is performing its intended task poorly. This is evidenced by the large number of Americans who suffer preventable medical injuries each year (Kohn, Corrigan, & Donaldson, 2000). Additionally, the widespread use of defensive medicine by physicians to reduce their liability risk subjects patients to potentially harmful treatments and procedures.

### *The ACA and Tort Reform*

Despite this potential to reduce costs and improve healthcare quality, the ACA fails to create reform that directly addresses the problems with the existing medical liability system. Instead of providing a lasting solution to the maladies of the current system, the law merely authorizes the federal government to award \$50 million worth of demonstration grants over 5 years to the states for the “development, implementation, and evaluation of alternatives to current tort litigation” (“PPACA,” 2010).

### *Proposal*

One promising approach to medical malpractice reform is the creation of a federal “safe harbor,” which would retain the existing adjudication process, but protect physicians from liability if they followed evidence-based medical practices. After the enactment of “safe harbor” legislation, care could not be found negligent if the physician complied with accepted clinical practice guidelines (Mello & Brennan, 2009).

The success of this type of reform in reducing costs and patient harm is demonstrated by the experience of anesthesiologists in the mid-1980s. During this period anesthesiologists faced very high malpractice insurance premiums, even in comparison to those of other high-risk specialties. These steep premiums were the result of the large malpractice awards granted to plaintiffs who prevailed in their lawsuits against anesthesiologists. In response, the American Society of Anesthesiologists developed practice guidelines to reduce patient harm. The result was a dramatic decrease in both the number of deaths and the price of malpractice insurance premiums (Schoenbaum & Bovbjerg, 2004).

By insulating physicians from liability if they adhere to evidence-based practices, “safe harbor” reform provides them with a legal incentive to follow clinical practice guidelines, such as comparative-effectiveness research (CER). Comparative-effectiveness research

seeks to determine the optimal methods of clinical care by evaluating the impact of various alternatives for treating a given medical condition for a specific group of patients (DeMaria, 2009). The “safe harbor” approach to tort reform is particularly appealing given Washington’s current interest in CER. \$1.1 billion was allocated for CER in the American Recovery and Reinvestment Act of 2009. Providing physicians with immunity if they complied with the findings of credible comparative-effectiveness research will promote the adoption of CER recommendations by providers (Mello & Brennan, 2009).

Increased adherence to proven best practices of clinical care will result in fewer medical injuries, and in turn, generate considerable cost savings in the medical liability system. A system that promotes the uptake of evidence-based practices will limit the use of defensive medicine as a means of reducing liability risk. Furthermore, fewer medical injuries equates to fewer malpractice claims, which will lower physician’s insurance premiums. As a result, providers will no longer increase the volume or price of services performed in order to offset high malpractice premiums (Mello et al., 2010).

### **Overcoming Obstacles**

The biggest obstacle facing the enactment of federal “safe harbor” legislation is the principle of federalism. Traditionally, medical malpractice laws have been a matter of state regulation. Attempting to institute a federal structure on the medical liability system complicates this issue (Mello & Brennan, 2009).

One suggested way of bypassing this hurdle is simply to make states’ receipt of federal health funds contingent on their willingness to implement “safe harbor” reform on their tort systems. Alternatively, Congress could employ more drastic measures and “declare its intent to completely preempt state regulation of the field” (Mello & Brennan, 2009).

### **Conclusion**

The creation of federal “safe harbors” as a means of improving the medical liability system is a valid next step in healthcare reform, one that builds upon the advances made by the ACA. Legislation that promotes the use of evidence-based practices among physicians helps to achieve the main goal of the malpractice system: improving patient safety and quality of care. In so doing, “safe harbor” reform can create a healthcare system that is more cost-effective as well as more equitable to patients.

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## The Use of a Quick Reference Card to Improve the Documentation of the Physical Exam by a Collegiate BLS EMS Organization

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*Objective:* To determine if the use of a physical exam quick reference card for an undergraduate all volunteer basic life support (BLS) emergency medical service (EMS) organization improved documentation of the physical exam. This documentation served as a proxy for performance of the physical exam. *Background:* There are 125 registered collegiate BLS EMS organizations with high turnover in membership (National Collegiate EMS Foundation, 2010). Georgetown University has a student run emergency medical technician EMS organization with over 100 EMT-Basic members. Most research dealing with improved documentation uses personal feedback to individual providers (O'Connor & Megargel, 1994; Joyce, Dutkowski, & Hynes, 1997; Kiefer, Schwartz, & Jacobs, 1993). *Methods:* For this study a novel pocket reference card was created (Figure 1, see online supplementary material). The card included physical exam components pertinent to respiratory, cardiovascular, neurologic or abdominal chief complaints. The card was distributed in both electronic and paper form. This study evaluated documentation of physical elements included in the quick reference card before and after the introduction of the card. Fifty charts involving a chief complaint that was primarily respiratory in nature, neurological in nature, or both were evaluated from the period after the implementation of the reference cards. Fifty charts of matching categories of chief complaint from before the implementation of the reference cards were also evaluated. Each chart was reviewed for the percent completion of the physical exam components on the reference card. The mean percentage completed after the implementation of the reference card was compared to that of before with a null hypothesis that it was not increased by 10 percent. A kappa value was calculated

for the two investigators. *Results:* There was not a significant increase in percentage completion. A two tailed unpaired t-test of data was performed. The difference in mean completion was 2.3% (54% before and 51.7% after implementation of reference card) with a 95% confidence interval of (-10.3%-14.8%), and a p value of .72. To evaluate interrater reliability of the chart reviewers a kappa value was calculated. Weighted kappa of .880 showed very good agreement. *Conclusions:* The study was limited by the fact that the organization began a computerized PCR system 3 months after distribution of the card, and only 50 charts were eligible. The results indicate the reference card was not sufficient to improve documentation. Further research into methods of improving physical exam documentation for this organization should be pursued.

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## Understanding the Behavioral and Emotional Responses of Childhood Cancer Through the Eyes of Adolescent Siblings

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*Background:* Childhood cancer is a chronic disease that affects all aspects of an ill child's life. In 2007, 10,400 children under age 15 were diagnosed with cancer and 1,545 died from the disease (American Cancer Society, 2007). This makes cancer the leading cause of death for children ages 1-14. Over the past twenty years, the incidence of all invasive forms of pediatric cancer has been increasing; however, the survival rate has also been increasing. The improvement in survival rates can be attributed to improved technology and treatment options, which has made childhood cancer a chronic disease. This means that more children diagnosed with cancer are living longer lives and surviving into adulthood. This has implications for all members of the ill child's family, especially the ill child's siblings. Siblings share a unique bond and when this bond becomes disrupted negative outcomes are likely to result. However, research addressing the impact of childhood cancer on siblings has been scarce, with much evidence regarding sibling maladjustment arising from parental reports with a focus on the school-age group. Therefore, little research is known about whether or not siblings continue to experience these negative behavioral and emotional responses into adolescence. *Aim:* The purpose of the study was to determine whether adolescents who have/had a sibling with cancer still experience similar responses today as they did when their sibling was first diagnosed and receiving treatment and to determine if these responses impact any major life decision that these adolescents make such as college and/or career choice. *Methods:* First, a literature review was conducted to evaluate the most common emotional and behavioral responses siblings who have/had a sibling with cancer display. From this review, gaps in the literature were identified and the research question was identified. Next, three (3) adolescents who have/had a sibling with cancer were interviewed in order to assess if they still

experience similar responses today as they did when their sibling was first diagnosed and receiving treatment. *Results:* This study determined that adolescents who have/had a sibling with cancer continue to display feelings of an unbalanced or tilted family system, feelings of being left behind, and feelings of ambivalence. However, adolescent siblings also express being more empathetic when compared to their peers. These results have significant implications for nursing practice. For example, parental education expressing the importance of family-centered care and providing attention to the sibling as well as the sick child is essential. Every member of the family plays an important role and ideally, no one should feel left out or neglected. *Conclusions:* Adolescents who have/had a sibling with cancer still experience similar emotional and behavioral responses in adolescence as they did when their sibling was first diagnosed. Therefore, nurses and other healthcare professionals play an important role in helping the family unit adjust to having a child with cancer when they are aware of these common emotional and behavioral responses that siblings often display. Future research with a larger sample of adolescents would allow for more detailed data about the behavioral and emotional responses that remain a part of the siblings' lives even after the ill child is in remission.

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