



# Determinants of trust in the flu vaccine for African Americans and Whites



Vicki S. Freimuth<sup>a</sup>, Amelia M. Jamison<sup>b</sup>, Ji An<sup>c</sup>, Gregory R. Hancock<sup>c</sup>,  
Sandra Crouse Quinn<sup>b, d, \*</sup>

<sup>a</sup> Center for Health and Risk Communication (Emeritus), University of Georgia, Athens, GA, USA

<sup>b</sup> Center for Health Equity, School of Public Health, University of Maryland, College Park, MD, USA

<sup>c</sup> Department of Human Development and Quantitative Methodology, College of Education, University of Maryland, College Park, MD, USA

<sup>d</sup> Department of Family Science, School of Public Health, University of Maryland, College Park, MD, USA

## ARTICLE INFO

### Article history:

Received 9 August 2017

Received in revised form

29 September 2017

Accepted 2 October 2017

Available online 4 October 2017

### Keywords:

United States

Vaccine trust

Generalized trust

Racial disparities

African Americans

Influenza

## ABSTRACT

Trust is thought to be a major factor in vaccine decisions, but few studies have empirically tested the role of trust in adult immunization. Utilizing a 2015 national survey of African American and White adults ( $n = 1630$ ), we explore multiple dimensions of trust related to influenza immunization, including generalized trust, trust in the flu vaccine, and trust in the vaccine production process. We find African Americans report lower trust than Whites across all trust measures. When considering demographic, racial, and ideological predictors, generalized trust shows statistically significant effects on both trust in the flu vaccine and trust in the vaccine process. When controlling for demographic, racial, and ideological variables, higher generalized trust was significantly associated with higher trust in the flu vaccine and the vaccine process. When controlling for generalized trust, in addition to the baseline covariates, psychosocial predictors (i.e. risk perception, social norms, knowledge) are significant predictors of trust in flu vaccine and trust in the vaccine process, with significant differences by race. These findings suggest that trust in vaccination is complex, and that significant differences in trust between White and African American adults may be contributing to disparities in influenza immunization.

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## 1. Introduction

Experts agree that public trust is necessary for the success of immunization programs, yet few studies have thoroughly explored the determinants of trust in vaccines. Two major research organizations have published research agendas related to vaccine trust. The international, interdisciplinary think-tank, “Motors of Trust in Vaccination” (MOTIV), calls for greater exploration of the factors contributing to trust in vaccines (Larson et al., 2013). The second, from the American Academy of Arts and Science (AAAS), calls for research on the role of trust in vaccine decisions, particularly within “at-risk communities” where social norms may contribute to lower vaccine trust and greater vaccine hesitancy (AAAS, 2014). Reflecting upon both calls, we recognized the need for research on trust as it relates to vaccine disparities, as growing evidence indicates African

Americans experience greater distrust and vaccine hesitancy when compared to their White peers (Quinn et al., 2017). In this manuscript, we utilize national survey data to explore the determinants of trust in both influenza vaccines and trust in the entities and agencies responsible for vaccine development, manufacture, and administration in a representative sample of White and African American adults. Although much of the discourse on trust in vaccines is related to parental trust related to childhood vaccines, we focus on adults, and specifically on racial differences between Black and White adults for two reasons: first, there is a consistent racial disparity in influenza vaccination with African American adults receiving the vaccine at lower rates than Whites, and secondly, African Americans experience a greater burden of chronic diseases that place them at greater risk of serious complications from the flu.

### 1.1. Trust in vaccines

While there are numerous and competing definitions of trust, we have employed a general definition, based on the common

\* Corresponding author. Department of Family Science, School of Public Health, University of Maryland, 4200 Valley Drive, College Park, MD 20742-2611, USA.  
E-mail address: [scquinn@umd.edu](mailto:scquinn@umd.edu) (S.C. Quinn).

agreement that trust involves a voluntary relationship between a trustor and a trustee, where the trustor holds certain expectations about the trustee's future actions (Gilson, 2003). Trust arises in situations of vulnerability, and in a medical context, vulnerability related to illness and disease risks are thought to intensify trust relationships (Hall et al., 2001). We recognize that trusting a flu vaccine encompasses numerous entities, and necessarily involves multiple trust relationships.

Major theoretical work surrounding vaccine trust comes from the World Health Organization's (WHO) Strategic Group of Experts on Vaccination (SAGE). SAGE hypothesizes that trust is a major factor in vaccine hesitancy, contributing to vaccine delay and refusal (MacDonald, 2015). Trust influences vaccine hesitancy at many levels, including "trust in the effectiveness and safety of vaccines, the system that delivers them, including the reliability and competence of the health services and health professionals and the motivations of policy-makers who decide on the needed vaccines" (MacDonald, 2015, 4162). Recognizing this complexity, we chose to investigate trust in the flu vaccine and trust in the vaccine process as two separate, but related, outcomes.

SAGE also acknowledges that trust varies by vaccine type and across populations (Larson et al., 2011). This research is specifically focused on seasonal influenza vaccines and the research population includes African American and White adults. The majority of vaccine research investigating trust is focused on parental trust and its role in shaping parents' decisions to immunize their children with childhood vaccines (AAAS, 2014). Adults consider different factors when making decisions about immunization for themselves than when deciding for their children (Quinn et al., 2016). Unlike many childhood vaccines with specific age recommendations, seasonal influenza vaccine is recommended broadly to all children (over six months) and adults. Flu is also unique because a new vaccine is released each year, requiring annual immunization to be maximally effective. Public perception of the flu also varies widely, contributing to mixed perception of risks: some think the flu "isn't that bad" while others understand it could be deadly (Quinn et al., 2016). In qualitative research, we found many adults describe thinking about the flu vaccine differently than vaccines in general (Quinn et al., 2016).

The SAGE framework also identifies a "matrix" of determinants that shape vaccine hesitancy across three levels: contextual, individual/group, and vaccine specific. Contextual influences are the broadest including historic, socio-cultural, environmental, economic, and political factors. Individual and group influences include personal perceptions, beliefs, and attitudes related to vaccines as well as the influence of one's peer environment. Vaccine influences include aspects specific to an individual vaccine including modes of administration, costs, and vaccination schedule (Larson et al., 2015). As such, we recognized the need to explore a wide range of potential predictors for trust.

In the United States, the vaccine process involves institutions responsible for development, approval, and manufacture of flu vaccines including pharmaceutical companies, the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), the U.S. Food and Drug Administration (FDA), as well as the localized healthcare systems and providers responsible for vaccine administration. National polling data shows that despite having high levels of trust in federal health agencies overall, trust levels have recently declined, and trust in pharmaceutical companies is at an all-time low (Harris Poll, 2015; Gallup Poll, 2016). A recent study confirmed 65% of American adults trust the CDC and 63% trust the FDA (Kowitz et al., 2017). Trust in the role these institutions play in the vaccine process is less studied. Qualitative investigation revealed widespread mistrust in the motives that drive pharmaceutical companies, as well as some skepticism

regarding the competence of government agencies in developing appropriate influenza vaccines (Quinn et al., 2016). Research from the 2009–2010 H1N1 pandemic found public trust in government agencies had a significant impact on willingness to accept a novel influenza vaccine (Freimuth et al., 2014; Quinn et al., 2013).

More research has been focused on interpersonal trust between patient and providers (Kehoe and Ponting, 2003). Patients will often report different levels of trust towards their own provider, which may be based on personal experiences and patient personality, than towards health care providers as a general class, which may be more reflective of trust in the health care system as a whole (Hall et al., 2001). Some factors known to influence trust in providers include competence and beneficence (belief that providers' motives are aligned with patients' best interests), patient satisfaction, health outcomes, and patient-provider power dynamics (Thom and Campbell, 1997). A study by Musa and colleagues found patients with high levels of trust in physicians were more likely to utilize preventive health services, including influenza vaccination (Musa et al., 2009). A more recent study of parents concluded lower trust in health care providers was associated with lower odds of HPV vaccination (Fu et al., 2017).

Rather than consider institutions and providers separately, a broader look at the vaccine process encompasses the interactions between the two. Studies have shown feelings of shared values between patient and provider can reinforce institutional trust (Gilson, 2003; Kehoe and Ponting, 2003). The reverse has also been observed, as trust at a larger system can serve as a foundation in a new trust relationship with an individual provider (Hall et al., 2001). These relationships are also influenced as individuals respond differently to the competency of an agency/actor and the motives driving that agency/actor, differentiating between trust in competence and trust in beneficence (Ahern and Hendryx, 2003; Siegrist, 2010; Siegrist et al., 2003; Twyman et al., 2008).

In addition to considering the components of the vaccine process separately, we assessed trust in the vaccine itself. Black and Rappoli argue that the erosion of trust in vaccines is a problem, "transcending pharmaceutical companies producing vaccines or the public health agencies recommending them", suggesting individual levels of trust in pharmaceutical companies, in federal and state public health agencies, and in health care providers are secondary to the overall level of trust in vaccines (2010, 3). Because there has been little consistency in the way researchers have measured trust in vaccines, we explored these types of vaccine-related trust to see if people discriminate among them and if there are patterns of racial differences.

## 1.2. Generalized trust

In addition to assessing trust in the flu vaccine and the vaccine process, we recognized the need to assess a baseline measure of generalized trust. It is common to make a distinction between interpersonal trust (between known individuals) and impersonal trust (between strangers) (Gilson, 2003). Some scholars have formalized this distinction, broadening it to differentiate between generalized and particularized trust (Stolle, 2002). Generalized trust "extends beyond the boundaries of face-to-face interactions" and captures "an abstract preparedness to trust others" (Stolle, 2002, 403), which, in survey research, is often simplified into the notion that "most people" can be trusted (Carl and Billari, 2014). Particularized trust assesses trust in something specific, such as a flu vaccine, or their relationship with the doctor who provides the vaccine (Carl and Billari, 2014).

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