

Selecting and Training Contact Tracers to Address Minority Health Disparities:  
Lessons from COVID-19

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Like most public health emergencies, COVID-19 disproportionately affected Black, Indigenous, and Peoples of Color (BIPOC) communities, and was exacerbated by pre-existing health disparities (Hooper, Nápoles, and Pérez-Stable, 2020, 2466-2467; Selden and Berdahl, 2020, 1626-1629). Individuals from BIPOC populations were at a higher risk for virus exposure and suffered worse health outcomes for myriad reasons, at least partially rooted in the social and structural determinants of health limiting access to quality healthcare among BIPOC communities. For example, comorbidities associated with an increased risk of serious harm from COVID-19 are more prevalent in these communities (Hooper et al., 2020, 2466-2467), and disproportionate representation in population dense living areas and essential work making virus spread easier and physical distancing more difficult (Blau, Koebe, and Meyerhofer 2020; Selden and Berdahl, 2020, 1626-1629; Yancy, 2020, 1891 - 1892).

Importantly, there are also numerous approaches to limit the spread of communicable diseases (e.g., masking, social distancing, vaccines), although care should be taken to ensure that these strategies work for all, including BIPOC communities. A particularly important approach highlighted during the COVID-19 pandemic is contact tracing (Kretzschmar, Rozhnova, Bootsma, van Boven, van de Wijgert, and Bonten, 2020, 452-453). Contact tracing refers to the process of public health officials contacting individuals who have been exposed to a communicable disease, collecting information about with whom they have been in close proximity, and making suitable recommendations for testing, quarantine, and medical care. Contact tracing compliance is imperative for addressing communicable disease spread (Kretzschmar et al., 2020), and trust in contact tracers is a key determinant of compliance with contact tracing requests among BIPOC individuals (Randall, Dalal, & Dowden, 2021). Dalal, Randall, Danna, and Ash (2021) highlight core competencies required to perform this job well within marginalized communities, wherein many of the competencies align with engendering trust in the contact tracers.

These two studies (Dalal et al., 2021; Randall et al., 2021) identify a common gap in combating disease spread, particularly among BIPOC Communities: responses to the COVID-19 pandemic ignored personnel psychology principles that are applicable to building an effective public health workforce. Indeed, responding to the COVID-19 pandemic required onboarding a high volume of public health personnel, but the limited information about the knowledge, skills,

abilities, and other attributes necessary for successful performance complicated the process, introducing limitations to making standardized hiring and training decisions. To ensure that BIPOC populations are receiving equitable support, resources, and protection during public health emergencies, we posit that principles of personnel psychology can serve as the foundation for selecting and developing a workforce of contact tracers that is well equipped to equitably serve historically marginalized populations.

Drawing on theories from personnel psychology (e.g. Guion, 2011), we present a blueprint by which to extend this initial work (e.g., Dalal et al., 2021; Randall et al., 2021) by presenting a comprehensive picture of procedures to efficiently, fairly, and validly select and train contact tracers to address future public health crises, and to effectively work within BIPOC communities. First, we offer an overview of the role of the contact tracer, followed by a discussion of critical needs that contact tracers and other related institutions must fulfill to develop trust with the communities they serve. We detail how personnel psychology methods may be leveraged to select and develop contact tracers, and why these personnel psychology methods should be utilized to ensure contact tracers are effectively serving BIPOC communities. Finally, we offer future steps for addressing health disparities through utilizing valid selection and training practices.

### **Contact Tracing Overview**

Communicable diseases are most likely to spread when individuals are in close proximity or in an enclosed space for an extended period of time (World Health Organization, 2020). Contact tracing is an effective tool to combat the spread of a virus, and when deployed with a combination of testing, can more effectively deter transmission (Kretzschmar et al., 2020, 456-457). Broadly, the goals of contact tracing programs are to 1) *collect* information, including health information and close contacts of focal individuals and 2) *provide* information, including information about resources and support for quarantining procedures (Dalal et al., 2021, 12; CDC, 2020).

During the pandemic, contact tracers reached out to individuals exposed to COVID-19, or *contacts*, typically via a phone call. They *collected* information on symptom history, relevant health information, and, importantly, with whom the contact has been in close proximity. They also *provided* information, such as how to track symptoms, when to contact a doctor, and recommendations for quarantining, testing, and obtaining community-based resources (CDC, 2020). A contact tracing system is effective when all contacts of an infected person are identified, communicated with, and subsequently tested and/or isolated, ending the branching lines of virus transmission (Kretzschmar et al., 2020).

A critical step in the contact tracing system, identifying contacts, is contingent on a contact tracer successfully *collecting* information provided by a contact about their recent whereabouts and close contacts. Collecting information pertaining to recent whereabouts and close contacts presents a challenge for all populations that contact tracers support because obtaining trust with contact tracers is difficult (Mooney, 2020, 1808). Thus, the interactions contact tracers have with the populations they serve require that contact tracers build swift trust (Schilke & Huang, 2018) with their contacts during their initial phone call.

Meeting this need in marginalized populations is particularly important, but challenging, because BIPOC individuals may be reluctant to trust contact tracers as they attempt to gather personal information (Perry, 2021, 779-780; Randall et al., 2020). Such distrust in BIPOC communities may stem from a variety of sources. For instance, these individuals may fear that contact tracing may initiate immigration, law enforcement, or other legal repercussions for noncompliance (Randall et al., 2021, 6-7). Similarly, they may be hesitant to share information about their household members if they share a home with a number of individuals that exceeds local housing codes or are working without a visa. In short, the success of contact tracing efforts is contingent upon the contacts answering questions honestly and complying with contact tracers' requests. To encourage honest communication, one of the critical goals of the initial interaction a contact tracer has with a contact is to establish trust (Dalal et al., 2021, 12).

### **Trust & Compliance**

In a large-scale survey of BIPOC communities during the first year of the COVID-19 pandemic, Randall and colleagues (2021) found that an immediate determinant of willingness to comply with contact tracer requests is trust in the contact tracer. Whereas trust typically develops over time as two parties learn about each other's intentions and behavioral patterns (McAllister, 1995, 29), contact tracing is a limited duration, limited quantity, and novel interaction. Therefore, a contact tracing exchange relies on developing *swift trust*. Swift trust is defined as the willingness to be vulnerable to the actions of another that develops rapidly and prior to any significant interaction between the two parties (Schilke and Huang, 2018, 1183-1184). Importantly, Schilke and Huang (2018) found that swift trust can develop over short-duration telephone calls, highlighting that it is feasible for contact tracers to establish swift trust.

Furthermore, Randall et al. (2021) found that trust in government health officials and trust in healthcare providers significantly predicted trust in contact tracers. This speaks to the importance of building trust not only with contact tracers, but the institutions supporting contact tracing and slowing the spread of disease and illness. Considering two institutions at

the center of disease treatment and prevention are healthcare systems and the government, it is important to build trust not only with contact tracers, but also government health officials and healthcare providers - with whom individuals have longer, more established relationships.

Unfortunately, healthcare and government representatives have engaged in actions that undermine the trust individuals from BIPOC communities hold in these systems. In both domains, numerous past events have influenced individuals from marginalized communities' distrust in these two systems. Examples include how slave owners addressed medical needs of slaves (Kennedy, Mathis, and Woods, 2007, 56-58); COVID-19-specific racist remarks, blame, and assaults stemming from accusations of Asian individuals being responsible for the spread of the virus (Tessler et al., 2020, 637-641); and language barriers, fear of deportation and discrimination due to immigration status, and access to quality healthcare particularly among Latinx individuals (Cristancho et al., 2008, 635; Rhodes et al., 2015, 329). These factors have sustained over the years and permeate the healthcare landscape today engendering potential mistrust in healthcare systems (Kennedy et al., 2007, 58-59), making requests for blind trust in healthcare providers and government officials unlikely (Boyd, 2021).

It is critical to acknowledge and account for this mistrust when combating disease spread through contact tracing because of the indirect effect trust in healthcare and government institutions, through trust in contact tracers, have on BIPOC individuals' willingness to comply with contact tracing requests (Randall et al., 2021, 17-20). In sum, effectively mitigating the spread of communicable diseases among marginalized communities through contact tracing requires contact tracers who can foster trust in the contacts. Therefore, identifying and training the right personnel to serve as contact tracers is essential to building trust in contacts and in BIPOC communities. As we demonstrate below, the theories and expertise in personnel psychology can assist in accomplishing this goal.

### **Personnel Psychology Overview<sup>1</sup>**

Well-validated selection and training programs can support efficiently hiring and training quality personnel, in addition to improving performance and retention (Guion, 2011). The process of systematizing a selection and training program begins with a job analysis (Guion, 2011, 14). Results of a job analysis serve as the foundation for all decision-making concerning

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<sup>1</sup> It is beyond the scope of this chapter to provide a detailed, step-by-step plan of how to design selection and training systems for contact tracers. Rather, our purpose is to provide an overview of broad steps to follow as an initial foundation. Further work to identify competencies necessary for performing effective contact tracing duties, selecting, and training these individuals must be done by joint efforts engaging subject matter experts on contact tracing and personnel psychologists.

personnel in organizations, such as selection, training, performance appraisal, promotion, termination, and compensation (Brannick & Levine, 2002, 223-226).

Job analysis is a scientific assessment of a job to identify the critical job elements and the knowledge, skills, abilities, and other characteristics (KSAOs) required for successful job performance (Brannick, Levine, & Morgeson, 2007). This information is typically gathered through a variety of methods, including observation, interview, survey, and a review of existing job and training materials. Then, the job analyst makes predictive hypotheses specifying which specific KSAOs predict what aspects of job performance and why (Guion, 2011, 80-84). Once the most important KSAOs for a job have been identified, those that are needed at the time of hire are distinguished from those that can be trained after hire.

Dalal et al. (2021) followed these steps to conduct a combined job analysis (i.e., combining tasks critical to the job and personal characteristics critical for performing these tasks) for the position of contact tracer. As part of this process, they identified a number of critical KSAO characteristics that are likely to improve the performance of contact tracers in BIPOC communities. For instance, Dalal et al. (2021, 11) predicted that one of the skills identified as important for contact tracing, *service orientation* (i.e., actively looking for ways to help people), may improve contact tracer's success in engendering trust and meeting the needs of contacts. Further, it was argued that service orientation is something with which an applicant should demonstrate proficiency at the time of hire. Regarding KSAOs to be trained, Dalal et al. (2021, 8) proposed that *knowledge of HIPAA and local health regulations* is a trainable knowledge domain that ensures secure storage and maintenance of sensitive health information.

Outlined below are broad steps to be followed to create job relevant selection and training systems based on the results of this contact tracer job analysis. In addition, Figure 1 presents a flow diagram of the general process of developing selection and training practices after the job analysis. We note a few things about this figure. First, the figure presents the general process from which specific implementation may differ. Second, the steps are generally presented in chronological order, but the actual process may require cycling back-and-forth between steps to refine the system. Third, steps connected with dashed, double-headed arrows represent steps that will likely feed into each other. Finally, although we present citations for further readings at each step, we encourage localities to partner with personnel psychologists to assist with the development of such standardized human resource practices.

**Selection.** As figure 1 shows, developing an effective selection system begins with deciding on methods of assessing the KSAOs identified in the job analysis and the procedures for implementing the selection process. Regarding the former, it is not feasible to assess on all

identified KSAOs—as such, developers will want to decide on what KSAOs to select, and then decide how best to assess them (Arthur & Villado, 2008). Popular assessment methods include selection tests, structured interviews, and work samples. Deciding which methods to use should take into account locality specific issues (e.g., timelines for new hires, costs, available resources).

After identifying the selection methods, one will need to either identify existing tools to measure these KSAOs or develop them anew. Regardless of approach, the measures will need to undergo heavy psychometric evaluation (see Putka, 2017; Zickar, Cortina, and Carter, 2017). This will include assessment of the reliability of the measures as well as the construct validity of the measures. Regarding the former, one will need to ensure that the measures yield consistent and reproducible scores free of error (Putka, 2017, 4-6). Construct validity refers to the accuracy of the inferences made about a person's standing on the attribute measured (Zickar et al., 2017, 403-404). Establishing that each measure is construct valid is, in and of itself, an involved process (Clark and Watson, 2019), and care must be taken to ensure that the sufficient evidence is collected to establish construct validity. In addition, one will need to engage in subgroup analyses to ensure there is no measurement nonequivalence (i.e., when two individuals with the same level of an attribute have systematically different scores on a measure) between protected classes (see Stark, Chernyshenko, and Drasgow, 2017). This represents a type of testing bias that can disproportionately negatively impact protected classes of individuals (Guion, 2011, 308-309).

In addition to developing assessment methods, one will need to strategize on selection procedures which will include decision points on whether to use a compensatory or a multiple hurdle selection system (Aiken and Hanges, 2017, 390-395; Tippins, Solberg, and Singla, 2017, 384), and how measurement data will be combined: actuarially or intuitively (Aiken and Hanges, 2017, 388-390; Kuncel, Klieger, Connelly, and Ones, 2013, 1060). Compensatory selection systems allow a lower score on one attribute to be balanced by being high on a different attribute; a multiple hurdle selection system requires the candidate to show a minimum level of a given attribute at one stage of the selection process before moving to the next (Aiken and Hanges, 2017, 388-390). Data combination procedures refer to the way the assessment scores are combined to make a decision. Actuarial (*statistical*) combination uses an algorithm to rank order candidates and engage in top-down selection. Intuitive (*clinical*) combination involves the decision maker determining weights for each measurement score for making the selection decision. Actuarial combination outperforms intuition in nearly every instance, and is the method we recommend (Kuncel et al., 2013, 1064).

The final steps in developing a selection system are implementing the developed system, then validating the selection decision (Binning and Barrett, 1989; Kehoe and Sackett, 2017; Schmitt, Arnold, and Nieminen, 2017). In an ideal situation, one would use the new system in conjunction with an existing system to ensure that new system does not adversely impact selection decisions (Kehoe and Sackett, 2017, 62; Schmitt et al., 2017, 36-41). If this is not possible, though, the system can be used to make selection decisions, and then these decisions can be validated. To validate selection decisions, one should evaluate if selected candidates meet minimum performance standards. Likewise, scores on the assessment developed previously can be correlated with measures of performance to ensure that those scoring higher on the assessments are performing better (Binning and Barrett, 1989). Finally, one should ensure that the selection system is free from adverse impact. Adverse impact occurs when the rate of selection for one protected class (e.g., BIPOC individuals) is 4/5 that of another protected class (e.g., White individuals). Such a situation is prima facia evidence of discriminatory hiring (Gutman, Outtz, and Dunleavy, 2017, 634-636), and should be addressed quickly. Finally, these selection procedures will need to be consistently reevaluated to ensure everything is working as intended (Kehoe and Sackett, 2017, 87-88).

**Training.** Training programs are the counterpart to selection systems because no new hire enters a role demonstrating their full potential in the KSAOs necessary for their job. Similar steps for devising and evaluating a valid selection system can be completed for a learning system, although as shown in Figure 1, there are some differences. Training and development plans target and reduce gaps in the KSAOs required to fulfill the needs of the job. For personnel to effectively learn the proper job-relevant information and KSAOs, it is critical for training programs to be developed based on the information about critical KSAOs obtained from a job analysis (Ford, 2021, 63-67). Aligning instructional objectives with KSAO gaps in the workforce thus ensures that the content included in training meets individual employee needs as well as organizational goals. Next, these objectives inform decisions about how best to design and evaluate the training. Indeed, to ensure that contact tracers retain and transfer what was learned in training to the job context, trainings must be developed according to scientific principles of training design and delivery methods (Arthur, Bennett, Edens, and Bell, 2003, 242-243; Kraiger and Ford, 2021, 4.7-4.13). For example, when incorporating critical contact tracing knowledge of HIPAA and local health laws into a training plan, learning principles that encourage deeper information processing (e.g., spacing instruction temporally, using varied and relevant examples, repeated testing) may improve contact tracers' knowledge acquisition (Schmidt and Bjork, 1992). Delivery method considerations, such as whether training will be delivered in person or online, will also influence how the training should be designed and evaluated (Ford, 2021, 173-174; Kraiger & Ford, 2021, 4.13).

As shown in Figure 1, the identification of training objectives also determines how to evaluate training effectiveness to ensure that individual employee needs and organizational goals are met. In scientific terms, validity evidence of the utility of training programs is established by gathering data demonstrating that training improved learners' targeted KSAOs, and then linking the training outcomes to future work effectiveness (Kraiger, 2002, 344). Thus, training validity establishes confidence that changes in learning are indeed caused by the training program and that the content covered in training is meaningfully related to job demands. Similar to evaluating the validity of a selection system, information should be obtained from different sources (e.g., SMEs, beneficiaries) and using different methods (e.g., pre/post knowledge tests, behavioral evaluations) to comprehensively evaluate the training effectiveness while ruling out alternative causes (Ford, 2021, 145-151; Sitzmann & Weinhardt, 2019).

The personnel requirements (i.e., KSAOs) for effective performance differ for each job, including that of contact tracing, which as we discussed above is both relatively unknown, but also critical to public health emergencies like COVID-19. Therefore, it is important to draw upon these principles of personnel psychology when building an effective contact tracing workforce, through selection and training, that will meet the needs of the disadvantaged.

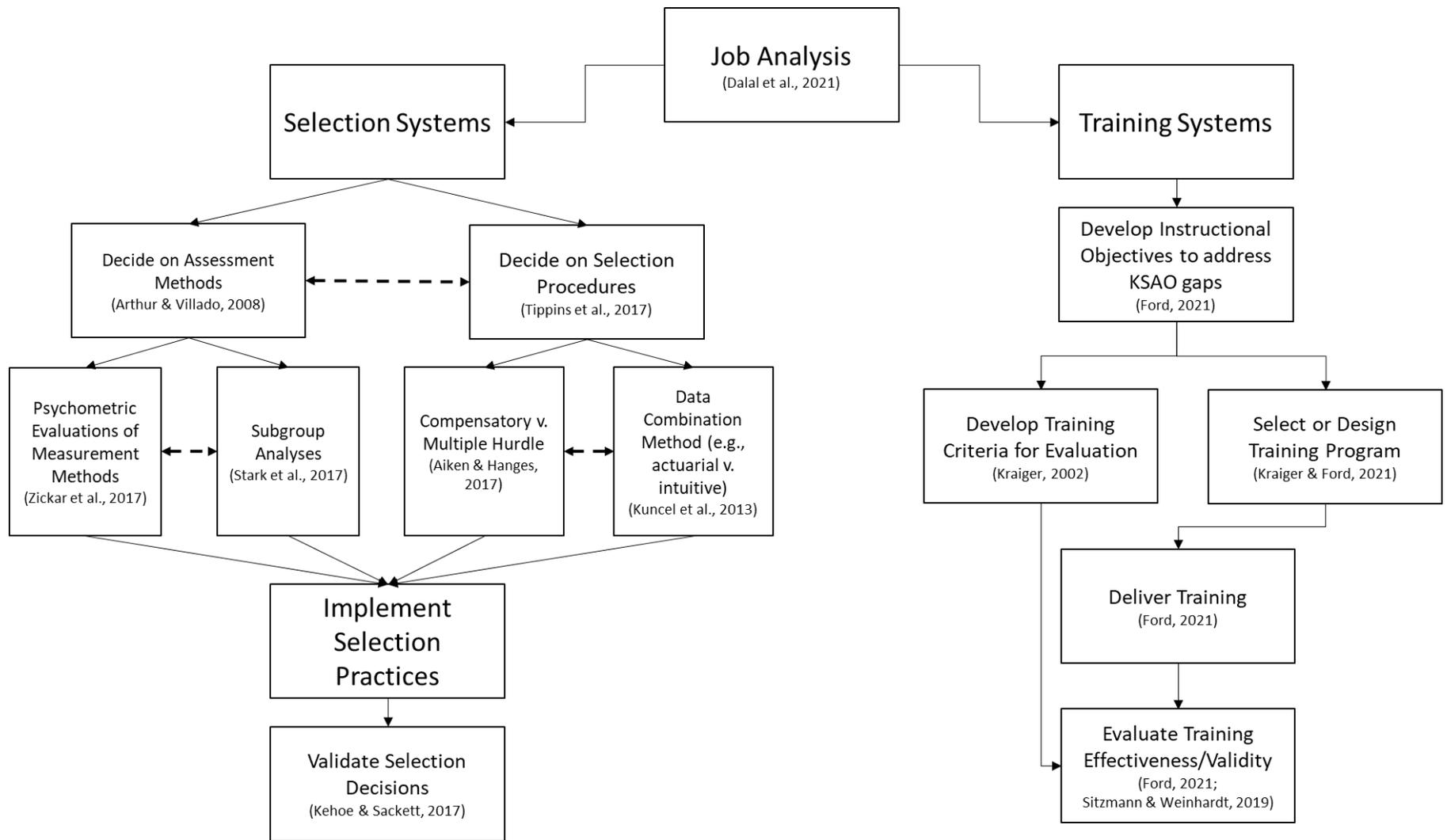


Figure 1. Flow diagram depicting the general processes for developing selection and training systems. Double headed arrows represent decision points that feed into each other.

## A Contact Tracing Workforce for Marginalized Communities

As mentioned earlier, it is critical for marginalized individuals to trust contact tracers, with this sense of trust developing swiftly during their initial interaction. Though research in this domain is scant, Dalal and colleagues (2021) identified six critical KSAOs in which contact tracers must demonstrate proficiency when working within BIPOC communities. Specifically, contact tracers should demonstrate 1) a thorough understanding of laws concerning sensitive health information (e.g., HIPAA and local health information regulations), 2) an understanding of the unique impact COVID-19 has on their contact’s community, 3) active listening skills, 4) complex problem-solving skills, 5) cultural sensitivity skills, and 6) empathy and compassion (Dalal et al., 2021, 27-29;). Table 1 distinguishes whether these six KSAOs are necessary at the time of hire versus those that can be trained after hire. Definitions of each KSAO from Dalal and colleagues (2021, 16-26) are also included. Notably, these attributes share a high degree of overlap with factors that are associated with increased trust in contact tracers (Randall et al., 2021).

Table 1. Critical KSAOs for Contact Tracers

KSAOs necessary for Hire	Definition
Complex Problem-Solving Skills	Identifying complex problems and using relevant information to evaluate and implement solutions.
Empathy and Compassion	The tendency to be understanding of and show concern for others' challenges
Active Listening	Giving full attention to what someone is saying, making sure one understands the points being made, and avoiding interruptions.
KSAOs necessary to Train	Definition
Knowledge of laws concerning sensitive health information (e.g., HIPAA and local health information regulations)	Information regarding the rules, regulations, and guidelines for recording and sharing health information as legislated in the Health Insurance Portability and Accountability Act, as well as specific state and local regulations.
Knowledge of the unique impact COVID-19 has on their contact's community	Information about how the communicable disease has affected different communities/stakeholder groups

## Cultural Sensitivity Skills

Understanding individuals from differing cultural backgrounds, and using this information to successfully serve individuals within their own communities

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Source: Dalal et al., 2021, 16-26.

Note: KSAO stands for Knowledge, Skill, Ability, and Other (e.g., personality, values)

Specifically, when a contact tracer has accurate knowledge about laws and regulations related to the handling of sensitive health information, they are better able to communicate to contacts how the information is used, stored, and shared. Additionally, skills such as active listening and cultural sensitivity may help build rapport and trust with contacts and facilitate communication with varied populations by increasing sensitivity to the unique needs, customs, and experiences of different cultural groups (Dalal et al., 2021, 12). Even personality attributes may be associated with establishing trust. Contact tracers who are highly empathetic or compassionate may successfully express their understanding and concern for the challenges and needs that the contact is facing (Dalal et al., 2021, 17), thus promoting trust.

Relatedly, Randall and colleagues (2021) identified actions by a contact tracer that may lead to higher likelihoods of willingness to comply with contact tracing recommendations among BIPOC individuals. The BIPOC individuals in this study reported that a) respectful communication, b) clear communication about their role as a contact tracer, c) clear justification of the reason for contact, and d) providing accurate evidence of spread relevant to the contact were all factors related to their willingness to trust/comply with a contact tracer. Furthermore, individuals from BIPOC communities reported that having respectful, kind, compassionate, and empathetic interpersonal communication would be more effective than threatening or punitive communication to increase compliance.

Developing selection and training procedures that are specifically designed to identify and develop contact tracers for working with marginalized communities can ensure that contact tracers have the critical KSAOs needed to perform this important work. Although what is presented in Table 1 may not be an exhaustive list, the KSAOs already identified suggest that contact tracers should demonstrate knowledge, attentively listen, demonstrate cultural competence, and act compassionately, therein increasing trust in contact tracers, and subsequently increasing the contacts' willingness to comply with contact tracer recommendations.

## Conclusion and Future Steps

Minority health disparities will intensify if public health interventions are poorly executed, ineffective, or under-funded (Phelan and Link, 2005). It is critical, therefore, to invest in public health infrastructure to address minority health disparities (Perry, 2021, 780). Here, we proposed that, based on the lessons learned from the COVID-19 pandemic, one such investment to addressing BIPOC health disparities is to build a contact tracing workforce that is purposely selected and trained to work within marginalized communities. Based on the work of Dalal et al. (2021) and Randall et al. (2021) during the COVID-19 pandemic, we argue that a systematic and standardized selection and training system built around the KSAOs identified as critical for building trust in contact tracing among BIPOC individuals will help address the disproportionate impact of communicable diseases in marginalized communities. This chapter advances this work further by providing steps on how to construct these systems and will hopefully encourage collaboration between public health and personnel psychology professionals. This is critical in responding to future public health crises so that marginalized communities feel safe interacting with contact tracers as their work is central to mitigating disease spread. Although the results of the aforementioned studies and the work presented here provides a blueprint for such a system, there is much that still needs to be developed in future work to realize these goals.

First, the primary outcome of a training and selection system is typically job performance (i.e., performance as a contact tracer). A critical public health outcome for contact tracing, however, is actual compliance with contact tracing recommendations. In other words, although performance as a contact tracer involves many things and contact compliance is multiply determined, a critical outcome of this standardized selection and training system should include actual compliance with contact tracer requests. Thus, future steps need to be taken to ensure contact tracers are given the resources to assist with compliance. This includes providing training on improving trust with BIPOC communities through respectful and empathetic dialogue, providing contact tracers with up-to-date information on the disease spread and local resources to offer individuals support, and public messaging to emphasize that contact tracers will not record or report immigration status or other information to law enforcement or others.

Second, Dalal et al. (2021, 13-29) identified a list of critical contact tracer KSAOs, predictive hypotheses linking these KSAOs to job performance, and recommendations for whether these KSAOs are better targets for selection and/or training. However, future research will want to consider any additional critical KSAOs not included here (e.g., multi-lingual skills). Furthermore, reliable and valid measures of the identified KSAOs need to be identified and/or developed for use in the selection of contact tracing applicants. Finally, well-designed training systems need to be developed and evaluated for those KSAOs that need to be trained.

Third, future steps need to consider how to share these findings. This can be done by submitting to O\*NET - an online database indexing thousands of jobs (Rivkin, Gregory, Norton, Craven, & Lewis, 2017) - a new job classification for contact tracer. This is particularly appealing because many people would have access to the full list of validated KSAOs, tasks, and other job qualifications and employment information which is continuously updated by the U. S. Department of Labor.

Finally, this chapter argues that scientific selection and training is critical for effective contact tracing in marginalized communities and presents a blueprint for future work to achieve this goal. However, the identified KSAOs related to working with marginalized communities can be considered with other public-facing health support positions and other related positions to more robustly support those working within marginalized communities. Indeed, our hope is that one of the lessons learned from the COVID-19 pandemic is that the science of personnel psychology can be applied to addressing minority health disparities by selecting and training an effective workforce. Thus, hopefully the information presented here, although focused on the position of contact tracer, may serve as a blueprint for building a more effective public health workforce that can meet the needs of heterogenous communities in times of crisis.

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