frontiers in Communication

ORIGINAL RESEARCH
published: 09 March 2022
doi: 10.3389/fcomm.2022.610012

# A Communication Complex Approach to Autism Awareness Training Within First Response Systems in Indiana

*Natasha A. Rascon**

*The Department of Communication, Indiana State University, Terre Haute, IN, United States*

Providing Autism and communication training to facilitate better interactions in emergency situations between first responders and individuals with Autism is a critical need. Although trainings exist for first responders, "typical training already being provided on the job is not sufficient" (IBCCES). In addition, while resources—such as YouTube videos—are available, the process for viewing, discussing, and debriefing over the material along with the development of more effective conversational practices is an unexplored space. This case study describes the use of the Communication Complex (CC) perspective for training Volunteer Firefighters in Indiana, emphasizing the development of knowledge and skills necessary for effectively managing this often challenging context. It extends the body of CC research that relates to first responders and other health care providers. An elaboration of the theoretical framing is provided, followed by a brief introduction to Autism and a discussion of safety concerns in the community. Finally, a detailed analysis of the case study is presented. Reports from the participants indicate that Autism awareness training through a CC approach can enable more desirable interaction patterns in emergency situations involving first responders and those with Autism. The findings suggest that the CC approach is effective for enhancing understanding, which can positively impact future scenarios involving individuals with Autism and their families and increase feelings of safety.

**Keywords: autism, autism awareness, health communication, safety, communication complex**

OPEN ACCESS

***Edited by:***
*Susan Parrish-Sprowl, Indiana University, Purdue University Indianapolis, United States*

***Reviewed by:***
*John Chetro-Szivos, Assumption University, United States*
*Linda Ziberi, American University in Kosovo, Serbia*

***Correspondence:**
*Natasha A. Rascon*
*natbarne@gmail.com*

***Specialty section:***
*This article was submitted to Health Communication, a section of the journal Frontiers in Communication*

***Received:*** *24 September 2020*
***Accepted:*** *07 February 2022*
***Published:*** *09 March 2022*

***Citation:***
*Rascon NA (2022) A Communication Complex Approach to Autism Awareness Training Within First Response Systems in Indiana. Front. Commun. 7:610012. doi: 10.3389/fcomm.2022.610012*

## INTRODUCTION

We have become increasingly aware that communication is more than messages exchanged and the influence they may or may not have. *How* we tell a story is at least as important as the story content itself (Pearce, 1989, 2007; Parrish-Sprowl et al., 2020). Many communication scholars agree that one of the key challenges for those that study communication is to consider aspects of the process that are not simply focused on the message content that is conveyed. All people communicate, but even when we convey the same message as another person we do not all do so in the same way. These differences matter, especially in emergency situations. Much of the theory and research in communication has ignored such aspects of interaction, calling into question the relevancy of

such scholarship for a substantial number of conversational episodes we label emergency or crisis situations. One example is when people identified as being on the Autism spectrum are involved in such contexts. Given the large and growing number of people who might qualify as neuro-diverse, it is important, especially in a phronetic sense, that communication studies find ways to meaningfully take into account such differences.

A recently developed approach to understanding the communication process in a more wholistic sense, labeled Communication Complex (CC), takes a transdisciplinary perspective drawing from scholarship in communication, neuroscience, physics, and other disciplines to create a framing for research and practice to more fully explain the complex process of interaction and to enable practices that serve all people well (Parrish-Sprowl, 2012, 2014, 2017). CC explanations enable scholars to integrate the storying aspects of interaction with the systemic biological dimensions that are always an integral part of human relationships. By interweaving these aspects of interaction into a meta-framing perspective, we are better able to both understand the process of communication and to use it to improve practices in difficult circumstances. The present study illustrates how engaging the CC approach can serve as a way to understand the nature of interaction between first responders and those with Autism and as a frame for developing and delivering training to improve communication resources and practices in emergencies.

## THEORETICAL FRAMING

Communication Complex takes a quantum complexity paradigmatic approach to understanding the dynamic process of human interaction (Parrish-Sprowl and Parrish-Sprowl, 2014, 2020; Parrish-Sprowl, 2015b; Parrish-Sprowl et al., 2020). Emerging from quantum thinking, it offers a way of understanding, describing, and researching communication that is different than a traditional social science approach based on a classical (Newtonian) meta-framing that encompasses a mechanistic, reductionist understanding of phenomena. The CC perspective views communication as not simply the exchange of messages, but as a dynamic, systemic, and bioactive process that flows between and within people, creating patterns of interaction that play a key role in shaping who and what we are as well as what our relationships, communities, and cultures are like (Parrish-Sprowl, 2017; Parrish-Sprowl et al., 2020).

Because communication is bioactive, the way we talk with each other plays a role in biological functioning that reflexively plays a role in our interactions (Doidge, 2007; Siegel, 2010, 2012; Cozolino, 2014; Parrish-Sprowl, 2017; Parrish-Sprowl et al., 2020). Perturbations, a term derived from quantum theory, are those ways that we alter action as the means for changing patterns that emerge from the process. This is a major reason why *how* messages are delivered matters. Porges (2004, 2017) describes the role of social communication as "biological movement", and goes on to describe the importance of non-verbal communication—*how* a message is delivered—in determining a feeling of closeness and safety with others. He describes a "biological imperative" of connecting and co-regulating with others. He goes on, "Thus, to fulfill our biological imperative of connectedness our personal agenda needs to be directed toward making individuals feel safe" (Porges, 2017, p. 51). More specifically, Porges discusses the compromised social engagement system of those on the Autism spectrum, stating, "many of the features of the depressed social engagement system observed in ASD may be reversed through an understanding of how the nervous system, *via* neuroception, responds to cues of safety" (Porges, 2017, p. 3). Effective non-verbal communication can mitigate defensive reactivity (activation of the sympathetic nervous system), leading to the possibility of more "profound understanding, learning, and skill development" (Howes, 2013). Thus, self-regulation of our nervous system becomes an important aspect of the communication process and the skills associated with it can be learned and developed to improve interaction, especially in challenging situations.

As Parrish-Sprowl et al. (2020) demonstrate in their CC-informed work with primary healthcare staff serving refugees in Jordan, learning self-regulation skills (as part of a "Communication for Whole Health" intervention) empowered the workers to act into challenging situations more effectively. Teaching health care professionals and first responders to regulate their physiological responses during emergency situations can assist them in moving from a state of reactivity to a state of receptivity that facilitates a more positive interaction. This can build trust and enhance the relationship with a victim in the situation. Porges (2017) notes, "The calming of physiological state promotes opportunities to create safe and trusting relationships which in themselves expand opportunities to co-regulate behavioral and physiological state" (p. 51). This is particularly important if that victim is on the spectrum and requires assistance regulating their own physiological response during the crisis. When considering the various sensory elements of an emergency situation, those involved may be experiencing sensory overload that can be debilitating, especially to those with sensory sensitivity such as people diagnosed with Autism.

Assisting others with regulation while simultaneously regulating oneself is a skill. Acquiring the skill is possible. Hasson et al. (2012) note that "cognition materializes in an interpersonal space" (p. 114), suggesting skills training for emergency situations is more likely to inhere if structured to enable interaction among all the people in the room, supporting the acquisition of new resources that enable better practices in future interactions. The unique connection between participants—based on existing relationships, experiences, and shared stories—allows for a synergistic flow between and within participants. The flow "between" the participants is more obvious, because an observer without any understanding of communication as a bioactive process could walk into the situation and identify messaging in the room; however, while the observer might identify a feeling of positive energy, the process itself is less visible. The process of conversation also includes the flow "within" (i.e., a person's internal state as reflected in intentional or unintentional facial expressions, posture, gestures, etc.). *How* they communicate can impact the other both consciously and non-consciously.

Among other biological actions, communication is partly a function of the mirror neuron system (MNS). The MNS refers to those neurons that activate when we observe the actions

of others (Hamilton, 2013). Creating an environment where positive non-verbals emerge that are then internally mirrored by others in interaction—through activation of the MNS—will create neural firing in the participants that can literally rewire their brains and create new mind-maps (Siegel, 2010, 2012) that can be activated in future, similar interactions (e.g., an emergency situation involving an individual with Autism). Of importance to this discussion is that despite attempts by researchers to demonstrate the differences in the MNS of individuals with Autism, Hamilton's (2013) review of 25 published research papers did not support the argument that the MNS of persons with Autism is abnormal—often referred to as broken mirror theory. Hamilton also highlights a study by Grèzes et al. (2009) that determined, "different responses to observation of emotional actions in autism are driven by differences in emotion processing in the amygdala, not by core differences in the mirror system" (Hamilton, 2013, p. 97). Not only will interventions that include mirroring improve the interactions of first responders when utilizing such practiced non-verbal behaviors, they have the potential to positively influence appropriate and helpful MNS activity for persons with Autism in an emergency situation (systemic effects). Even if the MNS does not activate in the same way for neuro-typical and neuro-diverse individuals, inviting a mirrored response requests a desired action. For instance, a positive facial expression combined with a soft tone and an outreached hand seeking a high-five may prompt a mirrored response of an outreached hand seeking to complete the high-five—and quite possibly a positive facial expression will accompany it. Recognizing that the MNS plays a role in how we interact, a CC approach to interventions can enhance communication by enabling more receptive rather than reactive interactions by encouraging behavior that activates a more calming response.

Aside from the MNS, it is important to note more broadly that perceptions are constantly formed rather than simply received without judgment. Ramachandran (2011) explains perception at the neurological level describing it as, "an actively formed opinion of the world rather than a passive reaction to sensory input from it" (p. 49). Sensory data (sight, sound, etc., which includes all aspects of communication) create "neural impulses" that lead to a translation process of sensation to neural firing which is the biology of meaning making. He goes on to describe neural impulses as "symbolic descriptions that represent the scenes and objects" (p. 47) observed. During perception, a representation is formed of "the various features and aspects of the image in totally new terms—not with squiggles of ink, of course, but in its own alphabet of nerve impulses… partly in your retina itself but mostly in your brain" (Ramachandran, 2011, p. 47). When the process of perception is considered then, we can work outwards to recognize that how we communicate is more important than what we say in many if not all circumstances, including emergency situations.

Imagine forming a pattern of neural firing (how we make meaning of speech acts along with everything else) that represents fear for safety of the unknown, of a scary figure, etc. vs. one that represents safety, trust, and a secure relationship. The negative or positive perception is literally constructed, reconstructed, or altered through impulses in the brain. An effort to develop positive perceptions necessitates effective interactions with people who have Autism, particularly those who aim to provide safety, including first responders. The effort begins prior to an emergency situation through the acquisition (i.e., training) of communication resources to influence practices during an emergency situation. As Porges (2017) states, "The bottom line is the understanding that the human nervous system … is on a quest, and the quest is for safety, and we use others to help us feel safe" (p. 100).

The power of neurological processes of perception is demonstrated by the impact of a number of health interventions' effectiveness. For example, Ayling et al. (2018) discuss the impact of putting people in a positive frame of mind when they receive a flu vaccine. If patients are in a positive mood—something that can be boosted or diminished by a practitioner—then the study found a higher degree of vaccine effectiveness. Although changing the mood of an individual during an emergency situation may be a challenge, it holds potential for greater safety. If a Volunteer Firefighter or first responder can learn to portray oneself in a non-threatening, inviting manner, perhaps the individual with Autism may form a positive mood and positive perception that would lead to trust in the relationship during a critical time.

Of importance in crisis circumstances is how we assess risk. Porges (2017) describes the non-conscious process of neuroception where one's "nervous system is continuously evaluating risk in the environment" (p. 8). Neuroception includes three key aspects: (1) possible environmental triggers of feelings that induce physiological reactions, specifically when concerning safety and danger, (2) the impact of social interactions on attempts to calm as well as reactions to events, and (3) potential defensive strategies and life threat triggers. Without knowing triggers, impact of social interactions, or defense mechanisms, a first responder is left without proper resources to collaborate with an individual to assure they *feel* safe, understanding that *feeling* safe and *being* safe from a danger are different concepts.

Feelings of safety require collaboration between the first responder and the individual that encourages both to regulate their physiological reactions and maintain calm (Porges, 2004, 2017; Porges et al., 2014). Being safe from a danger could mean using force to physically pull an individual out of a situation, which may not provide a feeling of safety for the individual. It may actually result in a negative reaction, despite safety efforts provided by the first responder. Porges states, "Attempts to socially engage a traumatized individual, rather than calming, may result in defensive strategies of rage and anger" (p. 8). Porges (2017) notes that the feeling of risk can arise even when there is no clear threat when neuroception is distorted by triggers. An individual with Autism experiencing a traumatizing event (e.g., car wreck or house fire) who encounters a first responder that is frantic and loud, rather than quiet and calm, may become behaviorally reactive (e.g., have a tantrum, cause physical harm, or show other demonstrations of anger).

Porges (2017) moves beyond the neuro-typical process of perception construction that is influenced by how a message is delivered to focus on individuals with neuro-diversity that

may have faulty neuroception—for instance in individuals with Autism who experience difficulty with social engagement processing. Neuroception in the neuro-typical will trigger a fight, flight, or freeze (Gray, 1988, 2003) response. Individuals with faulty neuroception have an inability to detect accurately whether the environment is safe or another person is trustworthy, which may prevent the responses from occurring (Porges, 2004, 2017; Porges et al., 2014). Yet, when individuals with faulty neuroception experience triggers, they non-consciously generate responses. Hence, determining triggers is an invaluable part of interpersonal interactions. Learning of possible triggers during interactions will have systemic effects on other interactions potentially improving first responders' ability to determine and avoid those triggers.

Engaging with the complexity of people's lived experience has the potential to improve lives, including those in the Autism community. Communication Complex offers a perspective that enables a richer and deeper understanding than foundational perspectives of communication. Yes, we engage in messaging and try to say what we think needs to be said in any situation. We also listen in an attempt to understand what it is that other people are trying to convey. At the same time, we are creating biological activity that flows through our bodies and through those with whom we interact. The bioactive and systemic effects of communication should be taken into account to facilitate the development of greater communication resources and practices. It also should be acknowledged when we consider the process of research. When we are being scholarly, we cannot escape the action of the communication process. A CC approach moves beyond traditional foundationalist assumptions to a more quantum approach that explicitly recognizes that the view of the researcher as an objective observer of an extant reality is not possible. I am a parent of children with Autism. My youngest received the diagnosis at the early age of two. Thus, my story is an integral part of the study discussed in this paper because the researcher is inherently entangled with the research. We live in socially constructed realities, literally and figuratively, making sense of events and experiences through the stories told as we participate in storying. Subjective views are not simply something that we have in our minds, they are embedded in biology and should be understood as such. Consequently, throughout this article, I share stories from a first-person perspective as an essential part of the research. Influenced by the work of Bochner and Ellis (1996) and Ellis and Bochner (2000) on autoethnography as well as by the CC perspective, readers are invited to experience my emotion as integral to my life journey that cannot be separated from research.

## AUTISM IN EMERGENCIES: COMMUNICATING SAFETY

Reflecting the systemic perspective of this research, the specific use of Autism with a capital "A" in this paper is meant to be inclusive of all those in the Autism community—including individuals with Autism, Autism Spectrum Disorder (ASD), Asperger's, or Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), as well as family members, caregivers, and friends. For those unfamiliar with the Autism diagnoses, a brief explanation of Autism diagnostic categories is provided along with changes that have occurred during the last decade. At the time of diagnosis for my family, the Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM-5) was used (American Psychiatric Association, 2013). For many in the Autism community, the relatively recent change in diagnostic criteria in the DSM-5 is familiar. For those who received a diagnosis based on the criteria from the DSM-IV-TR—used for diagnosis from 2000 to 2013 and arguably much of 2014 as professionals adjusted their diagnostic practice—three categories were assessed: (1) qualitative impairment in social interaction; (2) qualitative impairment in communication; and (3) restricted, repetitive, and stereotyped patterns of behavior (American Psychiatric Association, 2000). In 2013, the DSM-5 changed the criteria to include only two categories: (1) deficits in social communication and social interaction across multiple contexts and (2) restricted, repetitive patterns of behavior, interests, or activities (American Psychiatric Association, 2013), and combined four different diagnoses into Autism Spectrum Disorder (ASD).

As most members of the Autism community understand, there is a spectrum of characteristics that encompasses a variety of social, behavioral, and communication abilities—all of this precludes any comorbidity which has been found to be as high as 95% of children with ASD (Soke et al., 2018). Although exploring comorbidity is not the focus of this paper, identifying this relation for many individuals with Autism reveals an additional layer of complexity that demonstrates the necessity to move beyond a *conceptual* understanding of Autism for those not in the community—and for those who are new to the diagnosis—to an *experiential* understanding of individuals that focuses more on relationship building than just knowledge acquisition. This is a critical shift that should inform how we think about training first responders and is core to a CC perspective for understanding human interaction.

"It takes a village to raise a child"—is a proverb that I reference when considering the many elements of developing a child into a respectful, kind, and courteous person capable of cognitive complexity. In this pursuit, the village includes the surrounding community that also enacts a role in creating safety. Davis and Goldband-Schunick (2002) discuss a relationship between parents of individuals with Autism and professionals in a community. They dedicate chapters to defining Autism, examining characteristics, providing a rationale for training community members and evaluating scenarios for a variety of specific community member positions, including first responders, firefighters, law enforcement officers, ambulance and emergency room workers, and retailers. Throughout the text, they reiterate the importance of training community members. They discuss the need to be able to recognize a child on the spectrum rather than assuming s/he is "mentally ill, on drugs, or just antagonistic" (p. 18).

Tragic events surface in news headlines frequently. It is heartbreaking to observe the many families who have suffered as a result of their safety or that of loved ones being placed at risk,

including 13-year-old Linden Cameron. Linden's mother called the crisis intervention team for help when he began "having an episode caused by 'bad separation anxiety' as [she] went to work for the first time in more than a year" (Evelyn, 2020). Linden was then shot several times by local police officers, despite being informed that he had Asperger's Syndrome and was experiencing an episode. Of the many questions and concerns that fill my mind, one I feel that I can address is the lack of Autism awareness training. If the local police officers had an increased awareness of Autism and better tools for communicating with Linden (e.g., a receptive approach with enhanced empathy), the situation likely could have been resolved in a much more effective way, avoiding Linden being hospitalized with multiple gunshot wounds.

Research focusing on situations involving individuals with Autism includes: studies of communication aimed at improving speech and language acquisition for the person with Autism (e.g., McDaniel and Schuele, 2021) or including communication devices to enhance interactions (e.g., Logan et al., 2017; Thiemann-Bourque et al., 2018; Babb et al., 2020; Clarke and Williams, 2020; Gevarter et al., 2020; O'Brien et al., 2020; Pierson et al., 2021). Additional studies center on nonverbal communication, emotion, and empathy (e.g., Dvash and Shamay-Tsoory, 2014; Timler et al., 2014; Sahar, 2017; Wieder, 2017). Researchers also argue against the claim that individuals with Autism lack empathy (e.g., Gernsbacher and Pripas-Kapit, 2012). Interestingly, no studies provide research that has sought to enhance the empathy of those interacting with individuals with Autism. Additional studies focus on peer attitudes and motivations in the classroom (Underhill et al., 2019), media influence on perception (Rourke and McGloin, 2019), and the vaccine-Autism controversy (Jang et al., 2019). Worth noting is the use of the words "communication" and "complexity" in research focusing on Speech Language Pathologists' intervention techniques aimed at improving communication; the Communication Complexity Scale (Brady et al., 2012, 2018; Hahn et al., 2017; Thiemann-Bourque et al., 2019) aims to "specifically describe the communication status of individuals with severe intellectual and developmental disabilities, particularly the early communication skills of these individuals" (The University of Kansas Life Span Institute, 2021). Even though the Communication Complexity Scale includes "communication" and "complexity" in the title, the focus is still a foundationalist view of complexity, which can be understood as a systems view of complicated situations that include multiple variables that work together—a very different view of complexity than that which is explored later in this paper (Parrish-Sprowl et al., 2020).

Given the increasing prevalence of Autism in the United States, this research project is timely and necessary. When reviewing the Centers for Disease Control (2016a) statistics, one can see the drastic increase in ASD diagnoses from 1 in 150 in 2000, to 1 in 54 in 2016. The most recent publication on Autism prevalence in the United States found in 2018, an estimated 1 in 44 children have been diagnosed with ASD (Maenner et al., 2021). According to the associate director for science at the CDC's National Center on Birth Defects and Developmental Disabilities, Dr. Stuart Shapira, "Some of the increase in autism prevalence might be due to the way children are identified, diagnosed, and receiving services in their communities" (Centers for Disease Control, 2016b). The Autism community clearly represents a large part of the US population and warrants this study, because even though the diagnosis of Autism has increased, communication research on providing awareness training to first responders has remained stagnant. Addressing this gap in research for those impacted is important.

As a parent of children with Autism, I harbor fears regarding their safety. Yes, I hold their hands, lock my doors, check to assure their car seats are installed and fastened properly, etc. Yet, there is more to assuring safety than simply completing steps in a checklist of actions that support safety. How can they be induced to hold my hands? How can they be assured that they are safe when the doors are locked? How can they be comforted such that it allows me to put on their five-point car seat harness? These situations may appear to be simple, but they are often complicated. Ensuring safety includes more than making arrangements for someone to take care of my children. I am not alone in this. Although the estimate has inevitably increased since 2012, the World Health Organization (WHO) estimates that globally, 1 in 160 children have a diagnosis of Autism (Elsabbagh et al., 2012). There are millions of people around the world that experience these concerns for safety every day.

My children seem safest, to me, when they are with the people in my life with whom we have developed strong, trusting relationships. Thompson (2008), in his foundational book *Straight Talk on Autism*, describes trust as "the foundation of relationships" and explains the significance of building trust with children with Autism. He states, "Children with ASDs must depend on parents and other adult caregivers to structure their world so it is safe and predictable" (p. 105). Having established strong relationships with my children, they trust and depend on me in order to trust others, including family members. However, no matter how well I follow specific steps to assure the safety of my children, there are no guarantees that all will go well, only probabilities. They can be prepped for various interactions, but perhaps they may not remember what to do or say. Others they do not know and who do not know them may not have the knowledge or skills (resources and practices) to effectively engage with them. While taking steps to help my children be prepared, it is also important for others to learn how to act into such interactions well.

Even when being cautious about who is around my children, nobody (including me) can guarantee that they will feel safe with those individuals. One situation that is indexical are trips to the doctor's office which are necessary and definitely not my favorite—"white coat syndrome" is in effect for my youngest. His fear kicks in the moment we pull into the parking lot and does not end until we are leaving the office. He is four and has seen various doctors in his short life, none of whom is providing safety in his mind. Over time, my 6-year-old has developed a trusting relationship with our primary care physician and has made strides in allowing the physician to check his vitals. Through many visits—and through establishing a trusting relationship—it now seems he feels safe. Drawing from the CC perspective's tenet that "every interaction is an intervention" (Parrish-Sprowl

et al., 2020, p. 1), I see all of our interactions as opportunities for promoting a feeling of safety. When involved, I can manage the interactions. When I am not involved, what can make me feel that my children are safe when they interact with others who they are not in strong relationships with or even strangers?

There are ways to influence interactions that do not include a familiar person, especially myself. Family members can be educated regarding likes, dislikes, triggers, soothing mechanisms, etc. Outside of family, as a parent and member of support organizations, I can engage in and support advocacy to and with those who work in schools, daycares, and therapy centers for activities and routines, including contributions to treatment and Individualized Educational Plans, that enable my children to be better able to function in emergencies. Situations where my voice is not present are more challenging such as in an emergency situation where full reliance is placed on the professionals' abilities to make my children feel safe. Even though there is some training required for first responders, "typical training already being provided on the job is not sufficient" (IBCCES, 2020). When unable to be present, I want to know there is a chance for the professionals to provide that safety. There is no way to know if/when first responders will encounter an emergency situation involving a child with Autism, but they need to be prepared. One way of enhancing their ability to provide safety for my children and many others in my community, the United States, and across the globe is to learn effective ways of interacting with individuals with Autism. Learning effective practices for a complex situation requires more than a simple approach to training that merely provides a prescriptive list of messages to use in every circumstance. How people *think* about these situations matters because it is part and parcel of how they *act* into them.

Although this can and should be explored in many contexts, one that is especially important is emergency situations. My children and others with Autism may need to interact with first responders at some point in their lives. Fire Captain Sokol (2011) stated, "A first responder is seven times more likely to come in contact with an individual with Autism than the average person." In emergency situations, Volunteer Firefighters are often the first to arrive at the scene of a house fire or auto accident (Oswego County New York, 2019). If they need to interact with my children in such a scenario, they need to be prepared to do so effectively. Previous research has examined the experience of first responders from a CC perspective, but not their preparedness to manage conversations with those in the Autism community (Deason, 2020). The case study detailed below describes the use of the perspective for training first responders to enable them to more effectively interact with individuals with Autism.

## COMMUNICATING SAFETY: A TRAINING OF VOLUNTEER FIREFIGHTERS

There is limited research from communication scholars offering practical suggestions for enhancing communication within the Autism community and in interaction with the surrounding community. Interactions in emergency situations are particularly challenging; emergency situations that include a person/persons with Autism adds another dimension to the difficulties faced by first responders. If in these moments, the emergency service workers (e.g., Volunteer Firefighters) do not have the resources nor practices to communicate with neuro-diverse populations, then their ability to provide a feeling of safety is challenged. Davis and Goldband-Schunick (2002) demonstrate the significance of Autism training for first response teams to improve execution and effectiveness during emergency situations. They state, "Once I began the training I found that most emergency personnel knew very little about Autism unless they were previously exposed to it" (p. 19). They went on, "It's necessary to understand the characteristics of Autism and what an emergency worker might encounter. It is important to learn how to make a person with Autism feel as safe, secure, and as unthreatened as possible" (p. 19). They argued, "Police, firefighters, emergency medical technicians and emergency room workers all know about alcoholics, diabetics, mental retardation, and cerebral palsy. They should also know about Autism" (p. 20). The authors referenced the Americans with Disabilities Act and argue that necessary training should be provided to first responders—and other public employees as well—to comply with the Act.

In addition to discussing the exigence of preparedness, Davis and Goldband-Schunick (2002) also provide information regarding their training for public employees. Many training videos are available at no charge on YouTube. Police officers in Allegheny county provided their video, Encountering People with Autism: A First Responders' Training (Encountering, 2014). Their purpose was to create awareness of, "[S]ome characteristics of behavioral issues and tendencies of other personality traits of persons diagnosed with Autism." They discuss potential scenarios and give examples of likely responses by persons with Autism. Another training video by Clear Horizons Academy (2013) provided scenarios for law enforcement officers that include individuals with Autism. A final video was shared by first responders in Montgomery County, Pennsylvania, Autism and First Responders: Seeing Beyond the Smoke (Autism and First, 2014). The video includes scenes from an emergency situation involving persons with Autism, personal information regarding experience and diagnosis of family members as well as characteristics and the uniqueness of Autism.

Even with access to free training, it is often not sufficient to meet the needs of first responders in critical moments. As Parrish-Sprowl (2015b) notes, "some situations demand more from us than others" (p. 108). An emergency response situation where lives of those in the Autism community are more at risk than others is a situation that demands more from us. It demands more awareness regarding self and other in relation, as well as more action to add to the ability of first responders to act into such situations well. There is a need for action that provides resources and practices for firefighters that enhances their Autism awareness.

This case centers on a training exercise with Volunteer Firefighters (VF) that arose from a contact in my professional network that is a trusted member of the Volunteer Firefighter community. This connection led to a collaboration with the board of directors of the Indiana Volunteer Firefighter Association (IVFA) and an arrangement for the training to occur

during the state quarterly meeting. Planning focused on creating an interest in communicating Autism awareness, with the hope of opening the door for future, more advanced trainings that enhance prospects for safety in emergency situations. The format and content for the training were constructed based on CC concepts, which are provided in more detail in the discussion section. The meeting had several sessions throughout the day, with the training scheduled for one 75-min segment. Including communication skills that focused on perturbing (or changing) their pattern of practice in emergency situations involving Autism was a first for the IVFA.

The location of the state quarterly meeting was planned and arranged by the IVFA. On the day of the quarterly meeting, there were 51 meeting-attendees (48 Volunteer Firefighters, 2 medical service providers, 1 no response). Demographic information was not collected to maintain anonymity of participants given the state is specifically divided into districts and chaired by one person of that district. In addition, identifying demographic information was not considered relevant to the goals of the study.

The meeting was organized into sessions, with one session allotted for the training. Yet, since every interaction is an intervention from a CC perspective (Parrish-Sprowl et al., 2020), the entire meeting plays a part in the training. For instance, the interactions from the first session of the day, the conversations during break, and even their drive to the training impacts the participants' physiological state, which plays a part in information processing, meaning making, and how one might participate during the specified training session. For example, coffee before the start of the meeting may soothe some participants, and stress experienced from traffic on the way into the meeting may heighten another's anxiety. When attendees left the room for a short break at the end of each session, the change from sitting to standing has an impact as does any conversation, especially those which connected to the training content.

When all attendees were in the room, the President of the IVFA welcomed everyone back from a break and introduced the training session. The meeting attendees were told their participation in the training session was voluntary and no identifiable personal information would be collected to maintain their anonymity. They were then asked to take a short pre-training survey (see **Appendix A**)—this served to gather a baseline of knowledge about Autism. The survey included both open-ended and closed-ended questions. All 51 attendees agreed to participate and completed the pre-training survey within 10 min.

The session began with an invitation to engage with the material, to ask questions, make comments, relate their experiences, and to view the training as an ongoing dialogue to help increase awareness. Participants then watched the video, *Autism and First Responders: Seeing Beyond the Smoke*, created by Chief Brian Focht in collaboration with the Institute on Disabilities at Temple University (Autism and First, 2014) for first responders in Montgomery County, Pennsylvania. Throughout the video, there are tips for interacting with someone with Autism, such as taking feedback from families/caregivers, and safety suggestions. The video also contains a section with parental concerns, including parents who are VF, promoting building community awareness, and safety. Three influential elements of this project are embedded in the video: empathy, relationship, and safety.

Following the video, participants were asked to engage in reflection with someone sitting near them. After their discussions, a PowerPoint presentation reviewed some of the key points raised in the video. Throughout the session, participants asked about characteristics of Autism, and some more well-known aspects were discussed (e.g., sensory sensitivities, hiding places, verbal and non-verbal communication, etc.), to both challenge old and provide new resources. As the conversation moved to diagnostic criteria, they were reminded that the job/goal for them is not to determine a diagnosis. Rather, the focus was on introducing resources, enhancing awareness, presenting constructive communication practices for future interactions, and revealing the impact of an emergency situation on shaping the understanding of the interaction for all involved (Parrish-Sprowl, 2014, 2015b; Parrish-Sprowl and Parrish-Sprowl, 2020). The participants demonstrated involvement with the material and engagement with each other throughout the training. The interactive presentation lasted ∼45 min. Participants were then given another opportunity to ask questions, which lasted ∼10 min due to time constraints.

The final part of the session included completion of the post-training survey (see **Appendix B**). The survey included both open-ended and closed-ended questions. All ($n$ = 51) participants completed the survey within 10 min. The participants were then acknowledged for their participation, followed by a statement of appreciation by the President of the IVFA who then dismissed the group for another short break before their next session. Although the time delegated for training technically ended at this point, the discussion continued into the break. For example, immediately following the announcement of a break, some of the participants came up to me to express gratitude, share individual stories, ask questions on a more personal level and offer ideas about how they will use this information going forward. These informal interactions play a role in how participants make sense of the session. Although the individual conversations were not part of the formal session, they are, in a systemic sense, part of the training. The desire to continue the interaction suggests buy-in and the desire to use the information in the future, while also revealing the importance of stories told and story-telling. In addition, the story-telling not only informed and influenced the firefighters, it also impacted the researcher through developed understandings by the confluence of the participants' lived experiences enmeshed with stories of my own. The interactions impact each individual involved (researcher and participant) and create a unique co-constructed and systemic understanding among those present, along with whomever they share these stories with in future conversational episodes.

## DATA ANALYSIS

After the training, the survey responses were entered into an excel spreadsheet; each survey received a participant number.

If any personal information was included (e.g., name), it was excluded from the spreadsheet. Frequency distributions and textual analyses were utilized to analyze the data. From frequency tables, a baseline of knowledge about Autism awareness was identified. Cross-tabulations were used to compare pre- and post-training data. Textual analysis identified an emic perspective of understanding (Pearce and Littlejohn, 1997; Rascon and Littlejohn, 2017), as well as revealed new concepts that emerged after the training and areas of opportunity for future trainings. Worth noting is how the CC perspective influences the process of analysis. While CC does not provide a specific method for analysis, the recognition that everything is systemic frames the process since the training, including interactions with participants, influenced my understanding of the meaning of the text. Consequently, while not directly part of the data set analyzed, these interactions informed my analysis.

The textual analysis included an iterative process for both the pre-training and post-training analysis. Although I list macro-level steps, the nature of the analysis was not linear. Rather, the training itself, including the discussion and interactions (e.g., interventions) with the participants, as well as each "step" of the process influenced the next, which may have lead back to the previous step in order to continue with the next step; the reflexive nature of the process demonstrates the systemic nature of communication for creating and enhancing understanding. For the sake of description, I condense the process into the following steps: multiple readings of the answers; highlighting and extracting common phrases to determine connotative meanings; and aligning phrases with meanings. During the initial read, the purpose was to enhance the baseline understanding through the words of the participants. The second reading of the text determined commonalities in shared meanings. The third reading included highlighting and extracting text into the most prevalent categories, assuring all phrases related to the shared meanings were included. The final reading allowed for a check to assure all answers fit into the shared meaning categories. Lastly, specific quotes that represented the connotative meanings were used as exemplars.

## Frequency Distributions: Pre-training

The majority ($n$ = 29, 57%) of participants self-reported confidence in their knowledge about the community they serve in their districts. When reporting on current knowledge about Autism, only one person claimed to know a lot, and most ($n$ = 31, 61%) claimed to only know a little. Some participants ($n$ = 8, 16%) reported a call that revealed a victim with Autism at the scene and an unsuccessful outcome that was understood as related to Autism. A little over a third ($n$ = 19, 37%) specified no experience with a call that identified a victim with ASD. Some participants ($n$ = 7, 14%) indicated that in an unsuccessful situation, they did not know an individual had ASD until afterward. For the participants ($n$ = 9, 18%) having an unsuccessful situation that involved a person with ASD—either knowing prior or after the situation—all responders shared more specialized training could have led to a successful outcome. Some reasons are reviewed in the qualitative analysis below. Around one-third ($n$ = 18, 35%) said they had not had Autism awareness training. Over half ($n$ = 32, 63%) had received Autism awareness training as part of their department training. Of those who had training, seven participants (22%) claimed very little was covered, while seven other participants (22%) shared that a substantial amount of information about Autism was covered (e.g., basics, signs to look for, and practices for adapting to the person's needs). Eighteen (56%) indicated a fair amount was covered (e.g., basics and signs). In the final question, the majority of participants ($n$ = 34, 67%) responded "yes, Indiana needs more Autism awareness training within their first response systems," while some ($n$ = 14, 27%) participants responded no.

## Textual Analysis: Pre-training

In an analysis of the answers to the two open-ended questions in the pre-training survey, the participants shared support for more specialized training in ASD as well as support for knowing that an individual has Autism prior to entering the emergency situation. In response to the question focused on improving the successfulness of situations involving individuals with Autism in instances when the participant did not know about the Autism diagnosis, answers indicated a belief that knowing the individual had Autism would have helped the situation; participants claimed they would have changed their approach to interacting with the people involved if they had known. Some revealed that greater understanding would lead to a different interaction pattern than the one evoked; the common goal expressed was to attain more successful outcomes, such as fewer tragic accidents and deaths. One participant acknowledged the significance of the conversation with caregivers, stating, "Yes, it may have changed the questions ask[ed] of the parent or guardian to help with treatment." Another participant responded, "Yes, [I] would have had a different approach to how [I] talked and communicated to this person." Still others revealed that they would have liked to have known about the diagnosis, but may not have interacted differently given their lack of understanding of Autism, which prompted them to mention the need for training on the subject.

Second question responses regarding the need for more training on Autism in Indiana indicated support for more Autism awareness and the need for greater resources, training, and preparation. Some participants mentioned the rising statistics on Autism diagnoses as well as more experiences with individuals with Autism in emergency situations. One participant highlighted the need by stating, "Having worked in a school for many years with autistic children, I feel we need more training." Others discussed creating interactions that were more likely to lead to a better crisis response. One participant stated, "It would also help us in finding them and getting them out of fires." Another commented that training would help, "To be able to communicate with [individuals with Autism] better." Participants revealed needing updates from new and emerging research. One participant stated, "Not necessarily more required training but training to keep up with the topic as more medical research is completed." Another noted, "A one hour annual refresher is not sufficient to cover Autism. [We need] 2 to 3 hours with in-depth coverage of some of the advances in care for an Autistic child or adult."

## Frequency Distributions: Post-training

After the PPT presentation, nearly all of participants ($n$ = 50, 98%) reported learning a little ($n$ = 22, 43%) to a lot ($n$ = 28, 55%) about Autism; only one person reported learning nothing new ($n$ = 1, 2%). When asked if participants could successfully interact with an individual with ASD after the training, nearly three-fourths ($n$ = 37, 73%) agreed or strongly agreed that they could; while some ($n$ = 14, 27%) reported that they were unsure. All participants that answered the question regarding the importance of training for the rest of their department members answered yes ($n$ = 50, 98%); one person did not respond. Three options were provided as possible reasons why it is important to fully examine an individual with ASD at the scene or transport them to the hospital for further examination; a vast majority ($n$ = 42, 82.4%) identified sensory overload and failure to acknowledge pain as an important reason; four did not respond; three responded that they did not know how to treat them; and two identified liability for the reason.

## Textual Analysis: Post-training

Two open-ended questions were included in the post-training survey. The first asked for three key questions a first responder should ask a parent/caregiver when arriving at the scene. The response mentioned the most ($n$ = 24, 47%) had to do with asking about a desired space (e.g., safe place, hiding spot, favorite spot). If asking for the location of the child can be seen as a sub-category of desired space, five additional participants ($n$ = 29, 57%) asked about location in one of their responses. The second most mentioned response ($n$ = 11, 22%) asked about calming the person (e.g., what calms this person; what item can help calm them; what is a calming mechanism). Three other question types were mentioned in similar amounts: asking if the child has Autism or other impairments ($n$ = 7, 14%), asking about fleeing or bolting ($n$ = 4, 8%), and asking about habits, actions, or reactions ($n$ = 4, 8%). It is worth noting that the responses to the question that mentioned discovering habits, actions, or reactions is vague; the intention of participants may be to receive answers to the more specific aforementioned question categories.

# DISCUSSION

Training Volunteer Firefighters to interact with individuals with Autism is one step toward improving safety in emergency situations. In this case study, participants reported that the introduction to Autism awareness was a positive experience and many expressed belief in the necessity to continue on with more training in this area. Furthermore, VF demonstrated interest and engagement with the trainer/researcher and topic through the high volume of questions they asked both within and outside of the formal setting. Of particular note is that this training was not just about learning what Autism is and is not, but rather focused on what the interaction might look like if the person with Autism is to be protected from danger. During the training, the VF were not given universal messaging or scripts to follow when dealing with Autism. They were offered a framework for what such conversations might look like and how they could be structured given the circumstances if such encounters are to promote the physiological and emotional reactions that we associate with safety. Since each situation and the people involved are unique, a CC-based training views it as more critical to consider the *process and patterns* rather than a specific checklist of what must be done in a one-size-fits-all set of requirements. Discussions during the training included stories that participants shared of previous experiences that resonated among the group. Creating a supportive environment that welcomed the story-telling process was a significant component of the training. The design allowed for information to be shared with the intention of improving future interactions that provide safety. This case extends the body of CC work that relates to first responders and other health care providers (e.g., Parrish-Sprowl and Parrish-Sprowl, 2014, 2020; Parrish-Sprowl, 2015b; Deason, 2020; Parrish-Sprowl et al., 2020). As Deason (2020) states, "While other frameworks are available, CC provides a different insight into how, why, and where communication takes place" (p. 14). CC research examines the process and patterns of communication so that interventions facilitate positive perturbations to improve health and healthcare in all aspects of life. As will be detailed below, the differences between CC and more traditional communication theories and analytical tools are important on both a theoretical and practical level.

Participants reported that their understanding of how to more effectively engage when interacting with a person with Autism is greater as a result of the training. More importantly, by engaging the resources from the training in their practices, the science underlying CC tells us that VF will be more effective due to the bioactive nature of communication (Cozolino, 2014; Parrish-Sprowl, 2017; Parrish-Sprowl et al., 2020). The explanation for this was not a stated topic in the training, but it is critical to understand why the training was structured as it was, as well as why it should prove to be effective in future emergency situations. Many researchers have contributed to the body of science that demonstrates the bioactive aspect of communication (e.g., Rakel et al., 2011; Ramachandran, 2011; Hasson et al., 2012; Ivey and Daniels, 2016; Parrish-Sprowl, 2017; Ayling et al., 2018). A CC perspective recognizes this aspect and notes that communication accomplishes more than just messaging and creating meaning; we literally (re)construct each other's biology (Parrish-Sprowl, 2014, 2015a,b; Deason, 2020). Considering this, the training imparts practices that emerge from the science of communicative action. Returning to my concern for safety and my children, feeling safe necessitates a consideration of each person that is in relationship with my children—grocery store clerks, bank tellers, friends, etc.—which is a tiresome task. Yet, these individuals and many others are intertwined with my children's biology *via* communication, suggesting a need for a broader understanding of the biological significance of how we communicate even beyond emergency personnel.

Informed by the concept that communication is bioactive, the training was intentionally designed to create an atmosphere or communication ecology that was positive, calm, and inviting to encourage a state of receptivity in the participants (Parrish-Sprowl et al., 2020). The goal was to facilitate learning and provide the participants an opportunity to experience in real time that which they want to embody in an emergency situation.

They were not asked to comment about this or to make any concerted effort to self-regulate if they felt themselves becoming reactive. Although it is possible that some participants experienced moments of activation during the video or recall exercises, the presentation style throughout the training—including delivery of information, discussions with peers, and the setting of a routine quarterly meeting—was designed to encourage participants to be in a receptive mode. This approach is helpful when answering difficult questions because it can help participants feel that they are heard and validated despite the answer. For example, when a participant's question focused on determining a diagnosis of a person that might be someone with Autism, the question was acknowledged and the response redirected to encourage seeking insight from a caregiver rather than learning how to make such a diagnosis. I want all of those who interact with my children to know *how* to interact with them in a healthy way. An individual's physiological reaction (e.g., heart rate, blood pressure, etc.) during communication with another occurs, with or without acknowledgment. As a bioactive influence, communication can impact cortisol levels, triggering a suppression of the immune system that, when chronic, can lead to a number of illnesses (Liu et al., 2017). Thus, it is important not only in emergency situations but in every interaction. These systemic effects not only alter our biology, but also that of those with whom we interact, both in present and future interactions. This understanding should influence future interventions and encourage first responders that they have choices during their interactions to improve the outcome of future situations.

A second important aspect engaging the bioactive concept of communication is that it recasts the notion of trust as something that is created in embodied conversation and is not simply reducible to a left-brain cognitive decision that one makes based on rational thought. Thus, the way people talk can build trust in relationships or diminish it. Trust evolves within patterns of interaction and VF benefit from considering how to perturb old patterns that might give rise to mistrust. For example, some VF in the training shared stories of unsuccessful outcomes (e.g., tragic death) in an emergency situation involving a person with Autism. If these are the only kinds of interactions a VF has had, this might result in a pattern of reactivity in future such interactions. It is important for them to develop new resources and practices that help them be more effective in future emergency situations, thus not perpetuating previous, ineffective patterns. However, a particular response may not be clearly identifiable as ineffective or undesirable in every situation. For instance, a VF may consider getting a child with Autism to safety as desirable, despite physiological reactions felt by the child that would suggest their dissatisfaction with the interaction. Such reactions might be expressed through a tantrum—or other undesirable response—from the child after being removed from what the VF identifies as the harmful/dangerous situation. This response reveals that although one part of safety is survival by removing one from a dangerous situation, "the end goal is not always individual survival" (Long et al., 2018, p. 4). The sole focus on survival from danger neglects to acknowledge the child's experience of intense fear of the VF, which does not provide safety in the child's reality and can be quite dangerous.

A CC perspective recognizes that the embodied experience is also part of human interaction, and we benefit by engaging in a systemic analysis that includes it. Understanding the child can be safe from the threat posed by the emergency without actually *feeling* safe is an important part of the analysis that can improve the experience. Some existing patterns of practice previously considered effective may *appear* positive while not necessarily experienced as such by all involved. For instance, Parrish-Sprowl (2015a) identifies one type of interaction that may not inherently seem undesirable/unwanted, specifically regarding discrimination. He states, "Part of the problem with discrimination is that sometimes people do it on purpose, but probably more often it is conveyed unwittingly *via* the assumptions we make about the other person" (Parrish-Sprowl, 2015a, p. 54). Individuals may be well-intentioned in their interactions with members of other communities—including those with various (dis)abilities—however, without appropriate resources, their practices may unwittingly lead to consequences that could be avoided. Second, when people notice an impairment in others and choose not to coordinate/interact *with* them, they "construct" a disability and may create a harmful situation. The decision to stop the interaction and move forward with previous patterns of practice limits the potential for the interaction to be wholly positive. A VF finding a child and simply carrying her to a safe place without coordination invites misunderstanding more than an opportunity for understanding safety as the VF does. In an emergency situation, timing is important and good training may help VF avoid a secondary danger of intense fear of the VF which can be traumatizing to the child.

In the current case study, unlike the emergency situations with Autism involved, participants experienced interpersonal interactions with others in the room who were easily identifiable as similar. Participants could relate to technical jargon, experiences in emergencies, and various policy topics. In addition to the content of such discussions, there are also neurological benefits to participants who identify as similar in many important ways. Hasson et al. (2012) discuss brain coordination between participants in an interaction related to their recognition and acknowledgment of dimensions of similarity. They state, "[S]eeing or hearing the actions, sensations or emotions of an agent trigger cortical representations in the perceiver (so called vicarious activations). If the agent has a similar brain and body, vicarious activations in the perceiver will approximate those of the agent, and the neural responses will become coupled" (p. 115). The interesting element here reveals the connection between those who identify as similar; identifying as different may decrease the opportunity for collaboration and understanding, and negatively impact interaction. This training provided a perspective that helped the participants see the similarity between volunteer firefighters and members of the Autism community, in part, by better understanding the differences and being able to talk through them. This means recognizing that we all respond better to kinder facial expressions, softened tone of voice, and in general more open non-verbal cues. Focusing on these

similarities in interaction helps us to navigate the differences that might exist between us. Future training should promote a perspective that can improve the connection and understanding of similarity between people, especially with those that we might initially label as different, to enhance brain coupling and promote improved connection (Hasson et al., 2012). This could lead to better coordination between first responders and those they are protecting both before and during emergencies.

Another dimension of the embodied experience aspect of communication is empathy. The current study briefly introduced empathy by including the video of firefighters so the participants could relate to their experiences. Attempts by VF and other first responders should be made to promote empathy with the person to enhance relationships and outcomes. Ivey and Daniels (2016) explore empathic communication and focus specifically on listening as the aspect of communication that leads people to empathize. They contend that listening aids in identifying multicultural differences, enabling adaptation to specific cultural settings. This training encouraged whole body listening of family members or caregivers to enhance interpersonal interactions when gathering information to find and help a person with Autism during the emergency situation. Participants were also encouraged to discover favorable ways to interact with individuals with Autism, including keywords and actions that may allow for the individual to relate to the VF during a heightened state of emotion. After gathering information from others, the VF can use the information to find the individual.

Although the VF may learn about the person prior to the interaction, the person with Autism who may be hiding in a favorite location (e.g., their "safe" place) has no prior relationship or trust with the VF, so the VF has to work to establish an "empathic relationship" (Ivey and Daniels, 2016, p. 106). Ivey and Daniels (2016) describe the effectiveness of training the Basic Listening Sequence: "the data show that those trainees also tend to demonstrate more complex communication dimensions that were not specifically taught, in particular, empathy" (p. 107). Ivey and Daniels also discuss the effectiveness of a softer vocal tone. In their research, an fMRI is used to show brain activity that is stimulated through active listening. Two types of empathy are discussed: cognitive and affective. Each type of empathy shows activity in specific brain regions. Ivey and Daniels identify that "empathetic active listening impacts both cognitive and affective empathic areas as well as those associated with [Theory of Mind]" (Ivey and Daniels, 2016, p. 109). They also identify that unsuccessful listening skills diminish empathy. Interventions should encourage active empathic listening skills for first responders to enhance brain coupling, empathy, and relationship building.

The concepts of cognitive and affective empathy are parallel to two of the three types of the expression of "understanding" explicated by Parrish-Sprowl (2015a). Specifically, cognitive empathy is similar to the notion of conceptual understanding, and affective empathy to experiential understanding. In addition, he supplies a third option of integrated understanding which is comprised of a blending of cognitive and experiential. In brief, Parrish-Sprowl (2015a) posits that when we say (or assume) "we understand", it can indicate a conceptual understanding often associated with left brain dominant thinking, a bodily felt sense of understanding often associated with right brain thinking, or an integrated understanding that is built on a blending of the conceptual and experiential such that the whole is greater than the sum of the other two. The integrated understanding is consonant with Siegel's Interpersonal Neurobiology notion of integration (Siegel, 2010, 2012). Parrish-Sprowl (2015a) explains the process of understanding in terms of resources and practices through a communication perspective, engaging the example of interactions with individuals who are Deaf (Deaf culture identified), deaf (but not associated with Deaf culture), or hearing impaired. When a communicator identifies someone as Deaf, deaf, or hearing impaired, they make perceptual choices in how to understand the other person and what is needed to have a coordinated conversation based on instantiated patterns of neural firing.

Parrish-Sprowl (2015a) suggests that developing resources and practices consistent with CC can facilitate a more integrated sense of understanding of the other and lead to better interactions and relationships, which is consistent with the conclusions offered by Ivey and Daniels (2016). Of particular concern in the present case is that identifying an impairment influences an interaction and making some adjustments to enhance the conversation can lead to more desirable processes in emergency situations. Both a VF and an individual with Autism can recognize the need to develop a way to interact with each other to create a better, more coordinated conversational process. If the VF recognizes that an individual with Autism has a need for help, but is having difficulty expressing their need, the VF is in a position to be a better helper if they have developed the knowledge and skills to better coordinate in such situations.

Interventions, such as the training in the present study, can lead to a construction of the process of engagement from one where we consider someone as having something wrong with them—labeling (dis)ability—to identifying an impairment so that we can develop resources and practices to better manage the interaction (Parrish-Sprowl, 2015a). CC-framed training can help VF (and all other first responders) feel more capable when interacting with people we might think of as neuro-atypical. They must deal with people as they meet them; a training such as the one in this case offers an opportunity to develop the capacity for a more effective engagement in situations where Autism is present. Because we all have varying neurological strengths and weaknesses, the need to construct conversations that account for them and still produce what we want to make, in this case both survival and a sense of safety, is a conjoint challenge. Thus, VF should expand their resources to increase affordances and reduce constraints in conducting necessary conversations during emergency situations.

## FINAL THOUGHTS

This case study demonstrates that a CC approach to Autism awareness trainings with first response teams can achieve improvements that move beyond the limitations of traditional approaches. VF in this study self-reported feeling underprepared to handle situations involving individuals with Autism and

expressed a desire for more training. Furthermore, the majority offered feedback that was supportive, reporting increased understanding and awareness regarding Autism after the training, as well as a confidence boost in their ability to have successful interactions when encountering such individuals in emergency situations. Like most parents, the safety of my children is a top priority and this training is a step toward enhancing interactions of VF with the Autism community that can benefit my children and me, as well as others. As Parrish-Sprowl (2015a, p. 55) stated, "We all have different physical and mental capabilities; that is the nature of the human condition. However, in communication, we can either make them simply differences or we can make them disabilities". In communication with members of the Autism community, VF have the opportunity to acknowledge the difference and utilize knowledge and skills to have better interactions that can facilitate collaboration and provide a feeling of safety.

Finally, it is important to note that while this single training was reported as having a positive influence on the participants, a 2-h training is probably not sufficient to instantiate new patterns of interaction, nor should the results be understood as a complete "solution" to the problem. As noted above, participants suggest additional training for themselves and others. One should understand the results of the training as demonstrating the need for perturbations of existing practices to change the process of providing safety for the Autism community, particularly in the first response system.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Indiana University IRB and Indiana State University IRB. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

## AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

## SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fcomm.2022.610012/full#supplementary-material

## REFERENCES


American Psychiatric Association (2000). *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR*. Washington, DC: American Psychiatric Association.

American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition: DSM-5*. Washington, DC: American Psychiatric Association Publishing.

Autism and First (2014). *Autism and First Responders: Seeing Beyond the Smoke*. Available online at: https://www.youtube.com/watch?v=mnua3jeek30 (accessed July 11, 2015).

Ayling, K., Fairclough, L., Tighe, P., Todd, I., Halliday, V., Garibaldi, J., et al. (2018). Positive mood on the day of Influenza Vaccination predicts vaccine effectiveness: a prospective observational cohort Study. *Brain Behav. Immun.* 67, 314–323. doi: 10.1016/j.bbi.2017.09.008

Babb, S., McNaughton, D., Light, J., Caron, J., Wydner, K., and Jung, S. (2020). Using AAC video visual scene displays to increase participation and communication within a volunteer activity for adolescents with complex communication needs. *Augment. Altern. Commun.* 36, 31–42. doi: 10.1080/07434618.2020.1737966

Bochner, A. P., and Ellis, C. (1996). *Evocative Autoethnography: Writing Lives and Telling Stories*. New York, NY: Routledge.

Brady, N. C., Fleming, K., Swinburne Romine, R., Holbrook, A., Muller, K., and Kasari, C. (2018). Concurrent validity and reliability for the communication complexity scale. *Am. J. Speech Lang. Pathol.* 27, 237–246. doi: 10.1044/2017_AJSLP-17-0106

Brady, N. C., Fleming, K., Thiemann-Bourque, K., Olswang, L., Dowden, P., Saunders, M. D., et al. (2012). Development of the communication complexity scale. *Am. J. Speech Lang. Pathol.* 21, 16–28. doi: 10.1044/1058-0360(2011/10-0099)

Centers for Disease Control (2016a). *Autism Spectrum Disorder (ASD): Data and Statistics on Autism Spectrum Disorder*. Available online at: www.cdc.gov (accessed June 25, 2020).

Centers for Disease Control (2016b). *Autism Prevalence Rises in Communities Monitored by CDC for First Time, CDC Finds Same Autism Prevalence in Black and White Children*. Available online at: www.cdc.gov (accesed December 1, 2020).

Clarke, K. A., and Williams, D. L. (2020). Instruction using augmentative and alternative communication supports: description of current practices by speech-language pathologists who work with children with autism spectrum disorder. *Am. J. Speech Lang. Pathol.* 29, 586–596. doi: 10.1044/2019_AJSLP-19-00045

Clear Horizons Academy (2013). *Law Enforcement and Autism*. Available online at: https://www.youtube.com/watch?v=NHRFqGVAMu4 (accessed July 11, 2015).

Cozolino, L. (2014). *The Neuroscience of Human Relationships: Attachment and the Developing Social Brain, 2nd Edn*. New York, NY: W.W. Norton and Company.

Davis, B., and Goldband-Schunick, W. (2002). *Dangerous Encounters: Avoiding Perilous Situations with Autism: A Streetwise Guide for All Emergency Responders, Retailers, and Parents*. London, GBR: Jessica Kingsley Publishers.

Deason, A. S. (2020). *I'm fine: Systemic affect of critical incidents in emergency medical service personnel communication* (Doctoral dissertation). Indiana University Purdue University, Indianapolis.

Doidge, N. (2007). *The Brain That Changes Itself: Stories of Personal Triumph from the Frontiers of Brain Science*. New York, NY: Viking Press.

Dvash, J., and Shamay-Tsoory, S. G. (2014). Theory of mind and empathy as multidimensional constructs. *Top. Lang. Disord.* 34, 282–295. doi: 10.1097/TLD.0000000000000040

Ellis, C., and Bochner, A. P. (2000). "Autoethnography, personal narrative, reflexivity: Researcher as subject," in *Handbook of Qualitative Research, 2nd Edn,* eds N. K. Denzin and Y. S. Lincoln (Thousand Oaks, CA: Sage), 733–768.

Elsabbagh, M., Divan, G., Koh, Y. J., Kim, Y. S., Kauchali, S., Marcín, C., et al. (2012). Global prevalence of autism and other pervasive developmental disorders. *Autism Res.* 5, 160–179. doi: 10.1002/aur.239

Encountering (2014). *Encountering People with Autism: A First Responders' Training*. Available online at: https://www.youtube.com/watch?v=xtDRIYslWXA (accessed September 15, 2019).

Evelyn, K. (2020). *Police Shoot 13-Year-Old Boy with Autism Several Times After Mother Calls for Help*. Available online at: www.amp-theguardian-com (accessed September 24, 2020).

Gernsbacher, M., and Pripas-Kapit, S. (2012). Who's missing the point? A commentary on claims that Autistic Persons have a specific deficit in figurative language comprehension. *Metaphor Symbol* 27, 93–105. doi: 10.1080/10926488.2012.656255

Gevarter, C., Horan, K., and Sigafoos, J. (2020). Teaching preschoolers with Autism to use different speech-generating device display formats during play: Intervention and secondary factors. *Lang., Speech Hear. Serv. Sch.* 51, 821–838. doi: 10.1044/2020_LSHSS-19-00092

Gray, J. A. (1988). *The Psychology of Fear and Stress, 2nd Edn.* New York, NY: Cambridge University Press.

Gray, J. A. (2003). *The Neuropsychology of Anxiety: An Enquiry into the Functions of the SeptoHippocampal System, 2nd Edn*. New York, NY: Oxford University Press.

Grèzes, J., Wicker, B., Berthoz, S., and de Gelder, B. (2009). A failure to grasp the affective meaning of actions in autism spectrum disorder subjects. *Neuropsychologia* 47, 1816–1825. doi: 10.1016/j.neuropsychologia.2009.02.021

Hahn, L. J., Brady, N. C., McCary, L., Rague, L., and Roberts, J. E. (2017). Early social communication in infants with Fragile X Syndrome and infant siblings of children with Autism Spectrum Disorder. *Res. Dev. Disabil.* 71, 169–180. doi: 10.1016/j.ridd.2017.10.004

Hamilton, A. F. (2013). Reflecting on the mirror neuron system in Autism: A systematic review of current theories. *Dev. Cogn. Neurosci.* 3, 91–105. doi: 10.1016/j.dcn.2012.09.008

Hasson, U., Ghazanfar, A. A., Galantucci, B., Garrod, S., and Keysers, C. (2012). Brain-to-brain coupling: a mechanism for creating and sharing a social world. *Trends Cogn. Sci.* 16, 114–121. doi: 10.1016/j.tics.2011.12.007

Howes (2013). *Wearing Your Heart on Your Face: The Polyvagal Circuit in the Consulting Room*. Available online at: https://www.pesi.com/blog/details/967/wearing-your-heart-on-your-face-the-polyvagal-circuit (acessed September 15, 2019).

IBCCES (2020). *Why Autism Training is Important for Firefighters and First Responders*. International Board of Credentialing and Continuing Education Standards. Available online at: https://ibcces.org/blog/2020/07/13/autism-training-important-fire-first-responders/ (accessed January 27, 2022).

Ivey, A. E., and Daniels, T. (2016). Systematic interviewing microskills and neuroscience: developing bridges between the fields of communication and counseling psychology. *Int. J. Listen.* 30, 99–119. doi: 10.1080/10904018.2016.1173815

Jang, S. M., Mckeever, B. W., Mckeever, R., and Kim, J. K. (2019). From social media to mainstream news: The information flow of the vaccine-Autism controversy in the US, Canada, and the UK. *Health Commun.* 34, 110–117. doi: 10.1080/10410236.2017.1384433

Liu, Y. Z., Wang, Y. X., and Jiang, C. L. (2017). Inflammation: the common pathway of stress-related diseases. *Front. Hum. Neurosci.* 11, 316. doi: 10.3389/fnhum.2017.00316

Logan, K., Iacono, T., and Trembath, D. (2017). A systematic review of research into aided AAC to increase social-communication functions in children with Autism Spectrum Disorder. *Augment. Altern. Commun.* 33, 51–64. doi: 10.1080/07434618.2016.1267795

Long, K. M., McDermott, F., and Meadows, G. N. (2018). Being pragmatic about health care complexity: Our experiences applying complexity theory and pragmatism to health services research. *BMC Med.* 16, 94. doi: 10.1186/s12916-018-1087-6

Maenner, M. J., Shaw, K. A., Bakian, A. V., Bilder, D. A., Durkin, M. S., Esler, A., et al. (2021). Prevalence and characteristics of autism spectrum disorder among children aged 8 years — autism and developmental disabilities monitoring network, 11 sites, United States, 2018. *MMWR Surv. Summ.* 70, 1–16. doi: 10.15585/mmwr.ss7011a1

McDaniel, J., and Schuele, C. M. (2021). When will he talk? An evidence-based tutorial for measuring progress toward use of spoken words in preverbal children with Autism Spectrum Disorder. *Am. J. Speech Lang. Pathol.* 30, 1–18. doi: 10.1044/2020_AJSLP-20-00206

O'Brien, A. M., Schlosser, R. W., Shane, H., Wendt, O., Yu, C., Allen, A. A., et al. (2020). Providing visual directives *via* a smart watch to a student with Autism Spectrum Disorder: an intervention note. *Augment. Altern. Commun.* 36, 249–257. doi: 10.1080/07434618.2020.1862299

Oswego County New York (2019). *How to Become a Volunteer Firefighter*. Available online at: https://www.oswegocounty.com/departments/public_safety/fire_coordinator/how_to_become_a_volunteer_firefighter.php (accessed December 23, 2020).

Parrish-Sprowl, J. (2012). Organizational performance: Moving from communication simple to communication complex. *Organ. Consult.* 2, 18–20. doi: 10.22363/2687-0088-9261

Parrish-Sprowl, J. (2014). "Communication complex," in *Encyclopedia of Health Communication*, eds T. L. Thompson and G. Golson (Beverly Hills, CA: Sage), 210–212.

Parrish-Sprowl, J. (2015a). "I am hearing impaired: negotiating identity in a hearing world," in *Our Voices: Essays in Culture, Ethnicity, and Communication, 6th Edn*. eds A. Gonzalez, M. Houston, and V. Chen (New York, NY: Oxford Press), 51–56.

Parrish-Sprowl, J. (2015b). Intercultural communication and disabilities from a communication complex perspective. *Russ. J. Linguist*. 19, 101–110. Available online at: https://wwws.rudn.ru/linguistics/article/view/9261 (accessed June 19, 2019).

Parrish-Sprowl, J. (2017). *Communication is 'Bioactive'*. Available online at: https://www.youtube.com/watch?v=T_Or_-9Zb80 (accessed June 20, 2020).

Parrish-Sprowl, J., and Parrish-Sprowl, S. (2014). "Suggestions for a heuristic turn in the conversation on Posttraumatic Growth," in *Transforming Trauma: Space for Growth and Meaning-Making After Adversity*, eds J. Parrish-Sprowl, S. Parrish-Sprowl, Z.D. Konvisser, and B. Buechner (Columbia: International Transformative Learning Conference, Columbia University).

Parrish-Sprowl, J., and Parrish-Sprowl, S. (2020). *The Rationale for a Complexity-Based Approach to CE Evidence*. Available online at: https://www.google.com/url?sa=tandrct=jandq=andesrc=sandsource=webandcd=andved=2ahUKEwiGmPnI-qf1AhUaJzQIHYRnCbQQFnoECAMQAQandurl=https%3A%2F%2Fwww.ungm.org%2FUNUser%2FDocuments%2FDownloadPublicDocument%3FdocId%3D978256andusg=AOvVaw2TTqnV2shGDM4jA5udh3QD (accessed June 17, 2021).

Parrish-Sprowl, S., Parrish-Sprowl, J., and Alajlouni, S. (2020). Innovations in addressing mental health needs in humanitarian settings: a complexity informed action research case study. *Front. Commun.* 5, 601792. doi: 10.3389/fcomm.2020.601792

Pearce, W. B. (1989). *Communication and the Human Condition*. Carbondale: Southern Illinois University Press.

Pearce, W. B. (2007). *Making Social Worlds: A Communication Perspective*. Malden, MA: Blackwell Publishing.

Pearce, W. B., and Littlejohn, S. W. (1997). *Moral Conflict: When Social Worlds Collide*. Washington, DC: Sage Publications.

Pierson, L. M., Thompson, J. L., Ganz, J. B., Wattanawongwan, S., Haas, A. N., and Yllades, V. (2021). Coaching parents of children with developmental disabilities to implement a modified dialogic reading intervention using low technology *via* telepractice. *Am. J. Speech Lang. Pathol.* 30, 119–136. doi: 10.1044/2020_AJSLP-20-00037

Porges, S. W. (2004). Neuroception: a subconscious system for detecting threats and safety. *Zero To Three* 24 19–24. Available online at: https://scholar.google.com/scholar_lookup?title=Neuroception%3A+A+subconscious+system+for+detecting+threat+and+safety&author=Porges+S.+W.&publication+year=2004&journal=Zero+to+Three%3A+Bulletin+of+the+National+Center+for+Clinical+Infant+Programs&volume=24&pages=19-24

Porges, S. W. (2017). *The Pocket Guide to Polyvagal Theory: The Transformative Power of Feeling Safe*. New York, NY: W.W Norton and Company.

Porges, S. W., Bazhenova, O. V., Bal, E., Carlson, N., Sorokin, Y., Heilman, K. J., et al. (2014). Reducing auditory hypersensitivities in autistic spectrum disorder: Preliminary findings evaluating the listening project protocol. *Front. Pediatr.* 2, 80. doi: 10.3389/fped.2014.00080

Rakel, D., Barrett, B., Zhang, Z., Hoeft, T., Chewning, B., Marchand, L., et al. (2011). Perception of empathy in the therapeutic encounter: Effects on the common cold. *Patient Educ. Couns.* 85 390–397. doi: 10.1016/j.pec.2011.01.009

Ramachandran, V. S. (2011). *The Tell-Tale Brain: A Neuroscientist's Quest for What Makes us Human*. New York, NY: W.W. Norton.

Rascon, N., and Littlejohn, S. W. (2017). *Coordinated Management of Meaning (CMM): A Research Manual*. Chagrin Falls, OH: Taos Publications.

Rourke, B., and McGloin, R. (2019). A different take on the Big Bang Theory: Examining the influence of Asperger Traits on the perception and attributional confidence of a fictional TV character portraying characteristics of Asperger Syndrome. *Atlantic J. Commun.* 27, 127–138. doi: 10.1080/15456870.2019.1574797

Sahar, N. (2017). Cognitive milestones on mutual paths towards empathy: a four-step model. At the Interface. *Probing Bound.* 92, 107–129. doi: 10.1163/9789004360846_008

Siegel, D. J. (2010). *Mindsight: The New Science of Personal Transformation*. New York, NY: Bantam Books.

Siegel, D. J. (2012). *The Developing Mind: How Relationships and the Brain Interact to Shape Who We Are, 2nd Edn*. New York, NY: Guilford Press.

Soke, G. N., Maenner, M. J., Christensen, D., Kurzius-Spencer, M., and Schieve, L. A. (2018). Prevalanece of co-occurring medical and behavior conditions/symptoms among 4-8 year old children with Autism Spectrum Disorder in selected areas of the United States in 2010. *J. Autism Dev. Disord.* 48, 2663–2676. doi: 10.1007/s10803-018-3521-1

Sokol, J. M. (2011). *Autism Awareness: Response Tips for Firefighters*. FireRescue1. Available online at: http://www.firerescue1.com/firefighter-training/articles/1087393-Autism-awareness-response-tips-for-firefighters/ (accessed June 20, 2015).

The University of Kansas Life Span Institute (2021). *Communication Complexity Scale (CCS)*. Available online at: https://lsidata.ku.edu/ccs/index.php (accessed June 17, 2021).

Thiemann-Bourque, K., Feldmiller, S., Hoffman, L., and Johner, S. (2018). Incorporating a peer-mediated approach into speech-generating device intervention: effects on communication of preschoolers with Autism Spectrum Disorder. *J. Speech Lang. Hear. Res.* 61, 2045–2061. doi: 10.1044/2018_JSLHR-L-17-0424

Thiemann-Bourque, K. S., Brady, N., and Hoffman, L. (2019). Application of the communication complexity scale in peer and adult assessment contexts for preschoolers with autism spectrum disorders. *Am. J. Speech Lang. Pathol.* 28, 29–42. doi: 10.1044/2018_AJSLP-18-0054

Thompson, T. (2008). *Dr. Thompson's Straight Talk on Autism*. Baltimore, MD: Paul H. Brookes Publishing Co.

Timler, G. R., Boone, W. J., and Bergmann, A. A. (2014). Development of the conversation participation rating scale. Intervention planning implications for two school-age children with autism spectrum disorders. *Top. Lang. Disord.* 34, 252–267. doi: 10.1097/TLD.0000000000000021

Underhill, J. C., Ledford, V., and Adams, H. (2019). Autism stigma in communication classrooms: Exploring peer attitudes and motivations toward interacting with atypical students. *Commun. Educ.* 68, 175–192. doi: 10.1080/03634523.2019.1569247

Wieder, S. (2017). The power of symbolic play in emotional development through the DIR lens. *Top. Lang. Disord.* 37, 259–281. doi: 10.1097/TLD.0000000000000126

**Conflict of Interest:** The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Publisher's Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.