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CURRENT DEVELOPMENTS IN THE KNOWLEDGE BASE OF SOCIAL WORK: CONTRIBUTIONS OF NEUROSCIENCE

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ABSTRACT

In the early days of its emergence, the social work profession was seen as a social assistance profession. The profession, which has developed mostly in the focus of poverty, has started to benefit from the theories, approaches and models of different disciplines such as psychology and sociology and has an eclectic knowledge base. Social work, which evaluates human behavior, needs and problems with a biopsychosocial focus, continues to benefit from different disciplines. One of these disciplines is neuroscience, which facilitates our understanding of the brain's function and life-long processes. Studies showing the connection between social work and neuroscience are increasing, albeit slowly, around the world. This study aims to reveal the role of neuroscience in understanding the factors that affect the social behavior of

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individuals within the framework of the "person in environment" approach, which is one of the dominant paradigms in social work today.

Keywords: *Social work, neuroscience, brain function*

SOSYAL HİZMETİN BİLGİ TEMELİNDE GÜNCEL GELİŞMELER: NÖROBİLİMİN KATKILARI

ÖZET

Sosyal hizmet mesleği ortaya çıktığı ilk zamanlarda bir sosyal yardım mesleği olarak görülmekteydi. Daha çok yoksulluk odağında gelişen meslek, ilerleyen zamanlarda psikoloji ve sosyoloji gibi farklı disiplinlerin kuram, yaklaşım ve modellerinden de yararlanmaya başlamış ve eklektik bir bilgi temeline sahip olmuştur. Söz konusu temel doğrultusunda insan davranış, ihtiyaç ve sorunlarını biyopsikososyal odaklı bir biçimde değerlendiren sosyal hizmet, farklı disiplinlerden yararlanmaya devam etmektedir. Bu disiplinlerden biri de beynin işlevi ve yaşam boyu gerçekleşen süreçlerini anlamamızı kolaylaştıran nörobilimdir. Dünya çapında sosyal hizmet ve nörobilim arasındaki bağı gösteren çalışmalar az da olsa giderek artmaktadır. Bu çalışma günümüzde sosyal hizmette hâkim paradigmalardan biri olan “çevresi içinde birey” yaklaşımı çerçevesinde bireylerin sosyal davranışlarını etkileyen etmenleri anlamada nörobilimin rolünü ortaya koymayı amaçlamaktadır.

Anahtar Kelimeler: *Sosyal hizmet, nörobilim, beynin işlevi.*

INTRODUCTION

The brain has been viewed as a complex organ from ancient times to the present day in the history. Archaeological studies have revealed that ancient civilizations applied primitive surgical methods to the brain (Güleç et al., 2003). Hippocrates, who lived in the 4th century BC, provided (for his time, quite scientific) definitions and functions of the brain in his work called "Sacred Disease" (Karasu et al., 2008). In the year 177 AD, Galen from Bergama described the brain in his work "On the Brain" as the center of the soul and responsible for willpower and cognitive functions (Uzbay, 2016). Developments after the Renaissance significantly increased research into the functioning of the brain. By the 1600s, English physician Thomas Willis introduced the

term "neurology" into the literature, opening the doors of this field to scientists (Aktin, 2010). Discoveries about neurons in the 20th century added new dimensions to research on the brain. During World War II, neuroscience began to emerge as a discipline within science. Alexander Romanovich Luria (1964) developed intervention methods in the field of neuropsychology and started conducting other studies related to psychology under the umbrella of neuroscience. Looking at the historical development of neuroscience, it has shaped individual diagnosis and treatment methods and has led to changes and developments in other scientific fields affecting society, especially in areas like neuroengineering, neurophysiology, developmental neuroscience, cultural neuroscience, social neuroscience, behavioral neuroscience, cognitive neuroscience, neuropsychiatry, neuroeconomics, and others, which have given neuroscience an interdisciplinary structure.

The discipline of social work, since its inception, has considered the social, psychological, and biological contributions that affect human behavior, needs, and problems during the intervention phase. In social work interventions, improving the quality of life of the individuals being intervened upon and ensuring social harmony are of great importance. For example, lifelong human development and behavior, cognition, memory, emotions, addictions, stress, and trauma are aspects that social work takes into account during intervention processes (Balbernie, 2002; Claes, 2004; Negash and Petersen, 2006; Pennington, 2009). The holistic perspective conceptualized as the biopsychosocial model is one of the dominant paradigms in the social work profession today (Germain and Gitterman, 1980; Garland and Howard, 2009; Hutchison, 2016). However, there are very few social work studies that consider or examine any aspect of biology, with neuroscience being one of them. Neuroscience is a branch of science that focuses on the functions of the brain and nervous system. Despite some exceptions, very few social work professionals prefer to examine brain scans, blood, saliva, and other biological findings to understand individuals and the conditions they are in within a constantly changing social environment (Bishop-Fitzpatrick, Minshew, Mazefsky, and Eack, 2017). In contrast, the biopsychosocial model provides social work professionals with significant ease in understanding the conditions and behavioral patterns of individuals by considering the biological structure, psychological state, and social environment (Zengin, 2011). According to the biopsychosocial model, when seeking the source of problems, it is not solely attributed

to the individual, as the medical model does, which emphasizes that mental and physical problems originate from the individual. In the context where neuroscience is associated with social science, the subject of the problem is not seen only as the individual. The cause of any problem or crisis is considered to be related to all kinds of internal and external factors (Albayrak, 2020). Recent research indicates that the use of neuroscience in social work interventions can be beneficial. In this article, we will explore the application areas of neuroscience knowledge in social work interventions.

Areas of Neuroscience Research

The brain is one of the fundamental structures that make us feel like individuals while simultaneously shaping our social environment. Understanding social behavior without understanding individuality is only solving part of the equation. Studies in the field of neuroscience have traditionally had a medical focus on the brain. However, neuroscience has paved the way for a multidisciplinary approach to the study of the brain, including the field of medicine. The successful areas of study that shed light on the work of neuroscience within the social sciences, distinguished by the "neuro" prefix, encompass Cognitive Neuroscience, Social Neuroscience, Neuropsychology, Neurophysiology, Neuromarketing, Neurorehabilitation, Neurolaw, Neuroeconomics, and Neuropolitics (Eken, 2017).

The work of social workers who aim to create and sustain positive behavioral changes in the clients they serve in social work interventions is based on the fact that the brain has the capacity to change through experiences (Davidson and McEwen, 2012). While there is much to learn, research in social work focuses on the brain's development from childhood (Giedd et al., 1999; Hanson et al., 2013; Nelson, Moulson, and Richmond, 2006), mental health (Strakowski, Delbello, and Adler, 2005; Wolfers et al., 2015), addiction (Volkow and Li, 2005), aging (Grady, 2008), resilience (Russo Murrough, Han, Charney, and Nestler, 2012), and other areas.

Neuroscience research can be used to understand the underlying causes of individual behaviors. For example, brain scanning techniques can be used to understand the causes of mental issues such as depression. By examining activities in different brain regions, information about the causes of depression can be obtained (Bar, 2009). This information can assist social workers in developing appropriate intervention plans. Addiction is a problem that negatively affects many people's lives. Social work

interventions are crucial in managing addiction. Neuroscience can provide valuable insights into addiction. Additionally, by studying how addiction affects the brain, neuroscience can help develop different intervention plans for addiction management. For example, some treatment methods involve medication in the fight against addiction. Neuroscience research can examine the effects of these drugs on the brain, contributing to the development of a more effective addiction management plan (Bozkurt, 2022).

In the context of the discipline of social work, when considering neuroscience research, it can be concluded that it can serve as a significant tool to meet the needs of individuals and groups. These studies help social workers better understand individuals' behaviors, emotional reactions, and mental processes. As a result, neuroscience research helps social workers improve their interventions and create effective changes at the societal level.

Memory and Cognitive Processes

Cognition is the ability to separate, store, and develop solutions to problems (i.e., learning). The cerebral cortex (the outer layer of the brain) is the place in the brain where cognition occurs (Garrett, 2003). Cognition begins in infancy, continues through childhood, and becomes more complex throughout life, as shown by neuroscience research (Hines, Touron, and Hertzog, 2009). Remembering what is learned involves changes in various parts of the brain and changes in connections between neurons in those brain regions (Garrett, 2003). The working process of memory is a complex function of the human brain (Wickelgren, 1997). This process, which involves collaboration between different regions of the brain, is examined in two main categories: short-term memory and long-term memory. While short-term memory generally refers to the temporary storage of information, long-term memory has the potential to store this information indefinitely. While the term short-term memory is often used to refer to the storage of information for a few seconds or minutes, long-term memory can potentially be stored indefinitely, even with severe memory loss due to brain damage or Alzheimer's disease (İldem, 2021). Biologically, working or short-term memory can be thought of as temporary strengthening of neural connections, while long-term memory involves a change in brain architecture through the construction of new structures (Garrett, 2003; Schacter and Wagner, 1999).

Although variable, the loss of cognitive and memory abilities in older adults is believed to result from interventions in neural connections that occur mostly in the temporal lobes and prefrontal cortex (Garrett, 2003; Hedden and Gabrielli, 2005). Specifically, specific collections of proteins within synapses and/or neural fiber collections within neurons can interfere with memory processes (Garrett, 2003). In Alzheimer's disease, these "tangles and plaques" can block the hippocampus's normal function of separating input information from output information, thus interfering with the sequencing and processing of crucial information for memory (Hedden and Gabrielli, 2005). Understanding these processes is critical for both policy and direct application in light of the increasing population of older adults.

Understanding the Neurological Foundations of Behavioral and Cognitive Disorders

Recent developments in the field of neuroscience have provided an exciting new paradigm to explore topics central to social work, such as emotions, learning, coping, adaptation, mental health, attachment, child and adult development, and interpersonal relationships (Serbinski and MacFadden, 2018). These developments contribute to the effective social work practices by addressing topics such as emotions, learning, coping, adaptation, mental health, attachment, and child and adult development. It is known that oxytocin hormone plays a significant role in establishing the bond between mother and child (Donaldson and Young, 2008). According to a study by De Dreu and colleagues (2011), individuals with high oxytocin levels tend to exhibit behaviors directed towards those outside their perceived group or individuals outside their group's boundaries, which are opposite to the behaviors of in-group members (Karaca, 2019). The oxytocin hormone plays a crucial role in social interactions, bonding, and the establishment of emotional connections. This underscores the importance for social workers to consider oxytocin when seeking to understand and support relationships between mothers and children.

Environmental and genetic factors are influential factors in the biopsychosocial development during infancy and childhood. Since the development of a person's nervous system begins in the mother's womb, it is necessary to focus on the mother's biological deficiencies among the factors that affect development. Brain cells begin to form in the mother's womb, and iodine and folic acid deficiencies in the mother can harm brain development (Dedeoğlu, 2004). Furthermore, neuroscientific research

initiated during pregnancy also plays an important role in diagnosing and treating brain diseases in early childhood, as well as in understanding the brain development, nervous system, and sensory perceptions of the baby. These studies contribute to the development of methods used to detect and intervene in the symptoms of early brain diseases.

According to Knickmeyer and colleagues (2008), infants under a certain age who are in a developmental fragile period respond very positively to therapeutic interventions. Neuroscience research on brain development provides an important basis for identifying babies at risk of developmental disorders (Lefmann and Combs-Orme, 2013). Leveraging the insights from neuroscience studies can be highly beneficial in planning appropriate interventions (Brown, 2021). Utilizing neuroscience, particularly in areas such as behavioral problems in children, psychological issues in adults, and mental health in the elderly, can aid in planning more effective interventions.

The Biopsychosocial Impact of Stress and Trauma

Stress emerges as a result of the challenges individuals face in their daily lives, triggered by various factors. For example, the fast pace of work, family relationships, and financial difficulties are situations that trigger stress. When stress occurs, it can adversely affect physical, mental, and emotional health. High levels of stress can lead to problems such as sleep disturbances, anxiety, and depression. Shonkoff and Phillips (2000) define stress as a series of changes that occur in a person's body and brain triggered by a stimulus or threat perceived as traumatic. As a result of such a stressor, there is an immediate response in the brain and in other parts of the body (e.g., digestion, learning). Trauma, on the other hand, is a condition that deeply affects human life. Accidents, violence, natural disasters, etc., are referred to as traumatic events and can trigger chronic problems for individuals. Social workers, as mental health professionals, analyze the causes of stress and trauma and develop biopsychosocial methods. Before presenting any method, social workers review research on the subject, offering individuals various ways to cope with the negative effects of stress and trauma.

Neuroscience research has helped us understand how stress and trauma affect the brain. For example, experiences of stress and trauma can affect the brain regions that regulate emotional responses. This can determine how an individual emotionally

reacts. To describe the effects of stress and trauma on the brain, it is necessary to understand the structure of the brain and the processes that take place within this structure. The brain, despite its small size in terms of physical matter, is a highly complex structure, and ongoing discoveries are being made in the light of brain research. The brain consists of nerve cells called neurons. Neurons facilitate the communication network of nerves within the brain structure, generate electrical signals, and establish connections. There are many regions in the brain responsible for controlling emotions, behavior, and thoughts. The flexibility of individuals to be more sensitive to external stimuli, change behavior, and adapt to the environment is associated with neural plasticity (Barrett, Cooper, and Teoh, 2014). Plasticity means "the ability to adapt." Neural plasticity allows neurons in the brain to reorganize and adapt to changes in the individual's life, facilitating healthy development stages (Wolf, 1989; Apak, 2001). Those without neural plasticity struggle to adapt to changes in life and may not complete developmental stages healthily.

The effects of stress on the body are often a noticeable type of response. It occurs as a result of a chemical reaction in the brain and, during stressful moments, the brain releases a hormone called cortisol. Short-term stress is generally associated with situations involving threats, and the amygdala region in the brain controls this stress. Long-term stress, or chronic stress as it is often referred to, can affect the structural and functional processes of the brain. In some cases, stress can seriously damage brain cells or even lead to their death. Studies have shown that neglect experienced during childhood affects the amygdala in the brain. The amygdala is a central structure that regulates emotional responses and controls the release of neurotransmitters associated with stress. Chronic stress makes it difficult to control emotional responses by increasing specific neurotransmitters that block the control of the amygdala (Adolphs, Tranel, and Buchanan, 2005). Trauma has a similar effect on our bodies as chronic stress. Any traumatic event can disrupt the chemical balance in the brain. Stress and trauma can result in long-term problems in the human body and mind. Depression, anxiety, sleep disorders, and eating and drinking problems can negatively impact an individual's quality of life as a result of chronic stress and trauma. In humans and animal models, chronic stress and stress-related disorders such as depression and PTSD are associated with changes in brain structure and function that, to some extent, recover after treatment or after being removed from stress (Gray, Rubin,

Hunter, and McEwen, 2014; Sheline, Gado, and Kraemer, 2003; Warner-Schmidt and Duman, 2006).

Environmental and biological changes in human life also lead to changes in many neurochemicals in the brain and the body. For example, depression develops due to a disruption in the brain's chemical balance. Neuroscience studies pave the way for understanding the possible causes of depression and effective solutions. Although stress and trauma are common events in human life that can result in various chronic pathologies, it is known that many individuals show a degree of resilience against the negative effects of stressful or traumatic events. However, beyond this point, the change and transformation of biological structure have consequences that can affect a part of a person's life, perhaps their entire life. Neuroscience studies also help assess the effectiveness of treatment methods used to improve mental health. Lanius and colleagues (2004) found that individuals with Post-traumatic Stress Disorder (PTSD) respond differently in terms of neural connections compared to those who have experienced trauma but have not developed PTSD. These findings from neuroscience studies provide guidance for social workers, psychiatrists, and psychologists working in the field of mental health. Some studies conducted today investigate how methods such as psychotherapy or medication treatment affect the brain. This allows for the development of more effective treatment methods for mental health problems (Bozkurt, 2022).

In conclusion, recent advancements in neuroscience have significantly contributed to our understanding of the neurological foundations of behavioral and cognitive disorders, as well as the biopsychosocial impact of stress and trauma. This interdisciplinary approach, integrating neuroscience with social work and mental health practices, offers new insights into the complexities of human behavior and mental well-being. By examining the intricate relationship between brain function, environmental factors, and individual experiences, professionals in the fields of social work and mental health can better tailor interventions and treatments to promote positive outcomes for individuals facing various challenges related to behavior, cognition, stress, and trauma. Neuroscience continues to illuminate the path toward improved mental health and well-being, offering hope for more effective interventions and therapies in the future.

Developmental Neuroscience Research

Infancy is a crucial period for the development of the brain. It is known that a newborn baby has around 100 billion neurons. The human brain continues to shape itself from infancy until the age of two. It relies on the baby receiving the necessary nourishment from their caregiver, engaging with their environment, and responding to the attitudes and behaviors of their family. In fact, the first six months of life are often emphasized by experts for the importance of breastfeeding (WHO, 2003). Afterward, supplementary foods and non-allergenic foods should be introduced to the baby's diet. According to research conducted in the United States, only 10% of 12-month-old babies consume meat, with the rest of their diet being predominantly grain-based (Skinner et al., 1997). Iron deficiency negatively affects brain functions (Özenoğlu and Ünal, 2015). Additionally, it is crucial to establish communication between the baby and their environment and meet their social needs to ensure healthy growth. Findings from a study conducted on mice suggest that subjects in a enriched environment have a higher rate of nerve cell formation and proliferation in their hippocampus compared to those in an ordinary environment (Van Prag, Kempermann, and Gage, 1999). Babies need interaction with various stimuli for healthy brain development. Objects that make noise, have colors, and textures are essential stimuli for babies. The creation of new connections between brain cells in response to new stimuli is a neurological outcome that promotes healthy brain development. In this context, it is thought that mothers' use of smartphones during breastfeeding damages the attachment and bonding processes by weakening the eye contact and physical contact between the mother and the child, and this negatively affects the baby's brain development. In addition, directing the mother's attention to the smartphone instead of the baby and breastfeeding may cause problems in the production of the oxytocin hormone in her brain. Many animal studies show that environmental factors regulate brain chemistry (Özmert, 2005). According to Fischer (2008), creativity, critical thinking, and problem-solving skills observed during childhood are associated with neuroplasticity. Acquiring cognitive skills during infancy and sustaining them will contribute to education and academic success in later stages of life. Research indicates that social support is inversely related to mortality in both humans and animals (House, Landis, and Umberson, 1988). Play helps establish an emotional bond between a baby and their family. Play has a significant role in the cognitive and emotional development of a baby

(Özmert, 2006). The development of motor skills also begins this way. The primary role of a caregiver is to create a safe play area for the baby. For example, the orbital prefrontal cortex, located just behind the eyes, enters a sensitive developmental period starting from early life and continuing until approximately two years of age. This system processes facial expressions, touch, taste, and smell responses and interacts with the limbic system, which follows and regulates emotional responses to balance emotion and reasoning. Schore (2000) associates these two brain structures and this sensitive period of rapid development with the process of attachment between the baby and the caregiver who feeds them. In summary, this is important for social work students to understand: the brain forms connections (synapses) intensively between brain cells (neurons) during sensitive periods (Pennington, 2009). This insight provides opportunities for discussions during the development of social policies and programs, such as healthy child development, prevention of brain injuries, and situations related to later-life brain changes. While sensitive periods are essential, they are not determinative. Findings of recent studies contradicts previous beliefs that the brain developed early in life and then stopped developing and that this development was unchangeable in environmental or experiential contexts (Cicchetti and Cannon, 1999). Cicchetti and Cannon (1999) and Claes (2004) have conducted studies suggesting that stressors and changes in brain neurochemistry associated with bad behavior in children change brain development. Bad behavior towards children can have long-term consequences. These behaviors can affect children's mental health and make them vulnerable to psychopathology that may occur later in life (Farmer, 2009a; 89-97). In light of this knowledge, the conclusion is that traumatic events experienced during childhood can alter how memories are processed in the brain. Social workers work with families to ensure that children grow up healthily by meeting their basic needs such as education, health, and nutrition. They also help children develop emotional and social skills. Effective social work practices support the fundamental foundation of individuals' lives, which is a healthy growth and development process.

The Relationship Between Social Work and Neuroscience

Social work is a field that focuses on human behavior and social issues. It develops interventions tailored to the needs of individuals, families, groups, and communities, seeks to understand human behavior, identifies social problems, and formulates policies to address them. It is a profession that aims to enhance coping mechanisms

for problems in people's lives, promote their potential, and help them achieve a life of well-being within society. Biology, on the other hand, represents the starting point of our existence. In addition to the biological science that provides important details about human development, social work also follows similar stages of intervention. While the biopsychosocial model acknowledges the importance of both biology and the social environment in understanding behavior and addressing social problems, a closer examination of the rapidly evolving literature in social work will raise questions about how precisely biology fits into our field (Korucu, Söylemez, and Oksay, 2021).

The brain is a knowledge transformer that takes input from the environment and turns the vast amount of external stimuli we receive into something we can consistently interpret and ultimately act upon. To say that the brain plays a central role in our existence is an understatement, as it mediates everything we do, see, feel, and understand. Given that the brain is at the center of so much research (Masten and Wright, 2010), it is essential for the social work profession to closely follow studies related to the brain. Acquired brain injury can have significant impacts on an individual's life. In this context, social work professionals face a series of crucial assessment and protection tasks (Mantell, 2010). Primarily, social work professionals need to assess the individual's needs, including determining the assistance required for daily life activities. Subsequently, evaluating the individual's cognitive capacity is also important, as it easily identifies cognitive abilities and mental health. Considering these conditions, assessing the risks that individuals with acquired brain injuries may face is necessary because, in some cases, they may be more vulnerable to certain risks. Finally, timely protective measures should be taken for individuals with such risks, as those with acquired brain injuries may require additional protection (Holloway and Fyson, 2016). Despite this knowledge, public institutions have not implemented practices supporting individuals with acquired brain injuries, and many individuals struggle to access the services they need despite being at risk (Headway, 2014).

Social workers working with survivors of intimate partner violence are tasked with helping victims cope with post-traumatic stress disorder, depression, anxiety, and other psychological issues. In this regard, neuroscience can assist in understanding the neurological processes underlying such psychological problems, enabling the more effective design and implementation of social work practices. According to a bibliographic study conducted by Baird, Tarhis, and Messenger (2022), there are 13

studies exploring the relationship between intimate partner violence and neuroscience, with significant findings for social work practices. However, the study concludes that the research in this field is still insufficient.

Findings from lifelong health examinations regarding the causes of human illness have revealed that biological, psychological, and social factors, along with developmental stages, influence an individual's ability to shape their own destiny and can reduce resilience and motivation (Halfon et al., 2014). Social workers often provide empowering interventions and work to enhance individuals' problem-solving capacities (Egan, Neely-Barnes, and Combs-Orme, 2011). With the help of research, it becomes evident that there is a need to explore and improve classical interventions. The connection between social work and other disciplines and the exchange of knowledge among disciplines are crucial for encouraging social work professionals to both research and apply neuroscience in their field.

The Use of Neuroscience Knowledge in Social Work Interventions

Neuroscientific research offers a different perspective on human behavior and mental processes, complementing fields such as social work and highlighting the value of mutually enriching knowledge. Neuroscience seeks to understand brain functions and nervous systems through various research techniques, conducts experimental studies on neurological disorders, and provides valuable insights. Social workers utilize research conducted in the light of neuroscience to develop intervention plans aimed at improving behavioral and cognitive processes.

Creating a personalized application method tailored to the client can be quite challenging. A multidimensional approach becomes crucial in such cases. The knowledge gained from neuroscience studies will enable clients to respond more positively to interventions (Amato, 2017). For example, measuring the neural characteristics of a client will be essential in better understanding their issues (Gabrieli, Ghosh, and Whitfield-Gabrieli, 2015). Employing personalized applications when creating an intervention plan will be significantly beneficial, leading to observable positive developments in the client's quality of life.

For instance, a child in the developmental stage exposed to environmental toxins can negatively affect their sensitive developing brain (Rauh and Margolis, 2016). Experiencing frequent infections from infancy, lack of affection and care, neglect due

to poverty, and abuse by caregivers can hinder development. Physiological problems and social and economic deprivation leave temporary and permanent marks on the neurological systems of infants and children during their developmental stages. In such cases, a social worker gathers information about the child's developmental stage, evaluates this information, and advocates for necessary actions against unfair situations. A social worker utilizes the methods needed through neuroscience to address the client's needs. Being the voice of marginalized and deprived communities, being aware of deficiencies during developmental stages, closely monitoring their cognitive structures, collaborating with them, creating intervention plans, and exhibiting a biopsychosocial-based approach will contribute to the success of these practices.

Neuroscientific research supports cognitive-behavioral theories by describing the complex connections between thoughts, emotions, and physiological events (Applegate and Shapiro, 2005). Neuroscience also demonstrates how stress affects different areas of the brain, which can be used in developing different intervention plans for stress management. For example, techniques like meditation can be used to cope with stress (Turner, 2009). Neuroscience research, by examining the effects of these techniques on the brain, can help develop more effective intervention plans for stress management.

Research in the field of social work generally aims to facilitate an effective intervention process. It is important to recognize that our brains adapt to changes in the constantly changing world we live in. The brain can become excessively sensitive during certain periods, leading to changes in behavior and emotional patterns (Astle and Scerif, 2009). With knowledge from neuroscience, the negative situations experienced by clients can be explained more rationally when examined from a multidimensional perspective. Social behaviors may sometimes be attributed to the hereditary characteristics of the society in which the individual lives, rather than just the individual. Social neuroscience can reveal these aspects. Social workers, when working with different communities, cultures, or societies, can apply their approaches from a multicultural perspective, aligning them with scientific studies and avoiding misguidance.

Abdellaoui et al. (2019) reported that field studies on genes and social effects and consequences have increased and become more widespread. In a study investigating the effects of the Holocaust, it was found that cultural trauma indirectly passed down

through genes, highlighting that the effects of cultural trauma can be transmitted across generations (Lehrner et al., 2014). Recognizing the transmission of cultural trauma is essential, as addressing its effects through intervention can be less time-consuming and cost-effective. Social workers who are aware of localized issues will be able to easily access the solution they need in their interventions through neuroscience studies. Throughout the centuries, religious affiliation has served humanity to socialize. According to a study by Willemsen and Boomsma (2007) based on genome-wide analyses using data from the Dutch Twin Register, there is more parental relatedness between religious groups than between religious and non-religious groups, based on cultural influences. A social worker taking on the role of family counseling will realize that family relationships are not regulated by standardized explanations for each individual based on this knowledge.

CONCLUSION

Human behavior possesses characteristics that can change throughout one's life. According to neuroscience, social behavioral patterns are not only influenced by genetic traits but also subject to change due to the effects of stress and trauma factors. Understanding individuals within the changing and evolving global order requires an awareness of these differences to develop effective intervention methods. The integration of neuroscience into the field of social work is crucial in this regard. Cognitive processes that influence an individual's lifelong development must be harmonized within the perspective of social work. Curricula for social work education should include content derived from current neuroscience research (Mason et al., 2020).

Montgomery (2013) explained with examples the necessity of applying neuroscience in clinical social work interventions. Farmer (2014b; 37-55) emphasizes the importance of neuroscience for social work practices and specifically mentions "mirror neurons". Sayre and Walker (2014) also state that neuroscience can provide a theoretical basis for social work and will be a guide in social work practices. Neuroscience-based approaches can make learning processes more efficient by reducing students' stress and anxiety levels. Therefore, school social workers need to consider neuroscience in their work on students' mental health. In the study conducted by Blundo and Savage (2020), it was concluded that when school social workers prioritized students who caused unrest and exhibited contrary behavior in the classroom and performed

neuroscience-based awareness-based exercises, the students were more relaxed and focused on their exams.

The term "social neuroscience" was first coined by Cacioppo and Berntson (1992). With the technological advancements and progress in research methods that came with the 21st century, neuroscience continues to evolve. Integrating neuroscience with the biopsychosocial perspective of human behavior prepares professionals from various fields for increasingly interdisciplinary practice environments and ensures a higher level of care for clients. This integrated knowledge prepares social workers to better educate clients and their families about brain-related conditions and illnesses. It also depends on effective critical connections being established among clients, families, and interdisciplinary teams. It is a fact that neuroscience should be among the sciences with which social work is closely connected.

Social and individual problems continue to increase and become more complex every day. Striving to use more methods in solving social and individual problems will not only reduce the workload of social workers but also be very helpful in preventive applications. Within the framework of ethical professional principles, a social worker is responsible for continuously improving and renewing themselves for the well-being of their clients and the welfare of society. It is a known fact that there are many approaches to learn, but utilizing technological advancements, medical innovations, and current knowledge is among the inevitable duties of social workers to gain different perspectives.

The combination of social work and neuroscience disciplines offers an important opportunity to understand human behavior and produce more effective solutions to social problems. However, research in this area is still limited. Therefore, the development of new studies in emerging fields should be encouraged. In particular, social workers can make their professional practice more effective if they understand the basic concepts and findings in the field of neuroscience. For example, using neuroscience-based clinical therapy techniques to intervene with individuals experiencing post-traumatic stress disorder may help achieve more effective and lasting results. Finally, social workers need to be provided with more training and access to resources to improve their knowledge and skills in neuroscience. This could further strengthen social work's relationship with neuroscience and encourage further research in this field.

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