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Reimagining neuroscientific and andragogical principles for dementia care education

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ABSTRACT



This article aims to explore the integration of Louis Cozolino's (2013) andragogical strategies with the tenets of person-centered dementia care practices to enhance dementia care education. The article examines the multiple dimensions of learning in adulthood, highlighting the role of neural plasticity and lifelong brain adaptation in shaping learning and experiential strategies. This in-depth evaluation underscores the significance of tailoring andragogical approaches to the needs of adult learners, who, in this context, are care providers for persons with dementia. This is done through proper understanding of the neurobiological realities and the unique learning needs of adults. Such tailored approaches can be aligned with the brain's adaptive nature by recognizing the intricate interplay of cognitive, emotional, and social dimensions. Highlighting the need for including lessons on the person-centered approach in dementia care education, the paper argues that adult learners – who are essentially part of the dementia care workforce – first need to learn, appreciate, and embrace the approach before applying it in their caregiving practices. This article presents an overarching argument that integration of Cozolino's principles of adult learning with tenets of person-centered dementia care could provide a robust framework for dementia care education.

KEYWORDS

Dementia care education; andragogical approaches; person-centered care; learning in adulthood; cozolino's learning principles; neural plasticity; dementia; neurodegenerative conditions

Introduction

In recent years, the field of adult education has increasingly embraced insights from neuroscience to optimize teaching methods and enhance learning outcomes. Louis Cozolino (2006; 2008; 2013), a prominent scientist on the intersection of psychology and education, has proposed a set of principles rooted in neuroscience that hold great potential for guiding andragogical instructional practices. This article elucidates Cozolino's principles and their potential application to dementia care education when integrated with tenets of the person-centered care approach. The aim is to offer an integrative perspective on effective approaches, which could enhance the skills of dementia care staff.

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Dementia care education and the need for practical approaches

Dementia is a neurodegenerative condition characterized by significant decline in cognitive functioning and social abilities from a previous level of functioning and performance (Alzheimer's Disease International, 2024; Dementia, 2023). Cognitive domains include but are not limited to, complex attention, language, learning and memory, perceptual motor function, executive function, and social cognition, leading to significant interference in activities of daily living (Sachdev et al., 2014). Around 55 million of the global population currently live with dementia, and this number is expected to rise to 78 million by 2030 and 139 million by 2050 (World Health Organization, 2023).

Given the increasing prevalence of dementia, an informed and competently trained workforce is needed to provide effective care (Surr et al., 2017; 2021). Several interventional programs have been developed to increase care staff knowledge and competence (Zhao, Liu, & Chan, 2021). However, barriers and challenges of effective care education such as care staff characteristics, relevance, practicality, and applicability of educational content, delivery format, and several other factors are documented in review studies (Pit et al., 2024; Rasmussen, Anderssen, Waldorff, & Berg-Beckoff, 2023; Surr et al., 2017; Zhao, Liu, & Chan, 2021). Without granting care staff practical support, standard dementia care education and training have limited influence on their knowledge and competence to provide care (Parveen et al., 2021; Surr et al., 2017; 2021). Studies emphasize the importance of looking beyond dementia knowledge and training content and instead giving more consideration to andragogical factors when aiming to improve dementia care practices (Jack-Waugh, MacRae, & MacRae, 2018; Parveen et al., 2021; Surr et al., 2017; Wang, Xiao, Ullah, He, & De Bellis, 2017). These factors include practical approaches to designing teaching methods and strategies aimed at fostering engagement, facilitating learning, and gaining meaningful experiences for dementia care staff. Highlighting the challenges of implementing a single training framework, especially in care settings with a diverse workforce, studies recommend having clear guidelines and practice-based training that are underpinned by theoretical frameworks (Surr et al., 2017). It can be argued that the shared principles of Cozolino's approach and that of person-centered care could potentially provide a constructive landscape for introducing effective dementia care education.

Cozolino's andragogical approach (Cozolino, 2008; 2013) emphasizes the role of social and emotional engagement in learning. It includes creating a safe and supportive learning environment to foster optimal brain function, enhancing learning experiences through safe and trusting relationships, positive social interactions, and collaborative activities, using storytelling and building narratives to stimulate the brain's capacity for information retention and synthesis, and engaging in regular reflective exercises to facilitate learning.

Creating a supportive learning environment through safe and trusting relationships

According to Cozolino (2013) and from the neurobiological perspective, one of the optimal ways to promote neural plasticity – the brain's ability to adapt to the external environment and change its functions – is by forming a supportive learning environment. Current trends in neuroscience indicate that fostering an emotionally connected learning environment is conducive to neural plasticity, and it is through the formation of secure relationships that learning can be enhanced (Crawford, 2023; Goldberg, 2022;

Immordino-Yang, Darling-Hammond, & Krone, 2019). Cozolino (2013) also highlights the importance of creating safe and trusting relationships, emphasizing the use of facial expressions, eye gaze, and physical contact to enhance interpersonal relationships. This, he argues, is fundamental for neural plasticity and nurturing the brain's learning capacity. Studies have shown the connection between a supportive learning environment characterized by trusting relationships and the activation of certain neurotransmitters such as dopamine and norepinephrine, which are found to enhance learning (Cozolino & Sprokay, 2006; Sequeira, Butterfield, Silk, Forbes, & Ladouceur, 2019). In his discussion, Cozolino (2013) likens the learner-educator relationship to that of the child and the parent, where a safe physical and emotional space - *a holding environment* - is provided for the child unconditionally, and thereby neural plasticity is fostered (Kegan, 2000).

Storytelling and building narratives

Cozolino (2013) pays homage to Siegel (2012) when listing what he calls are the ingredients of a story well told: thoughts and emotions, gestures and expressions, and conflicts and resolutions, which serve different functions in building a distinct narrative in the teaching process. He argues that adult learners excel at storytelling, partly due to the convergence of several neural processes during the act, but also due to the evolutionary need to pass down knowledge and wisdom to future generations (Cozolino & Sprokay, 2006). Drawing a parallel between the learning that takes place and the story of oneself, he explains that adults may learn best when asked to draw from their own experiences and wisdom, successes and failures, and competence and status. Sharing stories that carry meaning and help transmit shared values and perspectives, is what Cozolino (2013) argues, helps create social as well as neural coherence. Using personal narratives as a memory tool to encode, store, and retrieve information has been found to aid the learning process by enhancing neural plasticity.

Cozolino (2013) also talks about helping “learners” edit negative self-narratives to alleviate challenges experienced in the learning journey. He views the narrative structure as a consequential byproduct of an increasingly developing and complex social environment, necessitating the encoding and retrieval of a vast amount of information; this increasing neural complexity eventually allowed for the emergence of language, storytelling, and the narrative structure. According to him, social interactions are facilitated and enriched by the use of language and the narrative structure. These in turn aid neural integration, abstract thinking, imagination, emotional regulation, and enhanced executive functioning (Cozolino, 2013; Xu et al., 2021). When building a story using enriched language, Cozolino (2013) explains the two crucial elements: coupling the narration of a series of events unfolding consecutively with emotional expressions and experiences. Doing this, he argues, will give the story meaning and relevance. From the neurobiological perspective, he states that telling a good story using the narrative structure leads to the integration of linguistic processing of the left hemisphere with sensory and emotional processing of the right (Cozolino, 2013; Xu et al., 2021). Building this coherence is what allows the brain to understand narratives, which are found to correlate with forming securely attached relationships, building self-esteem, and regulating emotions.

Engaging in regular reflective exercises to facilitate learning

According to Cozolino (2013), engaging in regular reflective exercises leads to what he calls “transformative learning,” which is what brings changes to the way people view and understand aspects of themselves and the environment they live in (Taylor, 2006). From the neuroscientific perspective, humans have a neural representation of themselves and the social world that they live in. Self-related cognitive processes, under which self-reflection and reflective exercises fall, have been found to activate certain regions of the brain implicated in self-referential processing, internally directed thoughts, autobiographic memory, and integration of emotional, motivational, and cognitive information (Herwig, Kaffenberger, Schell, Jancke, & Bruhl, 2012). These include the anterior and posterior cingulate cortices, the medial prefrontal cortex, the lateral and ventromedial prefrontal regions, the medial temporal regions, and the parieto-temporal regions (Han & Northoff, 2009; Ma et al., 2014; Modinos, Ormel, & Aleman, 2010; Murray, Schaer, & Debbané, 2012; Northoff et al., 2006; Rameson, Satpute, & Lieberman, 2010; Van der Meer, Groenewold, Nolen, Pijnenborg, & Aleman, 2011). More specifically, studies have found that the anterior insular and the anterior cingulate cortices are involved in abstract representation of the self that enhances maintaining the sense of self (Herwig, Kaffenberger, Schell, Jancke, & Bruhl, 2012). These same brain regions play a role in fundamental cognitive processes, including awareness and response, motivation, learning, decision-making, and goal-directed behavior (Medford & Critchley, 2010; Namkung, Kim, & Sawa, 2017). Engaging in reflective activities is a neurocognitive skill that can be improved through regular practice and is found to help foster neural plasticity and cognitive flexibility (Ludvik, 2017).

Neural plasticity and adult neurodevelopment

Research on adult neurodevelopment highlights the ongoing plasticity of the brain, even in later stages of life (Cozolino, 2008; Drigas, Karyotaki, & Skianis, 2018). Brain imaging studies indicate that the prefrontal cortex, responsible for complex reasoning and decision-making, continues to adapt through experience (Demetriou & Spanoudis, 2017; Fuster, 2002; Gogtay et al., 2004). Cozolino’s teaching approach aligns well with the evolving brain structure of adults, emphasizing the importance of social and emotional engagement to stimulate prefrontal activity (Cozolino, 2008, 2013; Franklin et al., 2017). The adult learning experience is a multifaceted interplay of cognitive, emotional, and social dimensions (Cozolino, 2008; 2013; Johnson, 2006), and Cozolino’s teaching approach addresses these dimensions comprehensively (Cozolino, 2006; 2013; Cozolino & Sprokay, 2006). Studies show that social interactions and emotionally engaging content increase the release of neurotransmitters associated with attention and memory and facilitating trust and collaboration (Eslinger et al., 2021; Kolk & Rakic, 2022). Moreover, active participation in reflective practices enhances metacognition, reinforcing learning retention and knowledge transfer (Blair, 2017; Zelazo & Carlson, 2020). Neural plasticity, the brain’s ability to reorganize itself, is a key factor in adult learning (Chen & Goodwill, 2022; Puderbaugh & Emmady, 2023). Cozolino’s teaching approach acknowledges that the brain remains malleable throughout the lifespan, particularly in response to new experiences. A review of the literature echoes Cozolino’s key arguments on neural plasticity (Chen & Goodwill, 2022; Davidson & McEwen, 2012; Park & Bischof, 2013). For instance, a safe and socially

supportive learning environment fosters neurogenesis – the birth of new neurons – while storytelling and metaphorical explanations engage diverse neural networks (Berns, Blaine, Prietula, & Pye, 2013).

Contextualising this narrative to a critical discussion on the unique learning needs in adulthood

This section extends the discussion to the unique learning needs of adults. As the prevalence of dementia continues to rise globally (World Health Organization, 2023), the domain of dementia care faces the pressing challenge of developing evidence-based tools, resources, and interventions to improve the quality of care through dementia care education. By contextualizing the foundational principles proposed by Louis Cozolino, this section highlights the importance of developing and adapting andragogical approaches within dementia care education designed to help fulfill the unique learning needs of adults.

Malcolm Knowles (1970s) is credited for coining the term “andragogy” to describe the science behind adult learning (Kearsley, 2010). He identified six factors that characterize adult learners: their need to know, their self-concept, the role of their prior experiences in their learning journey, their readiness to learn, their orientation to learning, and their motivation (Diep et al., 2019; Ota, DiCarlo, Burts, Laird, & Gioe, 2006). In his principles of learning, Knowles explains the factors that deserve consideration when designing any form of andragogical training. For learning to be meaningful, he argues that adults need to see the purpose and relevance of what they are being taught (Knowles, Swanson, & Holton, 2005). They also take responsibility for their own learning and have a clear self-concept that facilitates self-directed learning. Equipped with prior experiences, they bring a set of skills that could potentially determine their learning preferences. Their readiness to learn is also fostered by their knowledge that what they are learning is relevant to their current needs and situations. Their learning needs are also task and problem-centered, fostering their motivation to learn, both intrinsic and extrinsic (Knowles, Swanson, & Holton, 2005).

Considering these factors, it becomes evident that learning for adults must be purposeful and relevant. This understanding sets the stage for a nuanced reevaluation of Cozolino’s learning principles, known for their efficacy in education with children and adolescents (Cozolino, 2008). Specifically, their application to dementia care training and education necessitates a deeper examination. Having established that adults learn best when their learning experiences are rooted in their existing knowledge, life experiences, and mastery of a subject, the following section introduces the tenets of person-centered approach that are at the heart of dementia care. By aligning the andragogical learning process with the principles of person-centered care (PCC), care staff will be able to build upon their own expertise and understanding, making the adoption of new concepts and practices more meaningful and effective. They will also learn to see beyond the diagnosis of dementia and instead focus on the person behind the diagnosis, fostering a more empathetic and personalized approach to caregiving.

The overarching aim is to integrate Cozolino’s principles with those of PCC in creating a dynamic educational framework for dementia care practices. When the two approaches are consolidated, care staff will not only be equipped with the necessary knowledge and skills to provide effective dementia care, but they will also develop a profound appreciation for the importance of personalizing care. This deep understanding goes beyond simply following a set

of care protocols; it becomes a fundamental aspect of how caregivers will view and interact with those in their care. Ultimately, this integration will result in having a dementia care workforce who will go beyond applying their learned skills and will be able to provide care that is not only effective in addressing the symptoms of dementia, but also one that enriches the lives of those they care for by honoring their personhood, individuality, and dignity.

Linking Cozolino's principles with the person-centered care approach

Person-centered care (PCC) is a philosophy that focuses on the needs and preferences of the care recipient and involves knowing the person, supporting them to recognize their strengths and abilities, and encouraging them to play an active role in their own care and treatment (McCormack, Dewing, & Mccance, 2011; 2015). This is done by establishing meaningful interpersonal relationships between the caregiver and the care recipient (Kitwood, 1997). Such relationships are centered around love, comfort, and attachment, and encourage the caregiver to focus on promoting the care recipient's inclusion in decision making surrounding their care, encouraging their involvement in activities and interests that foster satisfaction and fulfillment, and helping them maintain their identity that connects them to their past and present (Kitwood, 1997; 1998). PCC focuses on providing an environment where people with dementia are valued and treated as individuals, and care staff are encouraged to see the world from the person's perspective (McCormack, Dewing, & Mccance, 2011; 2015). Caregivers are also encouraged to provide a positive environment for the person with dementia to enhance wellbeing and overall life satisfaction. At the core of PCC is providing a social environment that supports the psychosocial needs of persons living with dementia (Brooker & Latham, 2016).

Cozolino's principles of teaching and the person-centered approach share several fundamental principles that can be integrated to design and implement a holistic and effective dementia care education framework.

Safety and emotional environment

Cozolino's principle of creating a safe and supportive learning environment aligns with the person-centered approach that emphasizes on creating a safe and emotionally secure, comfortable atmosphere for the individual (Cozolino, 2013; Kitwood, 1997; Mitchell & Agnelli, 2015). For instance, creating a safe environment involves managing potential triggers and anxiety, often linked with memory lapses and confusion (Lukasik, Waris, Soveri, Lehtonen, & Laine, 2019; Sinoff & Werner, 2003). The person-centered approach recognizes that a safe environment reduces anxiety and allows the individual to express themselves more comfortably (Kitwood, 1997; Mitchell & Agnelli, 2015). Integrating validation techniques to emphasize the importance of active listening, empathizing, and acknowledging emotions, experiences, and memories helps the learner foster positive and effective engagement.

Social connection and engagement

Cozolino's principle of social connection emphasizes building meaningful relationships and social engagement (Cozolino, 2013; Cozolino & Sprokay, 2006). The person-centered

approach also emphasizes attachment and bonds with others while honoring the person's preferences, background, and interests to tailor interactions and promote social engagement that is personally relevant and meaningful (Kitwood, 1997; Mitchell & Agnelli, 2015).

Storytelling and building narratives

Cozolino's emphasis on storytelling and building narratives (Cozolino, 2013) aligns with the person-centered approach's use of reminiscing (Woods et al., 2016; 2018), where familiar stories and experiences are used to connect with individuals' memories and emotions. Both frameworks recognize the power of narrative to evoke emotions and foster connections. Adapting this principle for dementia care education might require considering linguistic and cultural awareness, narrative preservation, and personal relevance (Wray, 2019). Utilizing storytelling and reminiscing to connect with individuals' memories and experiences could add significant value in the learning journey (Woods et al., 2016; 2018).

Reflective practices and validation

Cozolino's principle of reflective practice is an important ingredient for dementia education that is often lacking. Acknowledging and respecting the emotions and experiences of the individual (Cozolino, 2013; Kitwood, 1997; Mitchell & Agnelli, 2015) is a vital aspect of person-centered care. Both approaches underscore the importance of active listening and responding empathetically to the person's thoughts and feelings. A dementia care education framework designed to foster these skills in the learner could significantly contribute to effective care practices.

Individualized approach

The person-centered approach is founded on personhood and individualization, where careful consideration is given to seeing the world from the individual's perspective, tailoring plans and interactions to their unique needs, preferences, and capabilities (Dewing, 1999, 2008; Kitwood, 1997). This aligns with Cozolino's principles that emphasize andragogical strategies to suit those receiving the education (Cozolino, 2013; Cozolino & Sprokay, 2006). Both frameworks recognize the value of customization to promote the individual's engagement, minimize frustration that could result from ineffective training, and optimize the learning experience.

In summary, the connection between Cozolino's principles and the person-centered approach lies in their shared emphasis on creating an emotionally safe environment, fostering social connections, using personalized approaches, and recognizing the significance of emotions and memories. Integrating these two frameworks can enhance the quality and effectiveness of dementia care education for the adult learner.

Conclusive remarks

Designing and implementing a dementia care education framework by integrating Cozolino's teaching principles and the person-centered approach requires careful navigation. Highlighting the compatibility of these shared principles while also

emphasizing that such an integrated approach upholds the needs and preferences of the adult learner could potentially lead to designing effective dementia care education. By contextualizing this integrated approach to the dementia care education landscape, further research is recommended with the aim of creating an evidence-based framework that considers the unique features of learning in adulthood.

Ethical approval statement

The study did not involve the collection and analysis of data involving humans or animals. As such, no ethical approval was required. However, this article is one among many of the author's contributions toward their Ph.D. project, which has obtained ethical approval from University of Reading (Reference: 23/07) and Dubai Health Authority's Dubai Scientific Research Ethics Committee (Reference: DSREC-SR-03/2023_06).

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