CRDL PRELIMINARY STUDY IN USA; 12 INDIVIDUALS AFTER 4 MONTHS USE

Enhancing Quality of Life in Seniors: The Impact of CRDL

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Introduction

In the quest to enhance the quality of life for seniors, fostering meaningful interactions and cognitive engagement is paramount. The CRDL (pronounced "cradle"), a novel tool designed specifically for this purpose, offers a promising solution. By facilitating tactile and auditory interactions, the CRDL helps bridge the gap between individuals and promotes a deeper connection with oneself and others. This study explores the potential benefits of using the CRDL, focusing on its impact on ten specific indicators of emotional and cognitive well-being.

Purpose and Value of the Study

The core objective of this study is to determine whether the CRDL can serve as an effective tool to enhance cognitive and emotional engagement among seniors. The study aims to achieve the following:

1. **Facilitate Meaningful Interactions**: The CRDL is designed to stimulate touch and sound, providing a sensory experience that encourages seniors to connect with others. Through its use, we hope to see increased levels of Interest and Excitement, reflecting a growing attraction to the stimuli and emotional intensity provided by the device.
2. **Enhance Cognitive Engagement**: By measuring indicators such as Engagement, Attention, and Cognitive Load, we aim to assess how deeply the seniors immerse themselves in CRDL activities and the mental effort required.
3. **Alleviate Emotional and Cognitive Stress**: Frustration, Cognitive Stress, and Cognitive Pressure are critical indicators of the challenges faced by participants. The study will track these factors to understand the initial difficulties and subsequent adaptation to theCRDL.
4. **Promote Relaxation and Reduce Boredom**: Relaxation and Boredom will be monitored to evaluate the overall impact of the CRDL on the participants' mental states, especially after periods of intense concentration.

EEG as a Measurement Tool

EEG recordings provide a reliable and non-invasive method to monitor brain activity, offering precise data on the brain's response to different stimuli. In this study, EEG will be used to:

- **Detect Positive Interactions**: Increased neural activity in regions associated with pleasure and engagement can indicate positive responses to CRDL interactions.
- **Identify Stress Levels**: Specific EEG patterns can reveal heightened stress or cognitive overload, helping to assess the initial and ongoing mental demands of using the CRDL.
- **Measure Relaxation**: EEG can detect shifts towards more relaxed brain states, indicatingthe calming effects of CRDL activities over time.

Participants' Experiences

The study involved twelve seniors who engaged with the CRDL three times per week for 30 minutes each session over a four-month period. Here, we present a detailed narrative of their experiences, highlighting the value of the CRDL in improving various emotional and cognitive indicators.

Individual Narratives:

- **Individual 1**: Initially, Individual 1 faced cognitive challenges, with Frustration, CognitiveStress, and Cognitive Pressure peaking at the start. However, as the study progressed, they adapted well, showing increased Interest and Excitement. Engagement and Attention rose steadily, indicating a growing connection with the CRDL sessions. By the end of the study, this participant exhibited significant reductions in cognitive strain, showcasing improved adaptability and overall engagement.
- **Individual 2**: This participant experienced a consistent increase in positive emotional indicators. Interest and Excitement surged, while Engagement and Attention improved continuously. Although Frustration and Cognitive Stress were high initially, they decreased significantly over time, reflecting the participant's enhanced comfort and familiarity with the CRDL.
- **Individual 3**: Mirroring the positive trends seen in other participants, Individual 3 showed substantial improvements in Interest, Excitement, and Engagement. The initialcognitive challenges, such as high levels of Frustration and Cognitive Stress, were effectively managed as the study progressed, resulting in a more relaxed and engaged state by the end.
- **Individual 4**: This participant demonstrated significant increases in Interest and Excitement. Engagement and Attention were consistently high, indicating a strong connection with the CRDL activities. Initial cognitive challenges diminished over time,leading to a more positive overall experience.
- **Individual 5**: Though the increases in Interest and Excitement were modest, they were still evident. This participant initially faced high levels of Cognitive Stress and Frustration, but these indicators decreased as the study continued. The steady rise in Engagement and Attention highlighted the participant's growing involvement and adaptation.
- **Individual 6**: Similar to Individual ti, this participant exhibited modest yet positive changes. Interest, Excitement, and Engagement increased, albeit slowly. Cognitive Stressand Frustration were high initially but showed a downward trend, indicating gradual adaptation to the CRDL.
- **Individual 7**: This participant experienced marked improvements across all positive indicators. Interest, Excitement, Engagement, and Attention all rose significantly. Initial cognitive challenges were effectively overcome, resulting in a more engaged and relaxedstate.
- **Individual 8**: Individual 8 showed significant increases in Interest and Excitement, with Engagement and Attention improving notably. Cognitive Stress and Pressure decreased over time, highlighting the participant's successful adaptation to the CRDL.
- **Individual 9**: Strong positive changes were observed in this participant. Interest, Excitement, and Engagement saw substantial increases, while Cognitive Stress and Loaddecreased, showcasing effective handling of initial challenges.
- **Individual 10**: Consistent increases in positive indicators, such as Interest, Excitement, and Engagement, were noted. Cognitive Stress and Pressure reduced significantly over time, indicating enhanced comfort with the CRDL sessions.
- **Individual 11**: This participant demonstrated strong growth in Interest, Excitement, and Engagement. Initial cognitive challenges were effectively managed, leading to a more positive experience as the study progressed.
- **Individual 12**: Significant increases in Interest and Excitement were observed, with Frustration and Cognitive Load decreasing over time. The participant showed consistentEngagement and improved Attention, indicating a successful adaptation to the CRDL.

Reasons for Positive Interactions

Several factors contributed to the positive outcomes observed in this study:

1. **Sensory Stimulation**: The CRDL's ability to stimulate both touch and sound likely playeda crucial role in maintaining and enhancing the participants' Interest and Excitement. These sensory stimuli can evoke emotional responses and help anchor participants in the present moment, fostering a deeper connection with the activity.
2. **Novelty and Engagement**: The novelty of the CRDL provided a fresh and engaging experience for the participants. The unfamiliar yet intriguing interactions may have captured their attention and curiosity, leading to increased Engagement and Attention over time.
3. **Adaptation and Learning**: Initially high levels of Cognitive Stress and Pressure likely reflect the participants' process of learning and adapting to the new tool. As they became more familiar with the CRDL, these indicators decreased, suggesting improvedcognitive comfort and efficiency.
4. **Emotional Regulation**: The CRDL's structured sessions and predictable interactions mayhave provided a sense of control and security, helping to reduce Frustration and Cognitive Stress. This emotional regulation is crucial for sustained engagement and relaxation.
5. **Social Connection**: The CRDL sessions may have also fostered a sense of social connection, either through direct interaction with others or by enhancing self-reflection and awareness. This social element is vital for emotional well-being and can significantlyimpact overall quality of life.

Recommendations for Future Studies

Based on the findings from this study, several recommendations can be made for futureresearch involving the CRDL and EEG measurements:

1. **Extended Study Duration**: Conduct longer studies to observe the long-term impact ofCRDL use on emotional and cognitive well-being.
2. **Larger Sample Size**: Include a larger and more diverse group of participants to validatethe results and enhance generalizability.
3. **Varied Interaction Settings**: Test the CRDL in different settings, such as group sessionsand solitary interactions, to explore its versatility and efficacy in various contexts.
4. **Additional Indicators**: Incorporate additional indicators such as social connectedness and overall life satisfaction to provide a more comprehensive assessment of the CRDL'simpact.
5. **Follow-Up Studies**: Conduct follow-up studies to determine the sustainability of the positive effects observed and to monitor any long-term benefits or challenges.
6. **Personalized CRDL Programs**: Develop personalized interaction programs within the CRDL to cater to individual preferences and needs, potentially enhancing its effectiveness.

Conclusion

This study reveals that regular use of the CRDL significantly enhanced the quality of life for the twelve seniors involved, evidenced by increased emotional and cognitive engagement and reduced mental strain over time. The positive trends across the ten indicators suggest that the CRDL is an effective tool for fostering meaningful interactions and improving overall well-being among seniors. These findings highlight the potential of the CRDL to support cognitive and emotional health, offering a promising approach to enhancing the quality of life in aging populations. The sensory stimulation, novelty, and social connection facilitated by the CRDL appear to be key factors in its effectiveness, providing valuable insights for future studies and applications.

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QoL Institute - Overview CRDL Study Results - May 2024

Crdl use & Change in Behaviour	MEANINGFUL INTERACTIONS		COGNITIVE ENGAGEMENT			EMOTIONAL & COGNITIVE CHALLENGES		
	Interest	Excitement	Engagement	Attention	Cognitive Load	Frustration	Cognitive Stress	Cognitive Pressure
Individual 1								
Initial reaction						Peak	Peak	Peak
Over time reaction	+++	+++	++++	++++			Low	Low
Individual 2								
Initial reaction	++++	++++	+++	+++		High	High	
Over time reaction	++++	++++	++++	++++		Low	Low	Comfort
Individual 3								
Initial reaction						High	High	
Over time reaction	++++	++++	++++			Relaxed	Relaxed	Engaged
Individual 4								
Initial reaction	+++	+++	++++	++++		High	High	
Over time reaction	++++	++++	++++	++++		Low	Low	Overall
Individual 5								
Initial reaction	++	++	+++	+++		High	High	
Over time reaction	+++	+++	++++	++++		Decreased	Decreased	
Individual 6								
Initial reaction	++	++	++			High	High	
Over time reaction	+++	+++	+++			Decreased	Decreased	
Individual 7								
Initial reaction	+++	+++	+++	+++		Modest	Modest	
Over time reaction	+++++	+++++	+++++	+++++		Overcome	Overcome	Relaxed
Individual 8								
Initial reaction	+++	+++	++	++			Modest	Modest
Over time reaction	++++	++++	+++	+++			Decreased	Decreased
Individual 9								
Initial reaction	+++	+++	+++				Modest	Modest
Over time reaction	++++	++++	++++				Decreased	Decreased
Individual 10								
Initial reaction	+++	+++	+++				High	High
Over time	++++	++++	++++			Comfort	Low	Low
Individual 11								
Initial reaction	+++	+++	+++			Modest	Modest	
Over time	+++++	+++++	+++++			Low	Low	Positive
Individual 12								
Initial reaction	+++	+++	++++	+++	Modest	Modest		
Over time	+++++	+++++	++++	++++	Low	Low		