The Role of Cognitive Dissonance in Dehumanization:

Denying Humanity through AI

by Bobbie Murray and Beata Moore

Artificial intelligence (AI) is an interdisciplinary science with multiple approaches to military application. It is quickly becoming central to modern warfare. There are eight areas where AI will prove its importance in the coming years: cybersecurity, warfare platforms, target recognition, logistics/transportation, battlefield healthcare, simulations/training, threat monitoring, and information processing. It is projected that by 2025, the market size of artificial intelligence is expected to reach USD 18.82 billion with a growth rate of 14.75 percent from 2017 to 2025.[1]

From the perspective of psychology, the advancement of AI centers on two important considerations. First, it brings to question if it is indeed possible for machines to reproduce human cognition and if so, what could cognitive science learn from the process (such as neural networks). Second, with the aggressive integration of smart machines in more areas of our lives, we need to better understand the psychological and social consequences of AI's increasing presence. The purpose of this work is not to undermine the integration efforts of AI into our military operational environment. Rather, the purpose is to highlight a need for understanding the psychological constructs that support our current understanding of human-machine relationships and to generate discussions related to new psychological constructs and theories that lay the foundation in support of how soldiers will learn to make decisions, manage cognitive dissonance, and successfully navigate the effects of change as artificial intelligence fully permeates the military environment. Scientific evaluation is a start to achieving a more defined and real understanding of how AI can allow humans to distance themselves from the reality of war.[2]

Bobbie Murray is the human protections administrator and an associate professor for the U.S. Army Command and General Staff College. She holds degrees in German, international business, finance, organizational psychology, and a Ph.D. in industrial-organizational psychology. She is an Executive Scholar – Leadership with the Kellogg School of Management, Northwestern.

Beata Moore is the director of the Ike Skelton Combined Arms Research Library, at the U.S. Army Command and General Staff College. She received a Master of Library and Information Studies from the University of Alabama.

Artificial Intelligence

For the purpose of this work, artificial intelligence is defined as the capability of computer systems to execute tasks that normally require human intelligence. To be sure, this definition is oversimplified. One could argue that a thermostat is intelligent in its ability to perceive and adjust the temperature of a home however, there is a vast difference between an intelligent thermostat and an intelligent machine that executes military operations especially when human life is involved.[3] Furthermore, there is a difference between an automated system and an autonomous system. Automated systems operate by an if-then-else structure based on rules where the inputs will produce the same output each time. In contrast, an autonomous system looks at possible courses of action using a set of inputs and generating guesses about probable courses of action. Automated systems produce the exact same behavior every time. Autonomous systems produce a range of behaviors.[4]

...as uncertainty increases (where ambiguity is prevalent and the cognitive continuum increases in complexity), knowledge-based reasoning and true expertise are needed.

Artificial intelligence follows a similar pattern as human intelligence by using the perception-cognition-action information processing loop. Essentially, AI processes inputs through optimization and verification algorithms. The system acts on the information in a fashion similar to that of a human by sensing the world around it and then responding accordingly. The application of Rasmusssen's SRK (skills, rules, and knowledge) taxonomy highlights the role of each step as uncertainty increases. Automated systems are good candidates for scenarios where the if-then-else structure of rule-based behaviors are in play. However, as uncertainty increases (where ambiguity is prevalent and the cognitive continuum increases in complexity), knowledge-based reasoning and true expertise are needed.[5]

Misconceptions and Dangers

De Saint Laurent posits there are four misconceptions around AI capability. First, AI can create. To elucidate this point, the authors offer the following example: AI applications have been used to show AI can produce an original artwork however, the concept of original is based on the replication of existing patterns that are combined to make new forms. AI has yet to invent a new painting style. Additionally, some AI programs have led to unexpected results in pattern replication such as finding spirals where none previously existed. While the results may appear to be meaningful, the reality is they may be only meaningful to the researcher or analyst in search of meaning. Meaning, creativity is very much in the eyes of those who produce and use new algorithms. Second, the argument AI can learn depends on the context of learning. Just like creating, the process of learning almost lends itself to the process of attributing anthropomorphic characteristics to a machine. Yes, it is possible for AI to learn how to recognize a cat versus a dog but this is done through pattern recognition and matching. Whereas human learning occurs through a similar process but also includes consequences. Intentionality in learning is more likely to be seen through the minds of those who program and use AI – those who create input and interpret output.[6]

Third, AI can solve ethically and/or culturally sensitive issues. AI does not have the ability to make assumptions related to what is appropriate for one group is also appropriate for another. Rather, AI applies outcomes that are considered appropriate and desirable to the

whole population with no regard to differences. Content moderations is an example of an ethical and/or culturally sensitive issue where what may seem obscene or violent in one country may not be regarded as such in another. Furthermore, AI can only reproduce existing classifications and AI models lack transparency and intelligibility related to discrimination. In some cases, AI reinforces discrimination by focusing on existing patterns and then exploiting those patterns to improve results. Finally, AI is neutral and objective. The argument for AI as a solution to human bias is flawed. Decision making is never neutral. Context plays a key role in decision making while knowledge serves the interest of some over others. Finally, as producers and users of AI it is our duty to engage in debate and to hold creators and users responsible. AI systems will never know how to ask questions, think critically about the literature or form a hypothesis. However, AI can serve as a combat multiplier, an unfatiguable assistant, and a tool to help solve complex problems.[7] In order to maximize the effectiveness of AI, we must also fully understand potential human consequences. A key reason to measure the application of AI is to track psychological intuitions and changes as individuals experience or engage with different types of machine agents.[8] After all, the application of AI should be a supplement to the human dimension and not a replacement for the human element. Machines cannot create, learn, or solve ethically and/or culturally sensitive issues.[9]

Three Theories

Theory of Cognitive Dissonance

Festinger defined the theory of cognitive dissonance as an uncomfortable feeling that occurs where an individual has a conflict between one's belief and actual behavior. It is a theory that accounts for the discrepancies between behavior and attitude.[10] The theory of cognitive dissonance has maintained its importance in the scientific community due in part to research vividly demonstrates the Soldiers are taught that killing is acceptable in the right situation (and may even be a good thing) and yet many of these same soldiers live by the ingrained belief of "thou shalt not kill." Cognitive dissonance helps explain dehumanization in war. Soldiers are coerced to obey the orders of a superior and may find themselves in a situation where killing another is mandated. When a solider follows through with such action, it is natural to expect a high level of tension as conflict exists between cognition and behavior.

AI systems will never know how to ask questions, think critically about the literature or form a hypothesis.

To alleviate cognitive dissonance, an individual will rationalize their behavior by overvaluing their choice or by undervaluing their rejected alternative.[11] There are also times when an individual experience an increase in cognitive dissonance. For example, an individual may experience increased dissonance related to the degree of significance of the subject matter or when the disparity between the two ideas is great. Which leads us to our next point—dissonance is strongest when it concerns one's own identity.[12] It is also important to highlight the well-established role of emotions in decision making.

Decisions can be difficult to make especially when choosing between similar and positive alternatives. Once a decision is made, individuals are prone to spread apart the alternative by exaggerating the positive aspects of their choice while highlighting the negative aspects of the choice not selected. This type of error justification hinders one's ability to acknowledge a failure and deal with the consequences. It is the

emotional state that brings one into the cognitive dissonance dilemma. While the term cognitive dissonance has been around for some time, the emotion of cognitive dissonance has not been systematically studied in the psychological literature. The emotions of cognitive dissonance are not recognized as a unique type of emotions different from what we identify as basic emotions. Understanding the underlying psychological structure of emotion is serves as the foundation for the development of AI systems capable of exhibiting and recognizing emotion-like responses. As we begin to better understand the underlying psychological structure of cognitive dissonance emotions, we also begin to better understand how to effectively design artificial neural networks to mimic human-like emotion responses in machines.[13]

...when organizations fail to address identity factors stemming from group membership, the success of training, individual, and organizational performance may be in jeopardy.

Social Identity Theory

The authors of this work highlight two additional theories in support of cognitive dissonance: Social identity theory and self-perception theory.

Social identity theory is a sub-theory of social cognition. It is a theory of group membership and behavior where individuals derive their identity from group membership and interactions.[14] The theory is useful in explaining how individuals make sense of themselves and their environment. Understanding the foundations and context of social identity theory is especially important in a military context where organizational actors move in teams to accomplish mission requirements and where the interaction between the individual and the group is an ongoing process.[15]

The importance of social identity theory for training in organizations stems from the knowledge about individual behavior in groups and subsequently, the group behavior that ultimately affects individual performance in an organization.[16] The affect occurs when individuals are motivated to maintain harmony in judgment with others. There is a motivation to reduce attitude discrepancies consistency with external social norms are valued while inconsistencies may be punished. The result is cognitive dissonance in groups.[17]

Social identity is one lens through which organizational actors view their responsibilities and dynamics of work. Therefore, when organizations fail to address identity factors stemming from group membership, the success of training, individual, and organizational performance may be in jeopardy.[18] The study and management of cognitive dissonance in groups is critical to the success of decision making in a military context and the subsequent management of failed outcomes, especially when those outcomes involve human life. People see their selves reflected in their choices and as such understanding the relationship of cognitive dissonance in a military context allows researcher to better understand how AI can allow humans to further distance themselves from the realities of war.

Self-Perception Theory

A complimentary theory to cognitive dissonance is self-perception theory. Cognitive dissonance theory characterizes attitude changes in the context of attitude-discrepant behavior. Self-perception theory characterizes attitude changes in the context of attitude-congruent behavior. The major difference between the two theories concerns the matter of aversive tension. The reduction of cognitive discrepancies is central to dissonance theory. However, in self-

perception theory, reduction does not exist.[19] Simply stated, self-perception theory concerns how individuals infer their characteristic by observing their own behavior.[20] When applied, self-perception theory predicts that a new attitude will emerge if an individual performs a behavior which is outside of one's current range of behaviors.[21]

Conclusion

Scientific evaluation is a start to achieving a more defined and real understanding of how AI can allow humans to distance themselves from the reality of war.[22] The study of theory and the application of empirical based research offers the opportunity to enrich the understanding of cognitive dissonance and its impact on a soldier's ability to understand the role of AI. An individual's identity can be conceptualized in a myriad of ways using theoretical and methodological frameworks.[23] However, the problems and gaps to understanding performance and learning as it relates to social identity and dissonance highlights the need for more work in theory development and research as soldiers take on the complex task of AI integration. In order to maximize the effectiveness of AI integration, we must also fully understand potential human consequences. A key reason to measure the application of AI is to track psychological intuitions and changes as individuals experience or engage with different types of machine agents.[24]

The purpose is to highlight a need for understanding the psychological constructs that support our current understanding of human-machine relationships and to generate discussions related to new psychological constructs and theories that lay the foundation in support of how soldiers will learn to make decisions, manage cognitive dissonance, and successfully navigate the effects of change as artificial intelligence fully permeates the military environment. Scientific evaluation is a start to achieving a more defined and real understanding of how AI can allow humans to distance themselves from the reality of war.[25] ***IAJ***

NOTES

1 Tejaswi Singh and Amit Gulhane, *8 Key Military Applications for Artificial Intelligence in 2018*, MarketResearch.com, accessed March 27, 2019, https://blog.marketresearch.com/8-key-military-applications-for-artificial-intelligence-in-2018.

2 B. Murray, "Ethical Considerations in Humanitarian Efforts," (Fort Leavenworth Ethics Symposium, 2015).

3 M. L. Cummings, "Artificial Intelligence and the Future of Warfare," Chatham House, 2017, accessed March 27, 2019, https://www.chathamhouse.org/sites/default/files/publications/research/2017-01-26-artificial-intelligence-future-warfare-cummings-final.pdf.

4 Ibid.

5 Ibid.

6 Constance de Saint Laurent, "In Defence of Machine Learning," *Europe's Journal of Psychology* 14, no. 4 (2018): 734-747.

7 Ibid., 734-747.

8 Dan Levin, Caroline Harriott, Natalie A. Paul, Tao Zheng, and Julie A. Adams, "Cognitive Dissonance as a Measure of Reactions to Human-Robot Interaction," *Journal of Human-Robot Interaction* 2, no. 3 (2013): 1-16.

9 Cummings.

10 L. David, "Cognitive Dissonance (Festinger)," Learning Theories, accessed March 27, 2019, https://www.learning-theories.com/cognitive-dissonance-festinger.html.

11 Edward D. Sturman, "Dehumanizing just Makes You Feel Better," Journal of Social, Evolutionary, and Cultural Psychology 6, no. 4 (2012): 527-531.

12 David.

13 Jose F. Fontanari, Marie-Claude Bonniot-Cabanac, Michel Cabanac, and Leonid I. Perlovsky, "A Structural Model of Emotions of Cognitive Dissonances," Cornell University, accessed March 27, 2019, https://arxiv.org/pdf/1202.6388.pdf.

14 Ernesto M. Reza, "Identity Constructs in Human Organization," *Business Renaissance Quarterly* 4, no.3 (2009): 77-107.

15 Russell F. Korte, "A Review of Social Identity Theory with Implications for Training and Development," *Journal of European Industrial Training* 31, no. 3 (2007): 166-180.

16 Ibid.

17 D. C. Matz and W. Wood, "Cognitive Dissonance in Groups," *Journal of Personality and Social Psychology* 88, no. 1 (2005): 22-37.

18 Michael A. Hogg and Kipling D. Williams, "Form I to We," *Group Dynamics: Theory, Research, and Practice* 4, no. 1 (2000): 81-97.

19 Russell H. Fazio, Mark P. Zanna, and Joel Cooper, "Dissonance and Self-Perception," *Journal of Experimental Social Psychology* 13, no. 5 (1977): 464-479.

20 T. Greitemeyer, "Effects of Playing Video Games on Perceptions of One's Humanity," *The Journal of Social Psychology* 153, no. 4 (2013): 499-514.

21 Fazio, Zanna, and Cooper.

22 Murray.

23 Kay Deaux and Peter Burke, "Bridging Social Psychologies," *Social Psychology Quarterly* 73, no. 4 (2007): 315-320.

24 Levin, Harriott, Paul, Zheng, Adams, 1-16.

25 Murray.