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ABSTRACT
Since a large area of cybersecurity research is technically centered but most cyber incidents are human enabled (Nobles, 2018), a shift in focus towards behavioral issues is imperative to improve the understanding of these problems. Research in behavioral economics shows that cognitive biases can impact the decision-making process. For example, a seminal study conducted by Iyengar and Lepper (2000) reveals that a large array of product options attracted customers to browse, but fewer choices got them to buy. Similar research shows that when presented with a large array of options, customers tend to defer decisions, search for alternatives, or even opt not to choose. Choice overload bias describes how individuals get overwhelmed when presented with a large number of options to choose from. This study translates extant behavioral economics based research on choice overload from various disciplines (e.g., business, public administration, medical science, sociology) and explores its impact on cybersecurity.

Keywords
Behavioral cybersecurity, cognitive bias, choice overload, decision deferral

EXTENDED ABSTRACT
The increasing number of cyber-attacks, data breaches, and ransomware attacks registered by organizations worldwide is largely the result of human error, with research showing that 95% of the cyber incidents are human enabled (Nobles, 2018). Nevertheless, the existing information security policies and plans created to prevent cybersecurity incidents refer almost exclusively to technology-related measures, with very little account for human behavior. This approach is generally aligned with the neoclassical (standard) economics model of the preference-maximizing human behavior that looks at humans as rational-agents who have perfect self-control and make only rational choices when provided with adequate information (Kahneman, 2011). The development of the behavioral model of economics provides an alternative approach to the rational-agent theory by taking into consideration the effects of psychological factors on human decisions in an attempt to explain why people are often deviating from the rational-choice model. Accepting humans as bounded-rationality agents allows us to probe why people are not always making the “rational” or “optimal” decisions, even in the conditions when they have a direct benefit to do it (Klaes & Sent, 2005) and facilitate ways to introduce new risk-management frameworks to prevent or correct irrational behavior occurrence that negatively impacts information security.

Aligned with the behavioral economics principles, studies conducted in marketing, public administration, political science, sociology, computer science, hospitality management, and medical science shows that when presented with a large variety of choices, people tend to experience a reduction in choice satisfaction and decision confidence, an increase in decision regret and switching likelihood, or even to completely defer the choice and postpone the decision (Chernev, et al., 2015). This puzzling effect was dubbed as “choice overload” (Iyengar & Lepper, 2000).

Our study examined the impact of choice overload bias on decision-making in cybersecurity settings and the influence of time constraints on this relation, based on a conceptual model of choice overload developed by Chernev and associates (2015). In concordance with similar extant research grounded in behavioral economics conducted in other disciplines a statistically significant relationship between an extensive array of options and decision deferral caused by choice overload was found. Also, we confirmed that time constraints moderate the relation between the number of choices and decision deferral.

REFERENCES