The Effects of Individual Factors on Cognitive Performance

S&T Campaign: Human Sciences
Human Behavior

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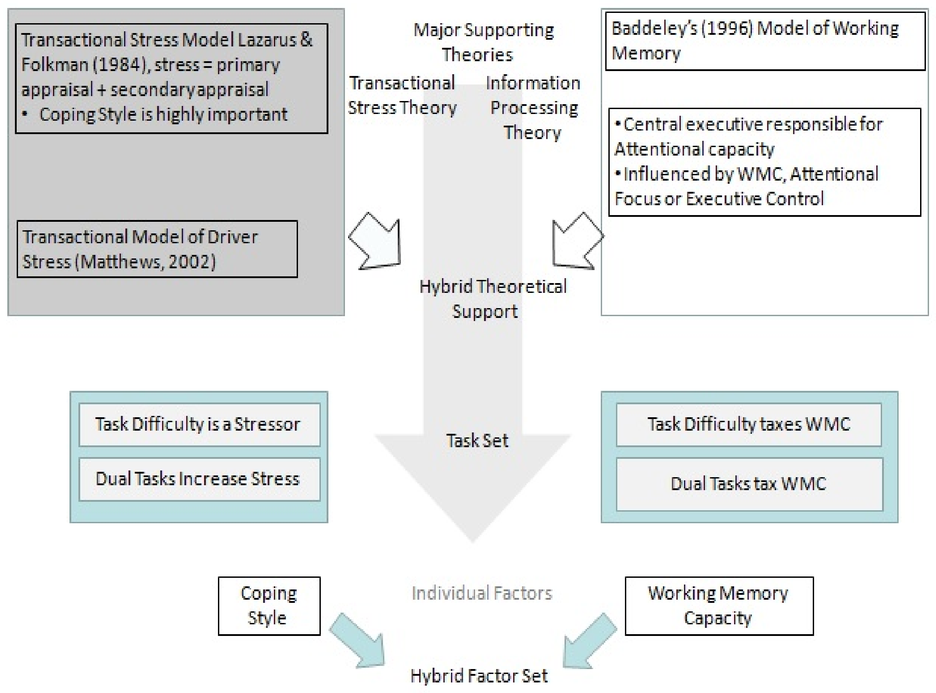
Research Objective

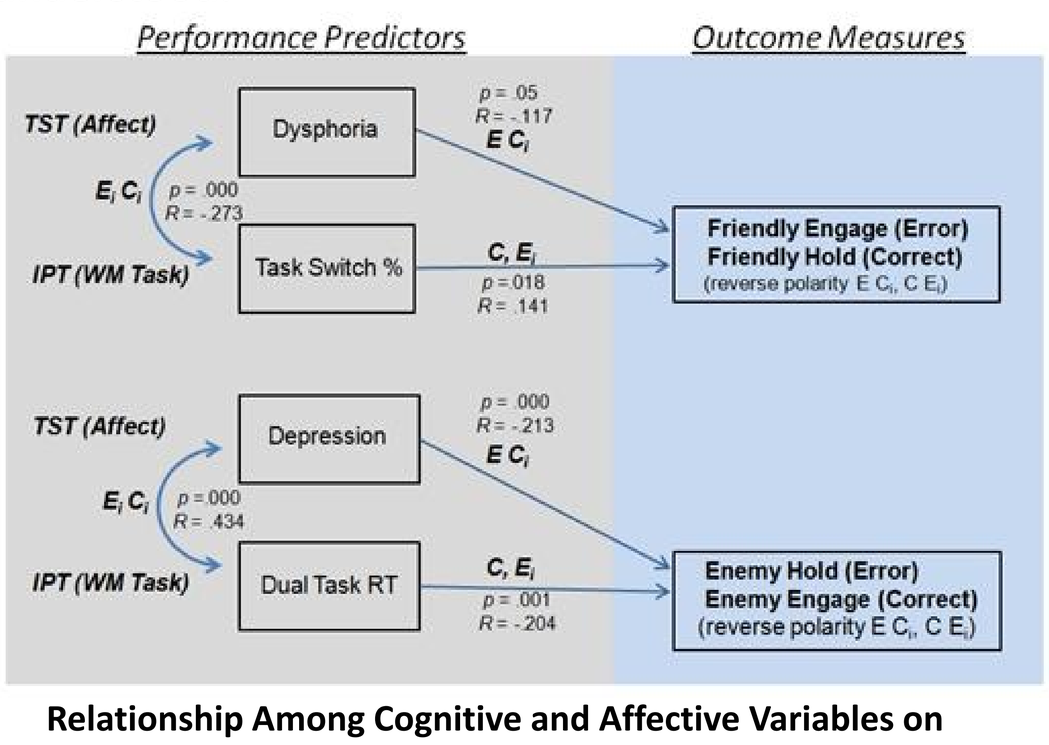
- **To better understand what individual factors contribute to real-world military relevant tasks.**
- **To better predict cognitive performance during complex task completion enhanced through multiple-theoretical individual construct measures.**
- **To reduce variability in applied laboratory and field studies through multi-theoretical foundation.**



Multi-theoretical Measures for Predicting Dual-Task Performance

Challenges

- **Until recently, multi-theoretical approaches to individual factors have not been widely researched to reduce variability in cognitive research.**
- **Broaden and refine the utility of individual factors to other cognitive task domains.**
- **TST- and IPT-based predictors (affective and cognitive, respectively) have also translated to shoot-don't shoot decision-making performance, but the cognitive (C) and emotional (E) pathways are just beginning to be understood:**



Relationship Among Cognitive and Affective Variables on Shoot/Don't Shoot Decision-Making

ARL Facilities and Capabilities Available to Support Collaborative Research

- **Software Assessment and Usability Laboratory (SAUL)**
  - **Reconfigurable laboratory space suitable for empirical data collection and software assessment and usability tests**
  - **Located at APG, MD within ARL-HRED.**
  - **Ability to simulate military-relevant task scenarios such as route recon and convoy driving, information handling, and UGV or UAV operation.**
  - **Shoot/Don't shoot marksmanship studies in simulated or live-fire environments.**
  - **Validated subjective and objective research tools and inventories with which to correlate with task performance or to use as covariates.**
- **Networking with other university resources and DoD laboratories that include:**
  - **Examine cognitive resilience factors and training.**
  - **Examine the nature of socio-cultural variables.**
  - **Use a wide variety of single user or teaming experimental tools such as MIX testbed, and UAV based research tools.**

Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- **Cognitive performance experts interested in individual factors as covariates or predictors of cognitive task performance.**
- **Experts in military-relevant tasks with which to expand the context of individual factors research.**
- **Expertise in social and cultural factors and how they contribute to cognitive performance in a multi-cultural cognitive task setting, along with other individual factors.**
- **Skill in applying a wide array of validated psychometric and psychophysiological measures as cognitive task performance correlates and covariates.**
- **Interest in developing path analysis and structural equation models based on individual differences.**
- **Interest in developing applicable performance models and model adjustments based upon findings in this research domain.**

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