



Marine Resiliency Study

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Why a Marine Resiliency Study?



Improved knowledge about risk and resiliency will help to

- *Prevent*
- *Identify*
- *Treat*

Operational and Combat Stress Injuries



Why a Resiliency Study?

- *In theater: Daily hardships and combat operations trigger acute and chronic stress*
 - *Physical: dehydration & wetness, dirt and mud, sleep deprivation, noise & blasts, fumes & smells, bright light & darkness, malnutrition, illness & injury*
 - *Cognitive: lack of information or too much information, ambiguous or changing mission or role, ambiguous or changing rules of engagement, loyalty conflicts, boredom & monotony, experience that don't make sense*
 - *Emotional: losses of friends to death or injury, fear, shame & guilt, helplessness, horror, killing*
 - *Social: isolation from social supports, lack of privacy, the media & public opinion*



Why a Resiliency Study?



- *The adaptive responses to chronic and intermittent stress is not fully understood*
- *Retrospective studies associate genotype, physiology and personality traits with conditions - anxiety, depression and posttraumatic stress symptoms – thought to result from stress*
 - *Age, gender*
 - *Reactivity to stress, tendency to dissociate*
 - *Childhood stress and/or trauma*



Why a Resiliency Study?



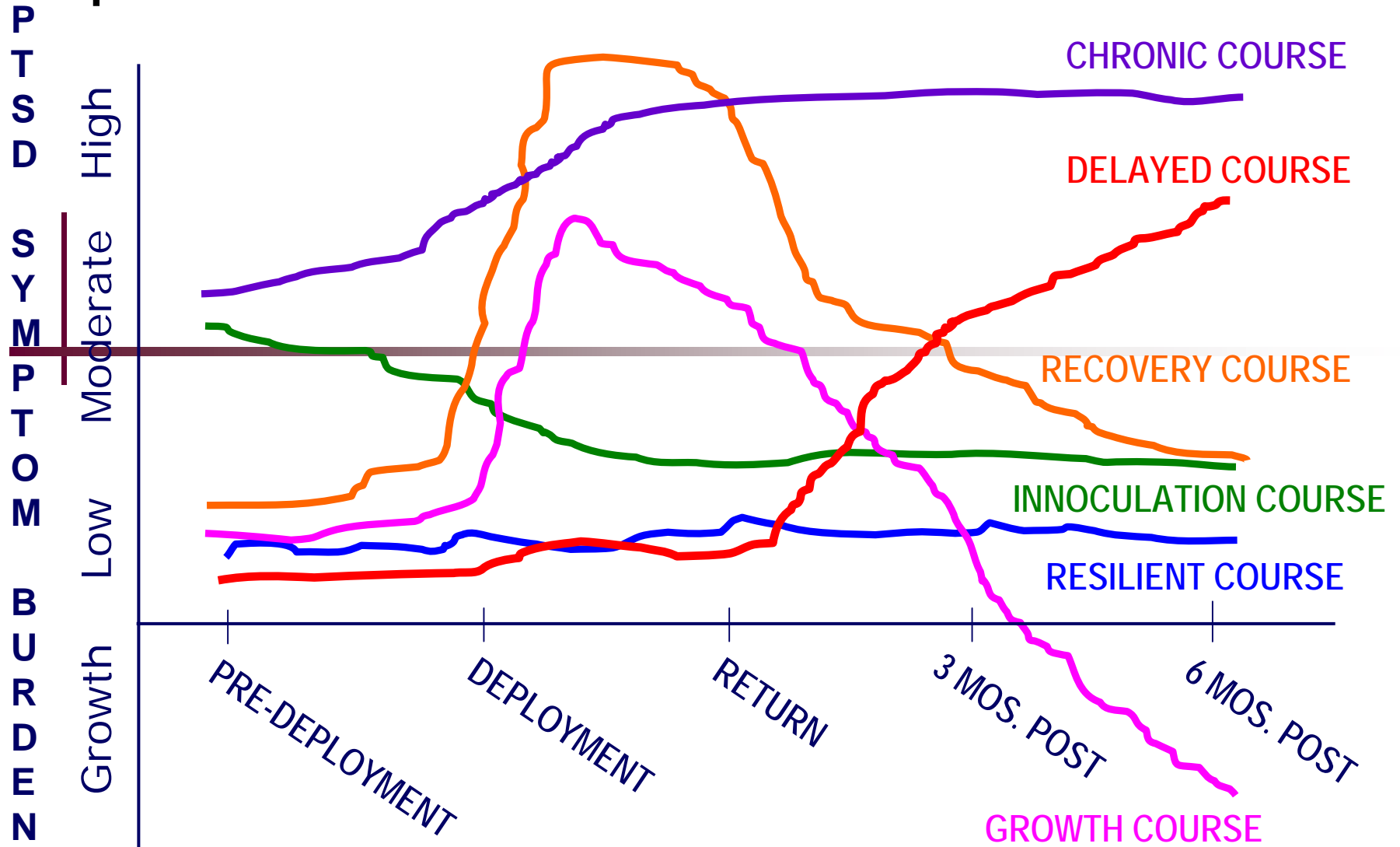
- *The retrospective studies provide clues about resilience but a better understanding of the full range of adaptive responses to combat operational stress is needed in order to design programs that promote resiliency*
- *Prospective studies could fill in knowledge gaps about the trajectories of adaptation to combat operational stress*



Why a Resiliency Study?

- *As yet, there are no prospective studies showing the various trajectories of adaptation to combat – this proposed study would be the first*
- *Components (projects) that are likely impact adaptation*
 - *Cognitive, psychological, social*
 - *Biological*
 - *Genetic*

Trajectories of Adaptation to Operational Stress and Trauma





Study – Who/when?



- *1600 Members (2 Infantry Battalions) of the 1st Marine Division will be offered invitations to participate in the prospective study*
- *Information (data) will be gathered at four time points*
 - *Time 1: Within the month prior to deployment*
 - *Time 2: One week postdeployment (questionnaires only)*
 - *Time 3: Three months postdeployment*
 - *Time 4: Six months postdeployment*



The projects?

Project 1



Psychiatric, psychosocial and cognitive predictors of adaptation trajectories

Brett Litz Ph.D.; Boston University and National Center for PTSD; William P. Nash M.D., Headquarters Marine Corps, Quantico & University of California San Diego; Jennifer Vasterling; Boston University & National Center for PTSD); Paul Hammer M.D., Division Psychiatrist, 1st Marine Corps, Camp Pendleton



The projects?

Project 2



Startle thresholds, sensorimotor gating, heart rate (HR) reactivity, baseline as predictors of adaptation trajectory

Victoria Risbrough Ph.D., San Diego VA CESAMH & University of California San Diego (UCSD); Mark Geyer Ph.D, San Diego VA CESAMH & UCSD; Dewleen Baker M.D., San Diego VA CESAMH & UCSD



The projects?

Project 3



**Characterization of catecholamine
(norepinephrine) genotype, stress-related
proteins and blood pressure (BP) as
predictors of intermediate biological traits
(phenotype) and adaptation trajectory**

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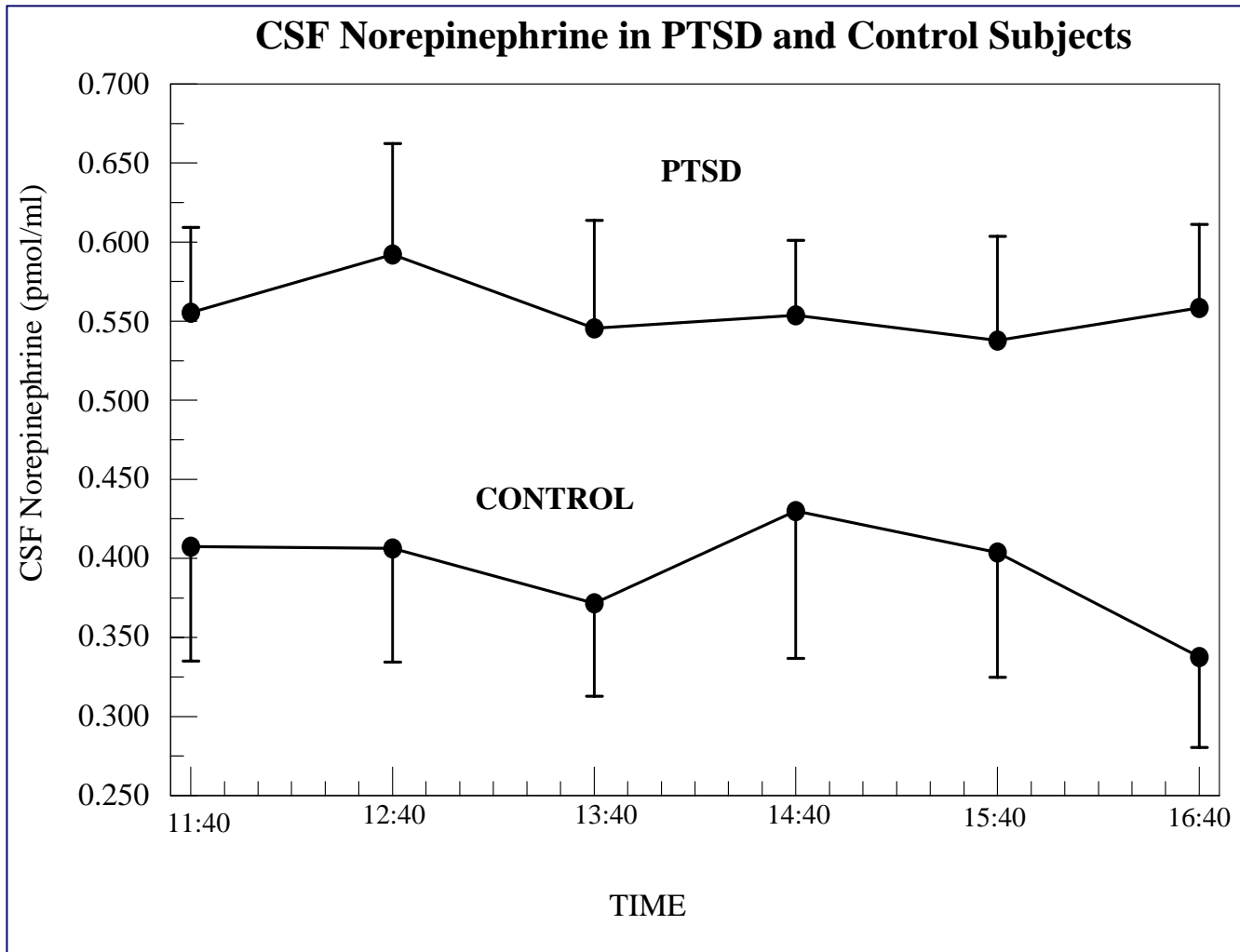
Rationale?

Project 3



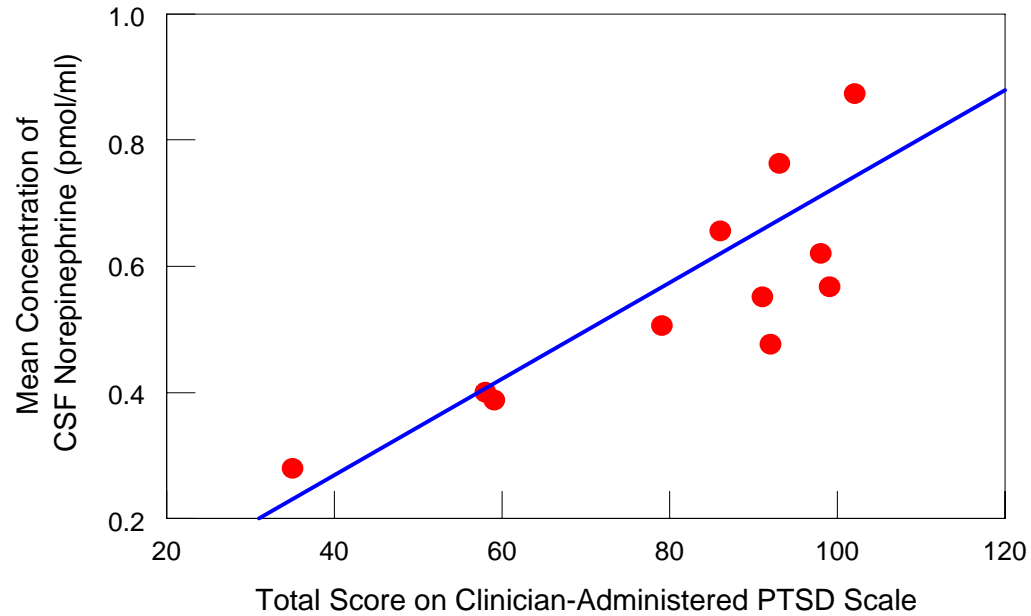
There is considerable evidence for the involvement of catecholamines (norepinephrine) in arousal, memory formation, startle, blood pressure and pulse, and in PTSD

Daniel O'Connor M.D., San Deigo VA & Department of Medicine, UCSD; Nicholas Schork M.D., San Diego VA CESAMH, Scripps Institute & UCSD; Dewleen Baker M.D., San Diego VA CESAMH & UCSD



*Geraciotti, Baker et al
2001*

Relationship Between Mean CSF Norepinephrine Concentration and PTSD Symptoms in 11 Patients with PTSD



Geraciotti, Baker et al 2001



Special aspects of this study



- **Prospective**
- **Multisystem**
- **Integrated (examination of data across projects)**



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