Methodological approach to advancing airport screener X-ray threat detection skills

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Abstract

The U.S. Transportation Security Administration seeks improving screener proficiency in X-ray technology; the principle method to screen passenger belongings at airport security checkpoints. Previous approaches have relied on classroom instruction, simulation, TIP (threat image projection) and on-the-job training. A review revealed repetition, trial-and-error learning, and exposure to threat images are the fundamental tenets of such approaches. These traditional approaches emphasize drill and practice vice learning targeted techniques and strategies.

Currently the TIP system is partly employed to assess performance (an electronic means to project threat images on actual baggage in operational environments). Analysis of national data indicated there are exceptional performing screeners who consistently exhibit expert threat detection capabilities well above norms with low false alarm rates.

This paper presents a methodology to identify critical cues, strategies, techniques, decision points produced by difficult threat detection scenarios, subtle perceptual features of suspect items, and application of unique knowledge used by exceptional performing screeners (EPs) that contribute to successful threat detection for later dissemination via training. The premise employed an empirical framework by quantitatively identifying the target population, item analysis to select difficult threats which discriminate performance between EPs and the workforce, tailoring scenarios on a simulator, and adapting applied cognitive task analysis and critical decision making protocols to elicit and capture techniques. Such data forms the content for an empirically-based training regime. The study is ongoing and findings will be published at a later time.

Introduction

On November 19th, 2001 U.S. President Bush signed the Aviation and Transportation Security Act that established the Transportation Security Administration and mandated the restructuring of the entire U.S. aviation security program. This legislation established provisions for the federalization of airport security screeners; effectively transferring all responsibilities for the recruitment,