

Assessing the Impact of Prior Teaching on Administrators' Perceived Security in Career and Technical Education (CTE) Facilities: A Study of Texas Public Schools Design for Threat Prevention

Trevor Hajek, Douglas Morrish, Eryn Pierdolla, Hannah Goebel, Elizabeth Ekren, Rachel E. Hall, Valerie Barnes,

Alison Jarzombek-Torralva, & Kathy Martinez-Prather

Introduction

- External threats to schools have become more common (Cohen, 2021), leading to security hardening practices
- Texas ranks alarmingly high in school violence statistics—fourth in violent incidents, seventh in violent threats, and second in school shootings since 1970. (Riedman, 2024).
- Improving protection against external threats begins with crime prevention through environmental design (CPTED) principles (Jeffery, 1971)
- Research exists in CTE safety planning, with a focus mainly on occupational safety and procedural safety but there is a lack of research in school security within CTE facilities (Gilbert, 2013; Love, Roy & Sirinides, 2023; Love & Roy, 2023; Schulte et al., 2005).
- CTE facilities have unique designs that may pose access control and evacuations challenges during a security threat.
- The study sought to determine how prior CTE teaching experience influences Texas school administrators' perceptions of CTE facility security.

Conceptual Framework

- Crime Prevention Through Environmental Design (CPTED) (Jeffery, 1971)
 - Natural Surveillance:** how well space provides visibility and monitoring
 - Image:** stakeholders' perceptions of facility safety
 - Personal Investment:** participation/pride of stakeholders related to space
 - Outside Threat:** man-made and natural



Methodology

- A novel survey instrument assessing degree of conformity with CPTED principles.
 - 29, 5-point Likert-scale questions across three dimensions (natural surveillance, image, personal investment).
 - 11, 5-point Likert-scale questions assessing perceptions of security (outside threat).
- The instrument was reviewed by a panel of experts, piloted, and deemed reliable with Cronbach's alpha values from .90 to .94.
- A census sample of 3,229 Texas high-school and middle-school administrators was performed and yielded 181 responses.
- Independent samples t-test with a priori levels set at 0.05.

School Characteristics	Range	M	SD
Number of CTE programs offered	1 - 15	5.7	3.5
Number of standalone CTE facilities	0 - 9	1.6	1.6
% students in at least 1 CTE course	2 – 100	70.7	24.1
# of full-time CTE teachers	0 – 150	11.5	17.0
# of part-time CTE teachers	0 – 45	4.5	6.8

Effects of Prior CTE Teaching Experience on Administrators' Perceptions of the Security of Career and Technical Education Facilities

CPTED	CTE (n=56)		Non CTE (n=125)		t	p	Cohen's D
	M	SD	M	SD			
Natural Surveillance	3.18	0.79	3.22	0.92	.282	0.78	.045
Image	3.84	0.72	4.08	0.68	2.09	0.04	.335
Personal Investment	3.79	0.75	3.86	0.66	.614	0.54	.099
Outside Threat	3.66	0.62	3.80	0.60	1.43	0.15	.230

5-point Likert scale, 1 = Strongly Disagree; 5 = Strongly Agree

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Results

- 56 administrators had CTE experience while the remaining 125 did not
- Years in the education field ranged from 0 – 42 years ($M = 22.9$, $SD = 8.1$)
- Years in current role ranged from 0 – 30 years ($M = 5.1$, $SD = 4.7$)
- Most administrators came from rural schools ($n = 117$, 64.6%)
- Number of CTE programs offered ranged from 1-15 ($M = 5.7$, $SD = 3.5$) with 130 (71.8%) indicating their school had Agriculture, Food, and Natural Resources
- CTE experience had no statistical significance on three CPTED constructs: Natural Surveillance, Personal Investment, and Outside Threat
- CTE experienced administrators indicated a lower level of agreement compared to non-CTE on the Image construct ($p = 0.04$)

Conclusions & Recommendations

- Prior CTE teaching experience had no statistically significant effects on administrators' perceptions in three of the CPTED principles (natural surveillance, personal investment, and outside threat)
- "Image" indicated a small statistical significance, but with a low effect size, suggesting a low practical significance
 - Administrators with prior CTE teaching rated the current state of CTE facilities lower potentially due to having experience
 - CTE-experienced administrators may have a more critical view or higher standards for facility safety
- The literature indicates that emphasis has been placed on traditional school hardening methods (e.g., metal detectors, cameras and school police) (Borum, Cornell, Modzeleski & Jimerson, 2010; Kim, Carlson & Nelson, 2021), but more investigations need to be done in CTE facilities due to the unique features that pose a challenge.
- Future research investigations should include:
 - Gathering more direct perspectives of students and staff directly involved in CTE programs;
 - More direct measures of impact – such as crime rates and threat occurrences to better assess impact of CPTED;
 - Barriers to adopting CPTED principles in CTE facilities