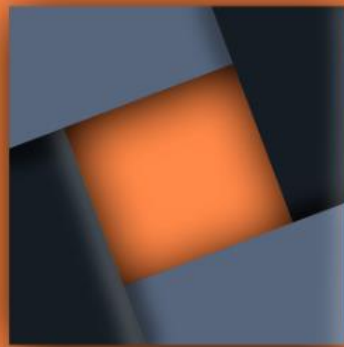


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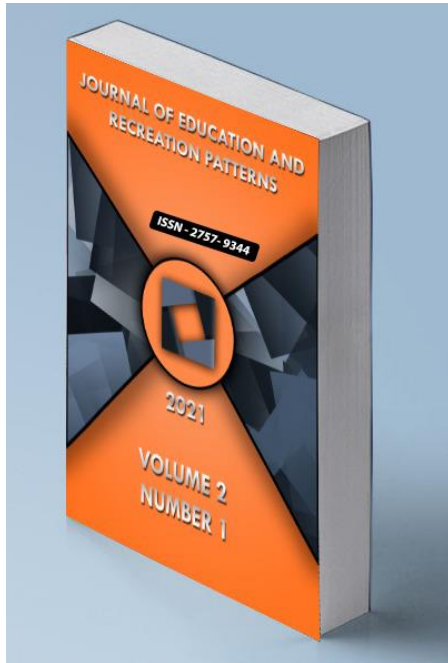
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### School Level Differences in School Threat Scenario Written Plans: A National Analysis


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## School Level Differences in School Threat Scenario Written Plans: A National Analysis

David S. McAlpin<sup>1</sup>, John R. Slate<sup>2</sup>

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### Abstract

This study was conducted to examine the effect of school level (i.e., elementary, middle, and high school) on written school safety plans in the areas of active shooter, hostage, and bomb threat scenarios. Inferential statistical analyses of nationwide survey data revealed the presence of statistically significant differences in the incidence of written plans for active shooter, hostage, and bomb threat scenarios by school level. Elementary schools were less likely to have written plans in active shooter, hostage, and bomb threat scenarios than were middle schools and high schools. In addition, written plans for active shooter and bomb threat scenarios were commonplace at each level compared to written hostage plans. Implications and recommendations for future research were discussed.

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**Keywords:** Active Shooter, Hostage, Bomb Threat, Written Plan, Elementary, Middle School, High School

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## INTRODUCTION

An often-overlooked concern in school safety are teacher fears and their perceptions of preparedness in relation to the development and implementation of school policies. Ricketts (2007) examined several factors involving teachers' perceived fears of school violence and the school policies created to address safety concerns. The sample of teachers in this study completed surveys as a method of data collection along with the Ricketts (2007) multilevel path analysis of certain aspects of teacher fears. Ricketts (2007) targeted four major factors in his analysis: ecological factors, policies, perceived risk, and fear. An increase in school violence is more of an influence on teacher fear than school policies and their supposed effectiveness. Ricketts (2007) further stated that if school leaders wanted to reduce teacher fears they needed to create policies that decreased disruptive behavior and provided consistent support to faculty and staff. In addition to providing consistent support, Ricketts (2007) suggested that teachers, due to their large role in the educational environment, be included in the development of policies to create ownership and to acknowledge the teachers' expertise in working with school children.

Booren, Handy, and Power (2011) investigated school safety practices and school climate in relation to teachers and students. They specifically addressed the relationship of school climate with major school safety concerns and perceived importance of safety strategies. From the results of their survey, teachers considered school safety practices more important than did students. When students placed a high value on a particular safety procedure, their level of importance in practicing the skill increased. Booren et al. (2011) acknowledged the presence of differences between teacher and student understanding in relation to school safety practices. Students reported that they typically witnessed more unsafe behaviors at school than were reported by teachers.

The development and implementation of an emergency operations plan is crucial to all involved when the unthinkable occurs in the school system. Kingshott and McKenzie (2013) analyzed the elements of an effective emergency operations plan for schools focusing on the developmental and implementation phases of the plan. Attitudes and perceptions of the emergency operations plan and district safety practices were the focus of the survey. Kingshott and McKenzie (2013) concluded that apathy played a significant role in the creation and utilization of an emergency operations plan. Participants typically did not see the importance of such designing, training, and practice because the chance of an incident actually occurring was highly unlikely.

Schools have often responded in a reactionary way to school shootings and other forms of violence. Many times telltale signs were present from the school shooters themselves. Lenhardt, Farrell, and Graham (2010) conducted an archival review of targeted school shooter cases totaling 15 from 1996-2005 in the United States. Lenhardt et al. (2010) addressed three environmental variables: (a) school culture and climate, (b) peer/social connections, and (c) intentions shared by the shooters' own statements. Examined in the study were White males from the ages of 11 to 18 that consisted of the 15 lone shooters in 13 separate schools with two of the locations having two shooters each. Lenhardt et al. (2010) selected two independent evaluators that examined case files on each shooter, and additionally conducted telephone interviews with campus staff members and campus leaders. A matrix instrument was designed using the Federal Bureau of Investigation's Threat Assessment model with emphasis on Lenhardt et al. (2010) established environmental variables. Lenhardt et al. (2010) formulated the following recommendations related to targeted school shooters, (a) utilize a risk model, (b) support the risk model with the proper resources, (c) limit school size, (d) increase communication, (e) parent and community involvement, (f) develop ongoing preventive measures that can be applied to student learning objectives, (g) address mental health issues

frequently and proactively. These recommendations place the responsibility of preventing and improving the response to school safety on school leadership officials. It is paramount that educational leaders become the change agents for safety prevention and preparedness, but it will require all members of the learning community to be reflective and make adjustments to current safety practices to overcome this plague on our educational institutions.

Effective schools consistently perform at high levels academically and by applying quality policies and procedures to improve culture and climate. Academic performance is very important, but students and staff need to be reassured that their physical, mental, and social needs will be met as well when attending school. Steeves, Metallo, Byrd, Erickson, and Gresham (2017) examined the overall design and structure of school crisis manuals and related activities for six public elementary schools. These research elements included: (a) knowledge of crisis events, (b) training and availability and attendance, (c) knowledge of crisis plans and roles, (d) perceptions of preparedness, (e) predicting preparedness, (f) crisis plan components, and (g) improving preparedness. (h) Steeves et al. (2017) concluded that comprehensive crisis plans factored in to campus staff members true preparedness for a crisis situation. Furthermore, crisis planning templates from states and local governments were insufficient in providing mitigation practices for factors related to diversity, cultural differences, and potential language barriers. Consequently, schools may be ill prepared for emergencies based on inadequately designed written safety plans and the absence of best practice recommendations from national and state safety programs. In addition, Steeves et al. (2017) discovered that two-thirds of the respondents had not read their safety prevention plans. Although safety documents and practices are considered an important part of a school comprehensive plan, Steeves et al. (2017) revealed deficiencies in overall crisis preparedness.

### **Statement of the Problem**

Based on a review of literature related to school safety, teachers and students are not well versed in the purpose of safety and security protocols; nor are they routinely involved in the development of these potential life saving measures. Steeves et al. (2017) contended that planning not only for the obvious and common types of threats to school safety, but should include prevention and preparation as a hallmark of a quality action plan to prepare of a real-life crisis in a school setting. Furthermore, legislators have passed laws at the national, state, and local levels to enhance awareness, develop security training, and produce security frameworks for schools to follow in relation to the most substantive safety issues affecting the field of education today. Steeves et al. (2017) examined legislation pertaining to school safety and indicated that legislation improves school safety accountability. Additionally, Diliberti et al. (2019) analyzed crisis planning techniques for a national study on school safety. Based on their findings, the most frequently performed school safety drills were for (a) natural disasters at 94%, (b) active shooters at 92%, and (c) bomb threats or incidents at 91%. According to Diliberti et al. (2019), schools were asked which factors most limited their safety prevention efforts. The three most frequently reported factors were (a) inadequate funds at 36%; (b) a lack of alternative placements or programs for disruptive students at 34%; and (c) federal, state, or district policies on disciplining special education students at 19%.

Unfortunately, schools have become more like a fortress than a place where knowledge is honed, and learning takes place. According to Rooney (2015), creating an environment similar to a prison fails to consider the social and emotional learning elements that students need to be well-rounded individuals. In addition, students need a multitude of experiences to learn more about themselves and our culture. Educational leaders challenged with the task of

creating a safe learning environment that protects the mental, physical, and social well-being of students, staff, and all members of the learning community.

### **Purpose of the Study**

The purpose of this study was to examine the degree to which differences were present in active shooter scenario written plans as a function of school level. Survey data were analyzed to determine the degree to which differences might be present in hostage scenario written plans as a function of school level. Furthermore, the degree to which differences were present in bomb threat scenario written plans as a function of school level was addressed. Through the analysis of a nationwide dataset the degree to which school level differences were present in active shooter, hostage, and bomb threat scenario written plan was determined.

### **Research Questions**

The following research questions were addressed in this study: (a) What is the difference in active shooter scenario written plans in public schools as a function of school level? (b) What is the difference in hostage scenario written plans in public schools as a function of school level? and (c) What is the difference in bomb threat scenario written plans in public schools as a function of school level?

### **Significance of the Study**

Creating a culture of safety in schools that increases awareness, provides practical safety training, and improves the implementation of learned skills in the area of campus intruder emergencies is a leading concern for educational administrators and school board of trustees. School safety dominates media headlines and is a constant reminder of the ever changing perception of the true mission of educational institutions. No longer are schools viewed a safe environment that meet the physical, mental, and social well-being of learners and educators alike. Numerous research studies related to frequent, practical, and applicable safety training have been conducted to enhance school safety. In addition, campus intruder awareness, skill training, and implementation techniques could further enhance school district response times and overall success when encountering such dangers to students and staff members' lives.

Information gathered in relation to school safety and the prevalence of school intruder situations may contribute to prevention or possible survival if a tragedy were to occur. School district board of trustees and administrators should consider all options related to the safety of their students and staff. Many factors contribute to the effectiveness of active shooter, hostage, and bomb threat written plans as it relates to school level. Therefore, a study in the areas of active shooter, hostage, and bomb threat written policies could be beneficial to current and future educational leaders.

### **Research Design**

The research design for this empirical investigation was non-experimental, causal comparative. Johnson and Christensen (2017) described this method of research as a relationship study between independent and dependent variables where the independent variable is not influenced or manipulated. Subsequently, Johnson and Christensen (2017) stated with this form of research extraneous variables must be considered, and investigators may need to statistically control for certain factors affecting the dependent variables. Archival data were used in this study. In this investigation, the independent variable was school level

(i.e., elementary, middle, and high schools). The dependent variables were active shooter, hostage, and bomb threat written scenario plans for schools.

### Participants and Instrumentation

Participants in this study were principals by school level who participated in a safety survey that inventoried schools with or without written plans for active shooter, hostage, and bomb threat scenarios along with other safety and security data from public schools. The School Survey on Crime and Safety gathers data from principals from primary and secondary public schools as mandated by the federal government. The survey questions focus on a variety of school related safety and security questions that could assist schools in implementing effective safety measures and prevent or reduce loss of life, property, and incidence of crime in public schools according to Diliberti et al. (2019). Respondents completed the survey by answering the questions with either a Yes or a No. For the purpose of this study, school level was based on the standard school levels of elementary, middle, and high schools respectively. In addition, written plans were those school plans that are tangible and in a usable form not verbal or word of mouth.

### FINDINGS

To ascertain whether differences were present in written active shooter, hostage, and bomb threat scenario school safety plans by school level, Pearson chi-square analyses were conducted. This statistical procedure was viewed as the optimal statistical procedure to use because frequency data were present for active shooter, hostage, and bomb threat written plans, and for school level. As such, chi-squares are the statistical procedure of choice when both variables in each research question are categorical (Slate & Rojas-LeBouef, 2011). In addition, with the large sample size, the available sample size per cell was more than five. Therefore, the assumptions for using a Pearson chi-square procedure were met.

For the research question related to a written plan for active shooter scenario differences in school level, the result was statistically significant,  $\chi^2(2) = 11.01$ ,  $p = .004$ . The effect size for this finding, Cramer's V, was below small, .07 (Cohen, 1988). As revealed in Table 1, more than two times as many elementary schools did not have an active shooter scenario written plan compared to high schools. More than half as many elementary schools did not have an active shooter scenario written plan than did middle schools.

**Table 1.** Descriptive Statistics for Written Active Shooter Scenario Plans by School Level

School Level	Written Plan n and %age of Total	No Written Plan n and %age of Total
Elementary Schools	(n = 473) 91.70%	(n = 43) 8.30%
Middle Schools	(n = 680) 94.60%	(n = 39) 5.40%
High Schools	(n = 743) 96.00%	(n = 31) 4.00%

Regarding a written plan for hostage scenario, the result was statistically significant,  $\chi^2(2) = 9.68$ ,  $p = .008$ . The effect size for this finding, Cramer's V, was below small, .07 (Cohen, 1988). Almost one third more elementary schools did not have a written plan for a hostage scenario than high schools. Almost one fifth more elementary schools did not have a written plan for a hostage scenario than middle schools. Table 2 contains the descriptive statistics for this analysis.

**Table 2.** Descriptive Statistics for Written Hostage Scenario Plans by School Level

School Level	Written Plan n and %age of Total	No Written Plan n and %age of Total
Elementary Schools	(n = 298) 57.80%	(n = 218) 42.20%
Middle Schools	(n = 448) 62.30%	(n = 271) 37.70%
High Schools	(n = 513) 66.30%	(n = 261) 33.70%

A statistically significant difference was present for written plans for a bomb threat scenario,  $\chi^2(2) = 23.21$ ,  $p < .001$ . The effect size for this finding, Cramer's V, was small, .11 (Cohen, 1988). As three times as many elementary schools did not have a written bomb threat scenario plan than did high schools and more than two times as many elementary schools did not have such a plan in comparison to middle schools. Revealed in Table 3 are the descriptive statistics for this analysis.

**Table 3.** Descriptive Statistics for Written Bomb Threat Scenario Plans by School Level

School Level	Written Plan n and %age of Total	No Written Plan n and %age of Total
Elementary Schools	(n = 481) 93.20%	(n = 35) 6.80%
Middle Schools	(n = 697) 96.90%	(n = 22) 3.10%
High Schools	(n = 760) 98.20%	(n = 14) 1.80%

## DISCUSSION AND RESULT

During this investigation, the degree to which differences were present in written plans for active shooter, hostage, and bomb threats by school level was addressed. Statistically significant differences were revealed for active shooter, hostage, and bomb threat written plans by school level. High school written plans for each of the three threat scenarios occurred more often than at the elementary and middle school levels. At the elementary level, active shooter written plans were two times less likely to be implemented than at the middle and high school levels. Based on these data, lack of adequate plans could create a situation where elementary schools were more vulnerable to active shooters than other school levels in the study. In addition, written plans for hostage threats were implemented 10 times more often at the high school level than at the elementary level. Although hostage situations occur less frequently, elementary schools were the least prepared with less frequent written plans in place compared to the other school levels. This analysis could potentially generate opportunities for such attacks on our most vulnerable students. Similarly, elementary schools were five percent less likely to have a written plan for bomb threats compared to the high school level.

Safety plans especially those plans that are written and practiced on a regular basis may improve a campus' response to a crisis. It is paramount that school districts prepare for the worst-case scenario to ensure a timely and adequate response to a dangerous situation. Based on the statistical data, elementary schools are further hindered by the lack of written plans compared to their school level counterparts. During the analysis of the research data, a third of each school level had no written hostage threat plan. Deficiencies in written plans for safety purposes create a multitude of liabilities for school districts. Creating an environment where all members of the learning community have a safety-first mindset will hopefully improve school administrators' response to emergencies and mitigate the loss of life and property if and when safety breaches in school systems occur in the future.

### **Implications for Policy and for Practice**

Developing and implementing safety and security written plans is essential for prevention and mitigation in the public school system. Information from the School Survey on Crime and Safety in the areas of written plans for active shooter, hostage, and bomb threat scenarios was utilized in this study. Based on the data analyses, written plans in the aforementioned areas for elementary schools were insufficient compared to secondary schools, hostage written plans were not implemented in a third of elementary, and secondary schools, and elementary and middle schools were inconsistent in their development of written plans compared to high schools as revealed by principal responses to the survey.

Therefore, policymakers should consider greater emphasis on the implementation of written plans as a best practice for all public schools especially at the elementary level. Emphasis could be placed on the development of a written plan database for all schools to submit their written plans for review. This practice would be most beneficial at the state or regional level to ensure accountability and continuity.

In addition, policymakers should consider a possible study in hostage threats for schools that could be mandated to determine if an incident or emergency should be considered when developing written plans. It may be possible that creating, writing, and practicing such a plan may not be necessary. Consuming valuable time when other potential emergencies are more practical for implementation may not be wise and could affect the application of other more practical safety procedures. If hostage written plans are considered necessary, then a greater importance should be placed in the enactment of such practices and creation of some form of accountability to protect students, faculty, and staff across the nation from dangers of this nature.

Correspondingly, elected officials and their administrations must determine if policies currently enacted are necessary and sufficient for school safety across all school levels. Deficiencies were clearly documented in the presence of elementary and middle school written plans compared to high school. High schools are more likely than not to complete most plans at a higher rate than elementary and middle schools. Policymakers should take this information into consideration when developing accountability protocols for schools. The accountability protocols could be addressed at the state or regional level. The possibility exists that principals of elementary and middle schools need more education in the importance of safety policy development; especially in relation to written safety plans.

### **Recommendations for Future Research**

Based upon the findings of this study, several recommendations are possible for further research related to school safety practices and procedures. The data analysis for this study pertained only to written plans for active shooter, hostage, and bomb threat scenarios. Additional research could be conducted for other safety written plans, safety drill frequencies, and similar related scenarios. Furthermore, qualitative interviews of a sampling of school level principals could glean additional data to alleviate any concerns about extraneous variables. Future researchers could ask more poignant questions about the community makeup, urban or rural status, and even the physical design of school campuses. Similarly, a more focused study on each school level independently; especially on elementary implementation on written safety plans could supplement the data of this research.

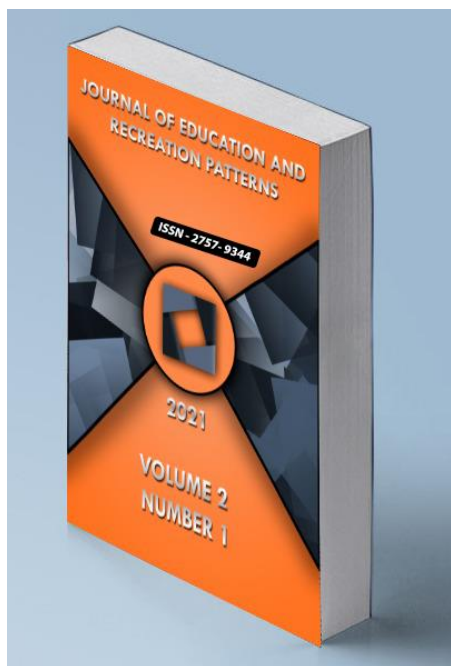
## CONCLUSION

In conclusion, school safety issues will continue to draw the attention of students, parents, educators, stakeholders, and community members. Children's safety should be of the utmost importance. Placing greater emphasis on written plans in the area of active shooter, hostage, and bomb threat scenarios should give comfort and peace of mind. Results discussed herein are valid concerns about elementary written plan implementation. School systems that do not plan in an effective manner for the most common emergencies are potential creating an environment of apathy among its staff and setting themselves up for failure in the wake of a disaster. Educators should demand of each other a more assertive approach to the overall safety practices and protocols in schools. Two times the number of high schools had active shooter written plans than elementary schools. A third of schools answered no to the survey for a written hostage threat plans. Elementary and middle schools were consistently lacking in written plans more frequently than high schools. Certainly, all students deserve the same consideration and attention to school safety at any school level.

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### Applying the Transtheoretical Model of Behavioral Change to Establish Physical Activity Habits


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## Applying the Transtheoretical Model of Behavioral Change to Establish Physical Activity Habits

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### ABSTRACT

The Transtheoretical Model is an integrative model of behavior change developed in response to increasing theoretical diversity within psychotherapy. Since its conception, the model has been applied to a variety of behavior change contexts such as substance abuse, diet, and exercise. **PURPOSE:** to review and summarize the literature relative to applications of the Transtheoretical Model in exercise interventions, and to provide considerations for health professionals while using the Transtheoretical Model in their practice. **METHODS:** The components of the Transtheoretical Model of behavior change are parsed and analyzed to review their function and role in the model. In addition, the model is reviewed to determine the effectiveness of applying the Transtheoretical Model in conjunction to interventions aimed at increasing physical activity behavior. **RESULTS:** In general, results support the application of Transtheoretical Model for physical activity behavioral change, but not unconditionally. Beyond highlighting results of studies applying the Transtheoretical Model, implications and considerations for interventions using the models are also detailed. **CONCLUSION:** When acknowledging the multidimensional nature of the model, it is important to demonstrate a good understanding of how the various dimensions relate to one another and recognize how these relationships will influence intervention development.

**Keywords:** Physical Activity, Behavioral Change, Health Professionals

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## INTRODUCTION

It has been well documented that exercise routine habits developed early in life persist across the lifespan. Resulting from alarming studies and surveys suggesting rapidly increased occurrences of obesity in youth and adults, there remains a presence of scholars dedicated to analyze this world-wide concern (Nelson et al., 2011; Pennington & Nelson, 2020). While a wealth of research has proven that nutritional habits are a direct cause to obesity, a similarly robust body of literature also suggests that lifestyle factors – such as physical inactivity - is also a major factor in obesity-related illnesses and related health conditions. Regular physical activity, among its numerous physiological and psychological benefits, also is proved to limit the probability of developing obesity, reduce occurrences of cardiovascular disease, and enhance individuals' quality of life (Nutbeam & Harris, 2004; Pennington, 2020a,b). The Physical Activity Guidelines for Americans suggest that persons participate in 150-300 of moderate-intensity, or 75 minutes to 150 of vigorous-intensity activity per week (U.S. Department of Health and Human Services, 2018). Chronic diseases, such as obesity, manifest themselves over the course of a lifetime, oftentimes with medical ramifications expressing several years after the underlying origination of the health condition has developed. Obesity is a condition that occurs as a result of an imbalance of energy in and out. Obesity is multi-dimensional, but it is well established that obesity is directly related to an over intake of energy substrates compared to what the body uses during total daily energy expenditure (i.e. the thermic effect of food, the resting metabolic rate, non-exercise activity thermogenesis, and exercise activity thermogenesis). Hence, increasing physical activity will have positive effects on reducing the likelihood of developing obesity due to providing a greater negative energy balance (Pennington, 2019).

Other chronic diseases are linked to lacking physical activity: Type 2 diabetes, Cardiovascular diseases (such as stroke, hypertension, and heart failure), cancer, and metabolic syndrome are the most common causes of mortality (World Health Organization, 2003). Hence, exercise remains a crucially important opponent to the many wide-varieties of chronic diseases (Roberts & Barnard, 2005; Nutbeam & Harris, 2004). To that end, clients, patients, and civilians should receive support and encouragement from leadership in health agencies at challenging task easier said than done (Graham-Clarke & Oldenburg, 1994). Research suggests that the deliberate use of behavioral theory will greatly increase the likelihood of behavior modification success (Hutchison, Breckon, & Johnston, 2009). One of the more commonly applied behavioral theory structures for physical activity-based interventions is the Transtheoretical Model (Prochaska & DiClemente, 1983; Prochaska, DiClemente & Norcross, 1992).

The purpose of this article is to review the literature relative to applications of the Transtheoretical Model (TTM) to exercise interventions, and to provide considerations for health professionals while using the model in their practice. Boundaries of this review include the exclusion of articles published in non-peer-reviewed journals outside the United States. Reasons for this restriction include access to articles and barriers related to the cost accuracy of translation. Additionally, with the exception of one article (Cardinal, Engels & Zhu, 1998), this review was bound to interventions concerning adult participants with one or more risk factor characteristics (i.e. obesity, tobacco use, etc.). Further inclusion criteria required articles published after the year 1979- the year the original language of the TTM was developed.

## **An Overview of the Transtheoretical Model**

The TTM is a combinable scheme for initiating behavior modification created by Prochaska (1979) with roots in psychotherapy. Since the development of TMM as an instrument, it has been applied to a variety of behavior change applications such as diet, and exercise (Velicer, Prochaska, Fava, Norman & Redding, 1998; Hutchison, Breckon & Johnston, 2009).

**The Transtheoretical Model Constructs:** A defining feature of the TTM is the multiple components of its design - *stages of change*, the *processes of change*, *self-efficacy*, and *decisional balance* (Hutchison, Breckon, & Johnston, 2009). When applying the model as an intervention instrument towards modifying behavior, it is important to consider how each facet of the model behaves with one another.

**The States of Change:** The TTM construct, *states of change*, represents the movement of the individual from lower levels [or stages] of success [or progress] to higher levels of success (Adams & White, 2005; Velicer et al., 1998). The *stages of change* construct is further broken down into smaller phases, such as:

1. *Precontemplation* (e.g. individuals have no intention to take action regarding their behavioral modification, and they may not recognize that their behavior is undesirable),
2. *Contemplation* (e.g. individuals start to notice and accept that their behavior is undesirable, and they now begin to consider at the positive and negative effects of persistent undesirable behavior),
3. *Preparation* (e.g. individuals now have intent towards behavioral change in the short-term future, and they may start making small progress in-line with the desired behavioral change),
4. *Action* (e.g. individuals have now developed made intentional observable alterations in adjusting their undesirable behavior or possible have developed new healthy lifestyle patterns),
5. *Maintenance* (e.g. individuals have experienced at least six months of successful behavioral modification and are deliberate about avoiding *relapse*),
6. *Termination* (e.g. individuals now do not possess a desire to return to the undesirable behavior in any physical or emotional context, and are confident about their ability to maintain the desirable behavior, and lastly,
7. *Relapse* which, technically, is not considered a “stage” per se, yet it is a return from the *action* or *maintenance* stages to an earlier stage in the cycle.

**Processes of Change:** The processes of change construct is comprised of activities individuals utilized to advance through the stages. Most commonly, for individuals to advance they require: *decisional balance* (e.g. possessing awareness that the advantages of changing are greater than the disadvantages), *self-efficacy* (e.g. the confidence they can make and maintain changes in environments that make the old behavior appear attractive and/or desirable again), and the *processes of change* (e.g. the planned design that can assist the individual in making and maintaining their change) (Dallow & Anderson, 2003; Graham-Clarke & Oldenburgh, 1994; Marshall et al., 2003).

**The Ten Processes of Change:** The ten processes of change construct includes (Graham-Clarke & Oldenburgh, 1994; Dallow & Anderson, 2003; Marshall et al., 2003):

1. *Consciousness-raising* – increasing personal understanding through personal education and additional information -as well as relevant personal feedback - about the healthy behavior;
2. *Dramatic relief* – being afraid, anxious, or concerned due to the undesirable behavior, or experiencing encouragement and/or enthusiasm when hearing about how others have successfully modified unhealthy behavior;
3. *Self-reevaluation* – when individuals acknowledge that they want and identity and to live a lifestyle that includes the desirable, healthy behavior;
4. *Environmental reevaluation* – the recognition of how the undesirable behavior impacts other people;
5. *Social liberation* – the recognition of society being more supportive of the desirable behavior;
6. *Self-liberation* – the belief in their capacity to progress and the enforcement and re-enforcement of pledges to progress and change;
7. *Helping relationships* – locating others who support the behavioral change;
8. *Counter-conditioning* – replacing unhealthy ways of behaving/acting and thinking with desirable ways;
9. *Reinforcement management* – adding and enhancing accolades and compensations resulting from desirable behavior and eliminating or reducing rewards that come from undesirable behavior; and
10. *Stimulus control* – the use of cues and reminders that promote the desirable behavior as replacements for cues and reminders that promote undesirable behaviors.

**Self-Efficacy:** The construct of self-efficacy refers to the situation-specific confidence individuals have that they can cope with high-risk situations without relapsing to their unhealthy or high risk-habit. Greater levels of self-efficacy lead to greater changes in behavior. A change in the level of self-efficacy can predict a lasting change in behavior if there are adequate incentives and skills (Bock, Marcus, Pinto & Forsyth, 2001; Fahrenwald & Walker, 2003; Kim et al., 2004). Self-efficacy also deals with how well one can execute a course of action to overcome a high-risk situation or deal with prospective situations. Bandura (1977) provided four sources of efficacy beliefs:

1. Performance outcomes,
2. Vicarious experiences,
3. Verbal persuasion, and
4. Physiological feedback.

Considerations of these four sources enable physical activity facilitators to better ensure adherence to physical activity patterns and behavioral modification.

**Decisional Balance:** The decisional balance construct reflects the individual's relative weighing of the pros and cons [or advantages and disadvantages] of changing. The pros and cons combine to form a decisional "balance sheet" of comparative potential gains and losses. The balance between the pros and cons varies depending on which stage of change the individual is in (Marcus et al., 1998). The evaluation of pros and cons is part of the formation of attitudes. During the change process individuals gradually shift from cons to pros, forming a more positive attitude towards the target behavior.

### **Findings: Applying the Model to Increase Physical Activity**

The purpose of many studies in psychotherapy and health education has been to examine the constructs of the TTM of behavior change in relationship to exercise behavior (Fahrenwald & Walker, 2003). There is no doubt that the dynamic approach of the TTM to understanding physical activity including different stages of 'readiness' is an appropriate framework to understand behavior and behavior change (Biddle & Mutrie, 2008). One may view the success of the TTM in other health-related applications (i.e. smoking cessation), to perhaps lend confidence towards its application to the adoption of positive exercise patterns. Indeed, many researchers have shown the value of implementing the TTM as their theoretical framework in physical activity contexts in adults of differing ages (Cox Burke, Gorely, Beilin & Puddey, 2003; Dunn Marcus & Kampert, 1999). Be that as it may, the TTM application is only partially validated for predicting exercise behavior in adults (Plotnikoff, Hotz, Birkett & Courneya, 2001; Bock et al., 2001).

Following the results of research and directives of health professionals, some generalizable statements can be made regarding the state of research investigating the effectiveness of utilizing the TTM towards the end of increasing adherence to exercise adoption and maintenance. In general, results support the application of TTM for physical activity behavioral change (Adams & White, 2003; Marshall & Biddle, 2001; Plotnikoff et al., 2001; Dallow, & Anderson, 2003). While it has been successfully applied to health behaviors among adult samples (Fahrenwald & Walker, 2003), it may not be appropriate for preadolescents' exercise and exercise behavior due to issues related to children's level of independence regarding physical activity. In youth, level of exercise commitment is significantly related to gender, age, and grade level (Cardinal, Engels & Zhu, 1998).

Additionally, in research investigating the impact the theory has on exercise adoption, the stages of change construct is the dominantly reported upon dimension of the model (Hutchison, Breckon & Johnston, 2009; Bridle et al., 2005). Few studies have reported to have applied all facets of the model and subsequently have not acknowledged its multidimensional nature (Hutchison, Breckon & Johnston, 2009). However, researchers observing participants longitudinally (i.e. Plotnikoff et al., 2001; Hilton, Doherty, Kendrick, Kerry, Rink & Steptoe, 1999; Steptoe et al., 1999; Steptoe, Kerry, Rink & Hilton, 2001), rather than cross-sectionally (i.e. Cardinal, Engels, & Zhu, 1998), have observed changes across multiple constructs and may be richer in findings (Bridle et al., 2005).

The role of processes of change for physical activity behavior is unclear, and the presence of higher-order constructs is not always apparent in exercise applications of the model, although negative cases can be observed (e.g. Marshall & Biddle, 2001). Because the processes emerged from psychotherapy to treat addictions, their relevance specific to the exercise domain is uncertain, although, negative cases against this claim are also observable (e.g. Dallow, & Anderson, 2003; Marcus, Rakowski & Rossi, 1992).

Although research does not often investigate all the constructs of the model, it is understood that significant relationships exist between all the constructs of the model (Fahrenwald & Walker, 2003; Dallow & Anderson, 2003; Bock et al., 2001). Developing a deeper understanding of how these relationships play a role in motivating an individual to practice positive exercise patterns is crucial to properly implementing the model in physical activity contexts. Despite a lack of research exploring the implementation the TTM to its fullest fidelity, research suggests that even a "watered-down" TTM-based intervention will produce

more powerful and longer-lasting adherence to physical activity than a program lacking a theory (Dallow & Anderson, 2003; Kim, Hwang & Yoo, 2004).

Health-specific results enjoyed by participants engaged in exercise interventions applied through the TTM include: enhanced cardio-respiratory conditioning (Hilton et al., 1999; Dunn et al., 1999; Steptoe et al., 2001; Dallow & Anderson, 2003); deeper adherence to suggested lifestyle changes and exercise adherence (Steptoe et al., 2001; Bock et al., 2001; Cox et al., 2003); a measured progression through stages of change (Plotnikoff et al., 2001; Fahrenwald & Walker, 2003); a firmer commitment to decreasing blood pressure (Cox et al., 2003); improved body composition (Dunn et al., 1999; Steptoe et al., 2001; Kim, Hwang & Yoo, 2004; Dallow & Anderson, 2003); and a fuller developed self-efficacy towards physical activity fostered through positive progression through an exercise intervention utilizing the TTM (Bock et al., 2001; Marcus et al., 1998; Dallow & Anderson, 2003). In all of the aforementioned studies, participants engaged in exercise interventions were adults ages 18-69 years (the majority falling in the range of 35-65 years) who possessed one or more physical activity risk factors associated with their lifestyle or health condition. These risk factors include: smoking, diabetic, obesity (BMI 30 + kg/m<sup>2</sup>), a high total cholesterol (6.5 + mmol/L), elderly, self-reported sedentary lifestyle, time constrained (e.g. new motherhood), and possessing a self-reported low level of exercise self-efficacy.

In conclusion, results of studies describing attempts to use the TTM aimed at increasing participants' likelihood of adopting and maintaining physical activity indicate to future researchers and health professionals that the TTM is reasonably effective, although some scholars indicate that TTM-based activity promotion interventions may be less effective than originally proposed (Hutchison, Breckon & Johnston, 2009). Adams and White (2003) argue that physical activity behavior is more complex than single behaviors (e.g. smoking). Therefore, interventions that treat physical activity as a single behavior may fail to recognize the complexity and specificity required for exercise interventions. Additionally, as noted, many studies reported on the TTM-based interventions as the related solely to the stages of change. Because these studies neglected other constructs and dimensions of the model (processes of change, self-efficacy, and decisional balance), results may lack in the sophistication of analysis required to "complete" the findings of the exercise intervention in relationship to the full model.

### **Discussion: Implications for Using the Transtheoretical Model**

How can we analyze this information to help with program development? The following are considerations for applying the TTM to increase physical activity to short- and long-term success (inspired by Hilton et al., 1999; Steptoe et al., 1999; Steptoe et al., 2001; Bock et al., 2001): (a) because baseline and post-intervention evaluations may be misleading, trained health professionals, like nurses, may be ideal for the evaluation of measurable physical health variables of participants rather than relying, solely, on self-determined health status; (b) interventions may provide individually tailored feedback reports matched to participant's stage of motivational readiness for physical activity adoption. Ideally, these reports will target deficiencies and reinforce successes and assets to improve participants' construct of self-efficacy; (c) interventions can supply self-help manuals matched to participant's stage of motivational readiness for physical activity adoption. Ideally, these manuals will be focused on processes of change in different stages of behavior change; (d) repeated exposure to intervention materials is likely to increase an interventions long-term success. Follow-ups, for example, phone calls, text messages, and regularly-scheduled counseling sessions, may be considered to maintain exercise adherence and further foster more desirable decisional balances among participants; and (e) interventions employing health counselors and health coaches may

suggest embarking in modest goal setting with their clients. Specific, measurable, attainable, realistic, time-oriented goals are more likely to foster self-efficacy than alternative goals, leading to improved decisional balance, appropriate considerations within the process of change construct and ultimately a continuation of exercise within the maintenance stage of change construct.

### **Limitations and Recommendation**

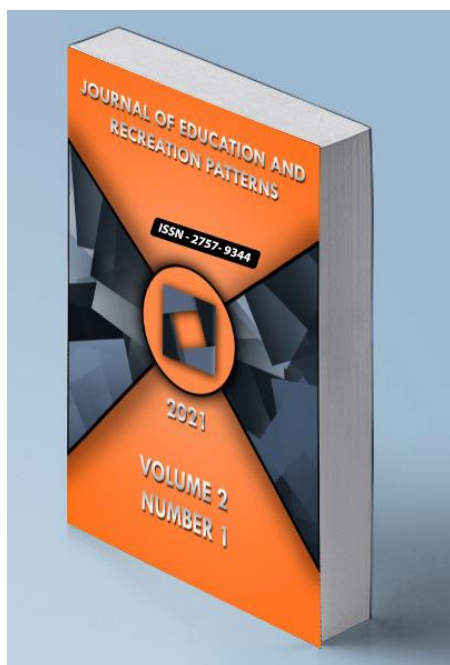
The stages of change construct is a variable, not a theory. Many TTM-based interventions may be flawed because they are variable rather than theory driven (Bridle et al., 2005). The stages of change is an organizational construct, which on its own provides no explanation of behavior change. It is only when it is combined with the other dimensions of the model that any explanatory power can be assumed. When acknowledging the multidimensional nature of the model, it is important to demonstrate a good understanding of how the various dimensions relate to one another and recognize how these relationships will influence intervention development.

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### Ready to Serve: Community-Based Leadership Learning through a Student-Athlete Mentorship Program

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## Ready to Serve: Community-Based Leadership Development through a Student-Athlete Mentorship Program

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### ABSTRACT

Mentoring works. One of the most powerful outcomes associated with mentoring is the mutually beneficial social, emotional and academic outcomes for both mentor/coach and mentee/apprentice (Ohlson, Shope & Johnson, 2020). Supporting this notion of mentoring leading to an improvement in a variety of skills, numerous studies further support the impact mentoring can have upon a student's social skills, college and career readiness. development of emotional supports and peer relationships (Coles, 2011; Crisp, 2010; Schwartz, Rhodes, Chan, & Herrera, 2011). The context of the mentoring relationship also matters. For example, the significance of community-based learning (CBL) initiatives in sport affiliated academic programs have been emphasized in varied publications recognizing the benefits of community-based learning (CBL) and service learning (SL) and their connection to effective pedagogy (Lee, Bush, & Smith, 2005; Lee, Kane, & Gregg, 2016). The purpose of this article is to examine an impactful CBL initiative featuring student-athletes engaging in leadership-themed mentoring of urban middle school students.

**Keywords:** Mentoring, Student-Athletes, Community-Based Learning, College and Career Readiness, Leadership

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## INTRODUCTION

Mentoring works. One of the most powerful outcomes associated with mentoring is the mutually beneficial social, emotional and academic outcomes for both mentor/coach and mentee/apprentice (Ohlson, Shope & Johnson, 2020). Supporting this notion of mentoring leading to an improvement in a variety of skills, numerous studies further support the impact mentoring can have upon a student's social skills, college and career readiness. development of emotional supports and peer relationships (Coles, 2011; Crisp, 2010; (Schwartz, Rhodes, Chan, & Herrera, 2011). The context of the mentoring relationship also matters. For example, the significance of community-based learning (CBL) initiatives in sport affiliated academic programs have been emphasized in varied publications recognizing the benefits of community-based learning (CBL) and service learning (SL) and their connection to effective pedagogy (Lee, Bush, & Smith, 2005; Lee, Kane, & Gregg, 2016). The purpose of this article is to examine an impactful CBL initiative featuring student-athletes engaging in leadership-themed mentoring of urban middle school students.

### **Why Community-Based Learning Matters for Student-Athletes**

Kuh (2008) emphasized the need for authentic, experiential service-based learning as a valuable pedagogical process, and universities are increasingly being acknowledged for their institutional focus on such initiatives (Lee, Kane, & Cavanaugh, 2015). Mindful of the value of CBL, the CAMP Osprey is an impactful leadership mentoring initiative, which pairs student-athlete mentors from with at-risk K-12 students to develop their leadership potential and college and career readiness. CAMP Osprey builds on the framework that the authors developed and implemented at the University of Florida (UF) and North Carolina State University (NCSU), where over 1,500 collegiate student "coaches" (mentors) mentors and K12 "Apprentices" have been positively impacted.

The National Collegiate Athletic Association (NCAA) has partnered with universities cultivating the development of student-athletes in the classroom, on the field, and in their lives (NCAA, 2015). Dugan and Komives (2011) determined leadership development activities are significant in assorted individual, organizational, and societal arenas. The engagement in educationally purposeful student-athlete activities fosters desirable educational outcomes for both mentors and mentees. CAMP Osprey builds upon research and provide a unique CBL model for athletic programs and their respective universities.

### **The Role of Athletics in College Readiness and Success for Both Coach and Apprentice**

College courses are paced faster than high-school courses, and expectations of college professors are distinctive from those of high school educators (Conley, 2007). Incoming college students are expected to work with others, give presentations, explain understanding from independent, self-reliant learning and studying, effectively use resources including professors and fellow students, and write lengthier papers that synthesize conflicting information in an organized and empirically supported manner. Yet in high school, expectations are often to memorize material, choose a "correct side" of an argument rather than synthesize information and draw an independent conclusion, and ultimately exert much less energy than is required in college (Conley, 2007).

### **Athletics and the Importance of Leadership Development**

Participation in athletics can increase college readiness and success (Pennington, 2019). Leaders in athletics score consistently higher in reading, math, civics, science, and vocabulary examinations in addition to having a higher GPA and self-esteem (Yeung, 2015). These successes may be in part explained by the fact that student-athletes receive more mentoring attention from leaders and coaches, in addition to the incentive of "don't pass, don't play" policies (Yeung, 2015). The leaders influencing student athletes, including coach, advisors, etc. play a great role in the intended socialization of their students and athletes- serving as positive role models of moral reasoning and positive behaviors both on the playing field, within the campus and throughout the greater community. In addition, these leaders should mirror the desired ideals of respect, fairness, civility, honesty, and responsibility towards their students and activity. Coaches often spend more time with athletes than parents or teachers do, so athletes look towards coaches for appropriate guidance in situations of challenging decision making. Therefore, it is imperative to infuse these same principles when the collegiate student-athletes serve as mentors/coaches to their K12 mentees/apprentices.

### **Why Student-Athletes are Ideal Leadership Mentors**

Recent figures indicate over seven million athletes participate in interscholastic sport, and these participants generally have higher grade-point averages, lower dropout rates, better daily attendance, and fewer discipline problems than non-athletes. Sporting behaviors of athletes are learned and reinforced from the leadership of coaches and advisors (Pennington, 2017). In addition, student-athletes often have the most diversity amongst college students-often matching the complex diversity of race, gender, income -levels and experiences of the high-needs mentees/apprentices.

### **Leadership Development in a College Context**

The most effective leadership programs occur in a specific context, such as a university or athletic leadership program (Zimmerman, Oster, & Burkhardt, 2000). Effective leadership programs explore intercultural issues such as race in addition to facilitating skill-building, problem-solving, service learning, mentoring, community involvement, and self-assessment and reflection (Zimmerman, Oster, & Burkhardt, 2000). Early undergraduate students, whose leadership skills are less developed reap long-term benefits from building leadership skills (Posner, 2009).

Leadership development programs can significantly increase student leadership skills up to five years post-graduation, making participation in leadership development programs appealing to employers who value leadership skills (Posner, 2009). Leadership development programs can scaffold the development of skills in communication, critical thinking, teamwork, and problem-solving, skills that employers seek (Ricketts & Dudd, 2002).

Connecting leadership to other social identities, such as athletics, enables students to explore their leadership practices and personal leadership identities through specific interventions such as mentoring or community service programs (Dugan & Komives, 2007). Participation in student organizations such as athletics promotes meaningful involvement, membership persistence, and identity development (Dugan & Komives, 2007). Leadership development occurs in the context of group influences, changing one's perspective to acknowledge the role of interdependence in viewing leadership as a process (Komives, Owen, Longerbeam, Mainella, & Osteen, 2005).

While faculty mentorship is impactful to students, busy professors cannot always offer it, so many students seek mentoring from peers or near-peers. Incoming college students seek leadership programs to fulfill a need for affiliation, achievement, support, and may be attracted to environments such as athletic programs that foster relationship building. These guiding mentor/mentee relationships are necessary aspects of leadership development (Campbell, Smith, Dugan, & Komives, 2012). Exemplary athletic leadership programs include the Purdue Athletics program, The University of Central Florida (UCF) Academic Services for Student-Athletes, and the Carnegie Mellon Student-Athlete Leadership Development Program.

### **Collegiate Achievement Mentoring Program CAMP Osprey**

The University of North Florida's institutional emphasis on community engagement is a powerful and significant point of connection with the CAMP Osprey, one of the University of North Florida's premier sources of institutional community engagement. CAMP Osprey's name is the fusion of the Collegiate Achievement Mentoring Program acronym – CAMP Osprey – and the mascot of the University of North Florida's athletic program.

CAMP Osprey is grounded in a framework that was developed and implemented at the University of Florida (CAMP Gator) and North Carolina State University (CAMP Pack). Inaugurated in 2007 as a partnership between a local public school and the UF College of Education, CAMP Osprey evolved so that college students completed leadership training and readings, engaged in targeted discussions, and participated in other activities that focused on leadership skills, personal development, and team-building strategies (Storch & Ohlson, 2009). At the University of North Florida, CAMP Osprey mentors originally included students from assorted majors who enrolled in an introductory leadership course and was later expanded to include student-athletes on several teams. The student-athletes do not take a full leadership course but receive a pared-down version of leadership training in six hours of instruction.

CAMP Osprey is focused on five primary goals for the development of the mentors: enhancing leadership skills; fostering learning; encouraging diversity appreciation; developing cultural awareness; and helping K-12 students become college and career ready. Previous CAMP Osprey endeavors have shown positive outcomes including:

- Collegiate Mentors/Coaches: Increased academic achievement (67% in pilot group); increased public speaking ability; increased employability skills
- K-12 Apprentices/Apprentices experienced gains in student attendance (27%) and student academic achievement (11% gain in GPA)
- Increased decreased number of suspensions and mentee grade-point averages (GPA)

### **University of North Florida Athletics**

The University of North Florida is located in Jacksonville, FL. The athletic department's 18 intercollegiate programs have experienced noteworthy success. One of the standout programs has been the women's tennis team, which has won numerous conference championships and has developed dozens of All-Academic Student-Athletes, while maintaining a team GPA over 3.20 during the program's tenure.

### **Benefits to Student-Athletes**

Student-athlete mentors, mentees, and program coordinators all benefited from the partnership between the University of North Florida women's tennis team and a local middle

school. As a component of their role as CAMP Osprey mentors, the student-athletes reflected at the end of their first semester on various points of interest, including the significance of providing opportunities for personal growth, the ability to make a difference, the value of building relationships, and the importance of partnership. Student-athlete reflections associated with this endeavor were shared with University of North Florida's athletic media relations (Women's Tennis, 2016).

Since the initial program with the women's tennis team, further participants included the women's golf team and the women's and men's basketball teams. Following the example set by the Women's Tennis Team, these additional teams underwent leadership training and facilitated the leadership mentoring process, leading campus visits and learning activities for their K12 mentees/apprentices. One of the benefits for the three teams was a consistent improvement in student-athlete GPA between the Spring of 2017 and Fall of 2019. The team GPA for women's basketball improved from 2.9 to 3.4; for men's basketball, from 3.2 to 3.4; and for women's golf, from 3.7 to 3.9. We cannot say with certainty that the improved GPA resulted solely from participation in CAMP Osprey; however, it does align with the research that shows leadership development in college students does impact academic-related outcomes (Posner, 2009).

### **Coming Full Circle**

Student reflections revealed the perceived value and benefits associated with participation in a community-based student-athlete mentoring endeavor. This finding is worth noting, particularly in comparison to findings from a recent leadership study that used the Multi-Institutional Study of Leadership (MSL) questionnaire at University of North Florida conducted by Evans-Buenaño (2016) between 2016-2018. In this study, participation in intercollegiate athletics at University of North Florida was quantified with respect to its influence on the development of characteristics of leadership, such as passion, teamwork, and achievement. While the results showed that participation in intercollegiate athletics can influence leadership development skills, of importance for the University of North Florida intercollegiate athletic program is that its student-athletes reported their lowest proficiency in the citizenship category in the Social Change Model (SCM) (Evans-Buenaño, 2016). The SCM value of citizenship is connected to questions that ask participants to report their involvement in the community, by rating statements such as "I participate in activities toward the common good, I believe my work has a greater purpose for the larger community, and I value activities that allow me to contribute to my community" (Dugan, 2015). Despite the low values given to the SCM citizenship statements by University of North Florida. Student-athletes, such statements were not echoed by the reflective feedback provided by those mentored in this CBL partnership after completing the program.

The findings highlighted a deficit of community-based experiential learning opportunities due to the time constraints placed on intercollegiate student-athletes. The lack of opportunity and time can account for the shortfall of community engagement participation for student-athletes. The qualitative testimonials after one semester of participation in CAMP Osprey suggest a model for athletic programs to follow to provide CBL opportunities for student-athletes. Mentoring programs modeled after CAMP Osprey, which include leadership training for both student-athletes and at-risk students and contribute to the community, show the potential to enhance a student-athletes overall experience and career development throughout college.

## CONCLUSION

The CAMP Osprey may function as a replicable template for other CBL initiatives-bridging service, learning, and sports in a format that harnesses the leadership strengths of student athletes. CAMP Osprey's curriculum emphasizes student-centered leadership training, CBL engagement, and a series of structured experiences between mentors and mentees that promote the various "life skills" embedded within athletics including the ability to promote the development of sportsmanlike behaviors and ethical decision-making skills; appreciate health, exercise and fitness; learn about themselves and how to handle adversity; and experience teamwork and sportsmanship (Pennington, 2017). The findings not only demonstrate the educational and personal development potential of such initiatives, but also elucidate the potential benefits of establishing enduring partnerships between institutions of higher education, athletic departments, and K-12 school partnerships.

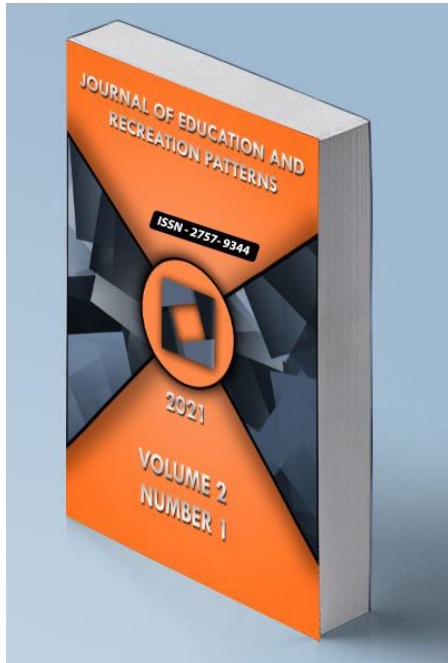
Building on the success of this initiative, the CAMP Osprey program seeks to support additional future CBL athletic-academic partnerships. This leadership mentoring model is now in the process of expanding to seven teams and over 200 student-athletes-creating a network of collegiate and K-12 leaders who are better prepared to thrive in college and the workforce. The success of CAMP Osprey serves as a call to action to other academic institutions, scholars and athletics coordinators to look at low-cost, mutually beneficial mentoring opportunities for student -athletes. The development of leadership skills can immediately influence the academic and career readiness skills of both the collegiate mentor and K12 mentee- reinforcing all the numerous "soft skills" embedded within the lessons learned of the student-athlete experience including teamwork, overcoming adversity, goal setting and the understanding of the alignment between hard work, grit and performance.

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### Ethnic/Racial Differences in Doctoral Degree Attainment in Texas: A Multiyear Analysis

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## Ethnic/Racial Differences in Doctoral Degree Attainment in Texas: A Multiyear Analysis

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### ABSTRACT

In this multiyear, statewide investigation, the degree to which changes had occurred in the numbers and percentages of doctoral degrees awarded to White, Hispanic, and Black students in Texas public postsecondary institutions from the 1999-2000 academic year through the 2018-2019 academic year was examined. The highest numbers of doctoral degrees were awarded to White students, followed by Hispanic students and Black students, respectively. Statistically significant differences were present for the percentages of doctoral degrees awarded to Hispanic and to Black students between the 1999-2000 academic year and the 2018-2019 academic year. The percentage of doctoral degrees awarded to White students decreased by nearly 21%, whereas the percentage of master's degrees awarded to Hispanic students and to Black students increased by 11.07% and 9.39%, respectively. As such, the ethnic/racial diversity of doctoral degree recipients increased over the academic years of data analyzed herein.

**Keywords:** Graduate Degree, Advanced Degree, Doctoral Degree, Underrepresented Minorities, Race/Ethnicity

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## INTRODUCTION

From a historical perspective, a graduate education in the United States has traditionally played a substantial role in producing an educated workforce, promoting successful employment, establishing financial stability, furthering and sustaining a healthy economy, and remaining competitive in the global marketplace (Adhikari, 2017; Altbach, Gumport & Berdahl; Franklin, 2013; Franklin & Slate, 2012; Holley & Gardner, 2012; Koc, 2013; National Science Foundation, 2018; Okahana, Klein, Allum, & Sowell, 2018; Wendler et al., 2010; Wendler et al., 2012). Indeed, “the global competitiveness of the US and capacity for innovation hinges fundamentally on a strong system of graduate education” (Wendler et al., 2010, p. 1). Undeniably, individuals who pursue and obtain a doctoral degree gain knowledge, experience, and skill sets that are critical to the nation’s progress in terms of generating new knowledge, discovering new scientific methods, establishing effective leadership, furthering influential research, fostering revolutionary innovations, and solving the complex problems currently facing the nation and the world (Koc 2013; National Science Foundation, 2018; Wendler et al., 2010; Wendler et al., 2012). These individuals work in all areas at the state and national level, including government, technology, science, business, engineering, industry, and academia (Litalien, Guay, & Morin, 2015; National Science Foundation, 2018; Wendler et al., 2010; Wendler et al., 2012). As noted by Wendler et al. (2012), “the link between graduate education and American prosperity has never been stronger than it is today” (p. 1).

From 2010-2020, Wendler et al. (2012) estimated that 2.6 million jobs would require an advanced degree. Specifically predicted was that the number of jobs requiring a doctorate or professional degree would increase by 20% (Wendler et al., 2012). These estimates may be interpreted to mean that an advanced degree is not an option but a requirement for certain occupations—occupations where a graduate education is typically associated with higher salaries (Koc, 2013; Melguizo & Wolniak, 2012; Pedersen, 2015; Wendler et al., 2012; Xu, 2013). Indeed, the expected lifetime earnings for someone with a doctoral degree is \$3 million, compared to \$2.7 million with a master’s degree and \$2.3 million with a bachelor’s degree (Wendler et al., 2012).

Of particular concern in terms of societal advancement, the economy, and in remaining competitive at both the national and global level is a diverse doctoral-trained workforce, particularly in the fields of science, technology, engineering, and mathematics (STEM) as well as in the professoriate (Dika & D’Amico, 2016; Griffin & Muniz, 2011; Holley & Gardner, 2012; Okahana, et al., 2018; Smith, Turner, Osei-Kofi, & Richards, 2016; Sowell, Allum, & Okahana, 2015). Indeed, Holley and Gardner (2012) made the following observation regarding the importance of doctoral degree attainment as well as the importance of diversity in doctoral programs:

Over the past 20 years, increased attention has been directed toward doctoral degree attainment. This attention is in part attributable to the central role that the degree plays in the higher education system. Doctoral programs train future scholars, who in turn construct a variety of academic, research, and other professional careers. Given the importance of the degree to the country’s scientific ambitions and economic security, concern has been expressed over the lack of student diversity in doctoral programs. (p. 112)

A stated national priority in the United States is to promote diversity in doctoral programs in the previously mentioned fields as well as in the overall general workforce (Ebersole, 2010; Griffin & Muniz, 2011; Holley & Gardner, 2012; Okahana & Zhou, 2019; Sowell et al., 2015). Important to note is that the priority of diversity is also present in postsecondary education. The likelihood that contemporary colleges and universities will

become institutions where underrepresented students, particularly racial/ethnic minority students, are engaged at the doctoral level is increased if postsecondary institutions employ a diverse faculty (Millett & Nettles, 2006). However, this requirement presents a conundrum in that for an ethnically/racially diverse faculty to exist, an ethnically/racially diverse student population must first enroll in and complete doctoral programs (Millett & Nettles, 2006). Moreover, “doctoral education is the training ground for the professoriate, and homogeneity in this population calls our ability to meet the needs of our increasingly diverse student body into question” (Griffin & Muniz, 2011).

Although the enrollment of underrepresented students in doctoral programs in STEM and other fields has increased over the past decade, the enrollment of underrepresented students in doctoral programs has been substantially lower than that of their White counterparts (Espinosa, Turk, Taylor, & Chessman, 2019; Griffin & Muniz, 2011; Okahana et al., 2018; Sowell et al., 2015). Despite efforts to diversify the student population in higher education, substantial disparities are present between the enrollment of White students and underrepresented students in STEM and in non-STEM doctoral programs (Holley & Gardner, 2012; Griffin & Muniz, 2011; Okahana et al., 2018; Sowell et al., 2015). Not surprisingly, the low enrollment of underrepresented students in doctoral programs is directly related to low degree completion rates in undergraduate and master’s programs.

In the 2016-2017 academic year, 107,445 doctoral degrees were awarded to White students, whereas only 12,493 were awarded to Hispanic students, and 14,027 doctoral degrees were awarded to Black students (National Center of Education Statistics, 2018). These national statistics are reflected in postsecondary institutions in Texas, the state of interest in this study. In Texas, 3,341 doctoral degrees were awarded to White students, whereas only 1,113 doctoral degrees were awarded to Hispanic students and 514 doctoral degrees were awarded to Black students (Texas Higher Education Accountability System, 2018).

Recognizing the near absence of research studies on underrepresented students in advanced degree programs, Franklin (2013) focused on *Closing the Gaps by 2015*, a statewide Texas education and diversity initiative. Franklin (2013) investigated the number and percentage of master’s, doctoral, and professional degrees awarded by public 4-year postsecondary institutions in the State of Texas from the 2000 through the 2011 academic years. For purposes of this article, only Franklin’s (2013) analysis of the number and percentage of doctoral degrees awarded will be addressed.

Franklin (2013) determined that from the 2000 academic year through the 2011 academic year, a total of 29,335 doctoral degrees were awarded by Texas 4-year postsecondary institutions to White, Hispanic, and Black students. White students obtained the highest number of doctoral degrees throughout the 12-year time period. Specifically, in 2000, 1,193 doctoral degrees were awarded to White students—a number that slightly increased to 1,341 in 2011. The number of doctoral degrees awarded to Hispanic students increased from 121 in 2000 to 243 in 2011. Similarly, the number of doctoral degrees awarded to Black students increased from 84 in 2000 to 192 in 2011.

Although the number of doctoral degrees awarded steadily increased for White, Hispanic, and Black students from 2000 to 2011, the percentage of doctoral degrees conferred fluctuated for all three groups from 2000 to 2011. Specifically, White students earned the highest percentage of doctoral degrees during the 12-year period as well as in each individual year, followed by Hispanic and Black students, respectively. White students were awarded 57.41% of doctoral degrees in 2000—a percentage that climbed to 61.19% in 2001 but then steadily declined to 43.81% in 2011. The percentage of doctoral degrees awarded to Hispanic students increased from 5.82% in 2000 to 7.94% in 2011. Similarly, the percentage of doctoral

degrees awarded to Black students grew from 4.04% in 2000 to 6.27% in 2011. In short, Franklin (2013) concluded that the percentage of doctoral degrees conferred by Texas 4-year public colleges and universities increased for White, Hispanic, and Black students from 2000 to 2011. However, the percentage of doctoral degrees awarded to White students decreased from 2000 to 2011, whereas the percentage of doctoral degrees conferred increased for Hispanic and Black students.

Regarding the percentage change over time for each group, the percentage of doctoral degrees conferred decreased for White students, whereas the percentage of doctoral degrees awarded increased for Hispanic students and for Black students. Specifically, White students were awarded 13.6% fewer doctoral degrees from 2000 to 2011, whereas Hispanic students were awarded 2.12% more doctoral degrees from 2000 to 2011, and Black students were awarded 2.23% more doctoral degrees from 2000-2011.

Several reasons have been given for the disparities in the ethnic/racial composition of students enrolled in doctoral degree programs, one of which is overall acceptance rates into doctoral programs. In 2018, only 23.5% of applicants were accepted into doctoral programs in the United States (Okahana & Zhou, 2019). Another source of disparity in doctoral education is the previously mentioned high rate of attrition—an occurrence that is multidimensional and multifaceted in nature (Gardner, 2009). According to Gittings, Bergman, Shuck, and Rose (2018), approximately 40% to 60% of all doctoral students do not persist to graduation. Moreover, underrepresented racial/ethnic minorities who pursue a doctoral education have higher attrition rates and lower degree-completion rates than their White peers (Sowell et al., 2015). Additional causes of attrition include, imposter syndrome, parental level of education, family obligations, age, lack of interaction with faculty mentors, employment issues, and financial resources (Bergman, Gross, Berry, & Shuck, 2014; Gittings et al., 2018; Litalien et al., 2015; Martinsuo & Turkulainen, 2011; Rockinson-Szapkiw, 2019). Further, the Council of Graduate Schools (n.d.) identified six sources of attrition related to institutional and doctoral program characteristics, including selection, mentoring, financial support, program environment, research mode of the field, and processes and procedures.

### **Statement of the Problem**

Increases in the ethnic/racial diversity of the United States population are reflected in the undergraduate student populations of Texas postsecondary institutions. However, unlike the undergraduate student population, which mirrors more closely the diversity of the nation's population, substantial racial/ethnic disparities exist in the graduate student population, particularly at the doctoral level (Ebersole, 2010; Griffin & Muniz, 2011; Holley & Gardner, 2012; Okahana & Zhou, 2019; Sowell et al., 2015). This state of affairs is problematic when considering the urgency of producing a heterogeneous, doctoral-trained workforce—a workforce comprised of diverse individuals who have the knowledge, critical thinking skills, and problem solving abilities that are needed in the 21st century's knowledge economy (Wendler et al., 2010; Wendler et al, 2012). As noted by Wendler et al. (2010),

. . . graduate education goes beyond just providing students with advanced knowledge and skills—it also further develops critical thinking skills and produces innovators. It is the application of knowledge and skills in creative and innovative ways that will help ensure our country's future economic prosperity, influence social growth, and maintain our leadership position in the global economy. (p. 1)

### **Purpose of the Study**

The overall purpose of this study was to determine the degree to which changes had occurred in the numbers of doctoral degrees awarded to White, Hispanic, and Black students in Texas public postsecondary institutions from the 1999-2000 academic year through the 2018-2019 academic year. Also ascertained were the percentages of doctoral degrees awarded to White, Hispanic, and Black students during the same time frame. Specifically, analyses were conducted from the 1999-2000 academic year through the 2018-2019 academic year to determine whether statistically significant changes had occurred in the numbers and percentages of master's degrees awarded to White, Hispanic, and Black students. The final purpose involved ascertaining the extent to which trends were present in both the numbers and percentages of doctoral degrees awarded to White, Hispanic, and Black students in Texas for the 1999-2000 through the 2018-2019 academic years.

### **Significance of the Study**

Procuring a diverse doctoral-trained workforce, particularly in STEM fields and in the professoriate, is of paramount importance to the economic health and standing of the United States in the global community. Toward this end, the Texas Higher Education Coordinating Board implemented two education initiatives in the State of Texas. The first was Closing the Gaps by 2015, which was in operation from 2000 through 2015. The purpose of this initiative was to close the gaps in education in terms of participation, success, excellence, and research (Texas Higher Education Data, 2015). The second initiative was the 60x30TX plan, which was put into practice in the 2015-2016 academic year and which will continue through the 2029-2030 academic year. The overall goal of this plan is to ensure that 60% of students between the ages of 25 to 34 earn a certificate or degree by 2030, graduate with identifiable marketable skills, and obtain employment where student loan debt does not exceed 60% of first-year wages (Texas Higher Education Coordinating Board, 2015).

Given the urgency of promoting and sustaining a diverse and doctoral-educated workforce, the implementation of the aforementioned initiatives is both judicious and relevant. However, simply creating initiatives and implementing them is not sufficient. These initiatives must be examined to ascertain the attained levels of success and equity as they relate to underrepresented students' completion of advanced degree and doctoral degree programs. The results of such an examination would provide essential information to legislators, administrators, graduate program recruiters, and to other educational leaders tasked with making critical decisions with far-reaching implications at all levels of education (Franklin, 2013). Yet, a review of the literature yielded few published research studies where the researchers investigated underrepresented students' attainment of a doctoral degree. Moreover, in the State of Texas, only one study has been conducted (Franklin, 2013) who examined the success of the state's education and diversity initiatives by investigating the attainment of advanced degrees as a function of race/ethnicity.

Because few researchers have explored the effectiveness of education and diversity initiatives both on a national level and on a state level, specifically in Texas, little evidence exists regarding the effectiveness of these initiatives. The significance of this study resides, in part, in a contribution to the limited literature on diversity and equity in graduate education. More specifically, this study will serve as an update to Franklin's (2013) study on Closing the Gaps by 2015. In her study, Franklin addressed diversity and equity in graduate education from 2000 to 2011. In this article, the data that will be analyzed will include all 15 years of Closing the Gaps by 2015 initiative (1999-2000 through 2014-2015) as well as data for the

60x30TX plan from the 2015-2016 through 2018-2019 academic years. An investigation of the participation of underrepresented students in Texas doctoral programs over the past 19 years will encapsulate more fully any disparities that might be present in terms of a doctoral level education.

### **Research Questions**

The following research questions were addressed in this study: (a) What are the numbers of doctoral degrees awarded to White students at public postsecondary institutions in Texas from the 1999-2000 academic year through the 2018-2019 academic year?; (b) What are the numbers of doctoral degrees awarded to Hispanic students at public postsecondary institutions in Texas from the 1999-2000 academic year through the 2018-2019 academic year?; (c) What are the numbers of doctoral degrees awarded to Black students at public postsecondary institutions in Texas from the 1999-2000 academic year through the 2018-2019 academic year?; (d) What is the difference in the percentage of doctoral degrees awarded to White students at public postsecondary institutions in Texas from the 1999-2000 academic year through the 2018-2019 academic year?; (e) What is the difference in the percentage of doctoral degrees awarded to Hispanic students from the 1999-2000 academic year through the 2018-2019 academic year?; (f) What is the difference in the percentage of doctoral degrees awarded to Black students from the 1999-2000 academic year through the 2018-2019 academic year?; and (g) What is the trend in the percentages of doctoral degrees awarded to White, Hispanic, and Black students at public postsecondary institutions in Texas between the 1999-2000 academic year and the 2018-2019 academic year?

## **METHOD**

### **Research Design**

A non-experimental, causal comparative research design was used for this study. This type of design is appropriate when a study involves an examination of “the relationship between one or more categorical independent variables and one or more quantitative dependent variables” (Johnson & Christensen, 2017, p. 43). In this study, the independent variables were academic years and race/ethnicity, and the dependent variables were the numbers and percentages of degrees awarded. The enrollment numbers and percentages of White, Hispanic, and Black students enrolled in doctoral degree programs in the State of Texas were analyzed for the 1999-2000 academic year through the 2018-2019 academic year. An archival dataset was obtained from the Texas Higher Education Coordinating Board’s Interactive Accountability website and included only public, 4-year colleges and universities that documented and reported race/ethnicity and doctoral degree information to the Texas Higher Education Coordinating Board.

### **Participants and Instrumentation**

Participants in this study included only public colleges and universities in the State of Texas that reported race/ethnicity data and doctoral degree data to the Texas Higher Education Coordinating Board. This information was retrieved online from the Texas Higher Education Coordinating Board Interactive Accountability system. The purpose of this system is to highlight educational priorities in the State of Texas, to measure the effectiveness of Texas’ colleges and universities, and to evaluate data to improve outcomes in the state’s postsecondary institutions.

## RESULTS

The dependent variables in this study were the number and percentage of doctoral degrees awarded, and the independent variables were race/ethnicity and individual academic years. Because the Texas Higher Education Coordinating Board combines these variables, the appropriate inferential statistical procedures to use were paired samples t-tests. A check of the underlying assumptions of this statistical procedure revealed that the majority of these assumptions were met (Slate & Rojas-LeBouef, 2011). Accordingly, paired sample t-tests were used to answer the inferential research questions presented earlier. The results for each of the seven research questions will be reported separately.

### Results for Research Question One

The first research question in this study was “What are the numbers of doctoral degrees awarded to White students at public postsecondary institutions in Texas from the 1999-2000 academic year through the 2018-2019 academic year?” To answer this question, descriptive statistics were calculated. As presented in Table 1, the number of doctoral degrees awarded to White students fluctuated throughout the 1999-2000 and 2018-2019 time period. The number of doctoral degrees awarded ranged from a low of 1,034 in the 2003-2004 academic year to a high of 1,532 for the 2014-2015 academic year. The average number of doctoral degrees awarded by Texas universities to White students increased from 1,193 in the 1999-2000 academic year to 1,141 in the 2018-2019 academic year. Overall, an increase of 18.52% was observed in the number of doctoral degrees awarded the White students by Texas universities.

**Table 1.** Descriptive Statistics for the Number of Doctoral Degrees Awarded to White Students Between the 1999-2000 and 2018-2019 Academic Years.

Academic Year	n of universities	Sum	M	SD
1999-2000	18	1193	66.28	100.57
2000-2001	17	1285	75.59	117.38
2001-2002	19	1120	58.95	91.36
2002-2003	18	1096	60.89	93.44
2003-2004	17	1034	60.82	89.38
2004-2005	20	1070	53.50	89.85
2005-2006	18	1124	62.44	90.80
2006-2007	22	1212	55.09	85.62
2007-2008	22	1246	56.64	91.22
2008-2009	21	1214	57.81	88.90
2009-2010	23	1316	57.22	94.94
2010-2011	23	1341	58.30	90.46
2011-2012	26	1374	52.85	88.90
2012-2013	23	1468	63.83	98.28
2013-2014	24	1503	62.63	97.44
2014-2015	23	1532	66.61	98.73
2015-2016	24	1503	62.63	93.80
2016-2017	23	1450	63.04	87.61
2017-2018	24	1451	63.09	87.64
2018-2019	13	1414	58.92	85.97

### Results for Research Question Two

To answer the second research question, “What are the numbers of doctoral degrees awarded to Hispanic students at public postsecondary institutions in Texas from the 1999-2000 academic year through the 2018-2019 academic year?”; descriptive statistics were calculated. As delineated in Table 2, the number of doctoral degrees awarded to Hispanic students increased from 121 in the 1999-2000 academic year to 320 in the 2018-2019 academic year. Regarding the years in between 1999-2000 and 2018-2019 the number of doctoral degrees awarded fluctuated from a low of 101 in 2000-2001 to high of 388 in 2016-2017. Similarly, as presented in Table 2, the average number of doctoral degrees awarded by Texas universities to Hispanic students ranged from approximately 7 to 19. Overall, the percentage of doctoral degrees awarded to Hispanic students increased by 164.46% between the 1999-2000 and 2018-2019 academic years.

**Table 2.** Descriptive Statistics for the Number of Doctoral Degrees Awarded to Hispanic Students Between the 1999-2000 and 2018-2019 Academic Years.

Academic Year	n of universities	Sum	M	SD
1999-2000	15	121	8.07	13.27
2000-2001	14	101	7.21	8.96
2001-2002	16	118	7.38	9.06
2002-2003	14	114	8.14	9.01
2003-2004	15	106	7.07	7.84
2004-2005	16	141	8.81	11.40
2005-2006	16	160	10.00	13.55
2006-2007	17	174	10.24	10.36
2007-2008	15	207	13.80	14.76
2008-2009	15	183	12.20	11.13
2009-2010	19	211	11.11	12.93
2010-2011	21	243	11.57	14.25
2011-2012	21	287	13.67	15.48
2012-2013	22	322	14.64	17.74
2013-2014	20	281	14.05	14.74
2014-2015	22	374	17.00	18.03
2015-2016	19	353	18.58	16.28
2016-2017	21	388	18.48	20.24
2017-2018	20	350	17.50	17.31
2018-2019	22	320	14.55	14.49

### Results for Research Question Three

The third research question in this study was, “What are the numbers of doctoral degrees awarded to Black students at public postsecondary institutions in Texas from the 1999-2000 academic year through the 2018-2019 academic year?” To answer this question, descriptive statistics were calculated. As revealed in Table 3, the number of doctoral degrees awarded to Black students increased from 84 in the 1999-2000 academic year to 277 in the 2018-2019 academic year. The fewest number of doctoral degrees awarded was 77 in 2003-2004 and the highest was 289 in 2015-2016. Overall, the average number of doctoral degrees awarded by Texas universities to Black students ranged from approximately 6 to 13. Regarding the percentage of degrees awarded, a 229.76% increase was observed from the 1999-2000 academic year to the 2018-2019 academic year.

**Table 3.** Descriptive Statistics for the Number of Doctoral Degrees Awarded to Black Students Between the 1999-2000 and 2018-2019 Academic Years.

Academic Year	n of universities	Sum	M	SD
1999-2000	11	84	7.64	8.090
2000-2001	10	83	8.30	8.420
2001-2002	13	80	6.15	6.656
2002-2003	12	69	5.75	4.975
2003-2004	14	77	5.50	6.248
2004-2005	14	85	6.07	7.590
2005-2006	15	86	5.73	6.193
2006-2007	16	131	8.19	10.901
2007-2008	18	119	6.61	7.429
2008-2009	17	145	8.53	6.875
2009-2010	17	138	8.12	6.284
2010-2011	21	195	9.29	10.640
2011-2012	22	196	8.91	10.132
2012-2013	21	208	9.90	9.674
2013-2014	22	238	10.82	10.178
2014-2015	20	234	11.70	9.274
2015-2016	22	289	13.14	10.877
2016-2017	22	293	13.32	11.35
2017-2018	23	287	12.48	9.02
2018-2019	23	277	12.04	9.80

#### Results for Research Question Four

To answer the fourth research question, “What is the difference in the percentage of doctoral degrees awarded to White students at public postsecondary institutions in Texas from the 1999-2000 academic year through the 2018-2019 academic year?”, a paired samples t-test was calculated. For this research question, a statistically significant difference at the conventional level was not revealed in the percentages of doctoral degrees awarded to White students between the 1999-2000 academic year and the 2018-2019 academic years,  $t(16) = -1.89$ ,  $p = .07$ . The result approached at .07 but did not reach the conventional level of .05. The percentage of doctoral degrees awarded to White students in the 1999-2000 academic year was 74.75% and decreased to 54.30% in the 2018-2019 academic year. Descriptive statistics for this analysis are presented in Table 4.

**Table 4.** Descriptive Statistics for the Percentages of Doctoral Degrees Awarded to White, Hispanic, and Black Students Between the 1999-2000 and 2018-2019 Academic Years.

Academic Year	White%	Hispanic%	Black%
1999-2000	74.75	11.95	13.29
2000-2001	88.19	05.94	05.87
2001-2002	77.60	16.25	06.15
2002-2003	80.30	13.38	06.32
2003-2004	77.90	15.15	06.96
2004-2005	83.05	10.25	06.70
2005-2006	76.33	11.35	12.32
2006-2007	76.71	12.28	11.01
2007-2008	66.27	21.92	11.80

2008-2009	75.08	16.43	08.49
2009-2010	74.51	15.65	09.84
2010-2011	71.98	17.34	10.68
2011-2012	66.35	19.89	13.76
2012-2013	65.17	16.55	18.28
2013-2014	68.74	18.73	12.53
2014-2015	67.70	20.38	11.92
2015-2016	61.58	25.20	13.23
2016-2017	58.95	20.34	20.71
2017-2018	57.25	25.96	16.79
2018-2019	54.30	23.02	22.68

### Results for Research Question Five

The fifth research question in this study was “What is the difference in the percentage of doctoral degrees awarded to Hispanic students at public postsecondary institutions in Texas from the 1999-2000 academic year through the 2018-2019 academic year?” To answer this question, a paired samples t-test was performed. A statistically significant difference was yielded in the percentages of doctoral degrees awarded to Hispanic students between the 1999-2000 academic year and the 2018-2019 academic year,  $t(12) = -4.76$ ,  $p < .001$ , Cohen’s  $d = 0.72$ . The effect size for this difference was moderate (Cohen, 1988). As presented in Table 4, 11.95% of doctoral degrees were awarded to Hispanic students in the 1999-2000 academic year compared to 23.02% that were awarded in the 2018-2019 academic year. As such, the percentage of doctoral degrees that were awarded to Hispanic students almost doubled in this time period.

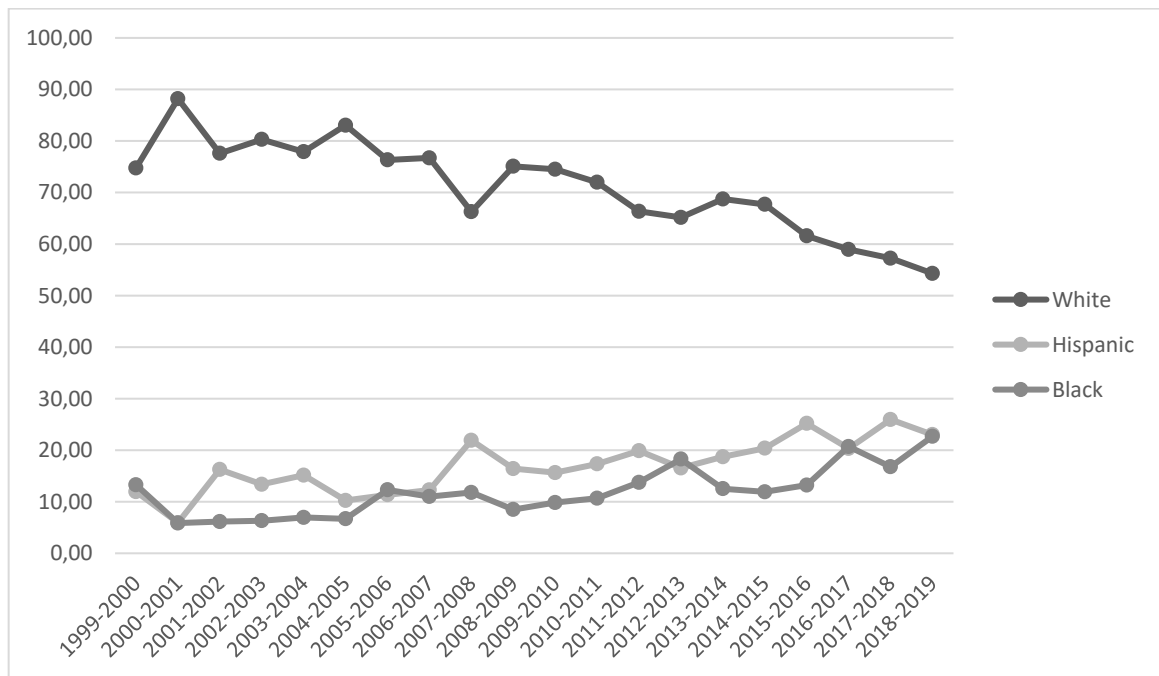
### Results for Research Question Six

Regarding the sixth research question, “What is the difference in the percentage of doctoral degrees awarded to Black students at public postsecondary institutions in Texas from the 1999-2000 academic year through the 2018-2019 academic year?”, a paired samples t-test was calculated. For this research question, a statistically significant difference was yielded in the percentages of doctoral degrees awarded to Black students between the 1999-2000 academic year and the 2018-2019 academic year,  $t(10) = -2.64$ ,  $p = .02$ , Cohen’s  $d = 0.97$ . The effect size for this difference was large (Cohen, 1988). In the 1999-2000 academic year, 13.29% of doctoral degrees were awarded to Black students. This percentage increased to 22.68% in the 2018-2019 academic year. Accordingly, the percentage of doctoral degrees awarded to Black students more than doubled (i.e., 71%) during this time period. Descriptive statistics for this analysis are presented in Table 4.

### Results for Research Question Seven

The seventh research question was “What is the trend in the percentages of doctoral degrees awarded to White, Hispanic, and Black students at public postsecondary institutions in Texas between the 1999-2000 academic year and the 2018-2019 academic year?”. As depicted in Figure 1, the percentage of doctoral degrees awarded to White students in the 1999-2000 academic year was 74.75%. This percentage increased to 88.19% in the 2000-2001 academic year and was the highest percentage of doctoral degrees awarded to White students between the 1999-2000 and 2018-2019 academic years. This percentage slightly fluctuated and decreased to 54.30% in the 2018-2019 academic year. Regarding the percentages of doctoral degrees awarded to Hispanic students, 11.95% were awarded in the 1999-2000 academic year.

This percentage increased to 23.02% in the 2018-2019 academic year, representing a total increase of 11.07% between the 199-2000 and 2018-2019 academic years. Similar to the percentage of doctoral degrees awarded to Hispanic students between the 1999-2000 and 2018-2019 academic years, the percentage of doctoral degrees awarded to Black students also increased during the same time period. In the 1999-2000 academic year, 13.29% of doctoral degrees were awarded to Black students. Although this percentage decreased by nearly 7% between the 2000-2001 and 2004-2005 academic years and continued to fluctuate over the remaining years of interest, by the 2018-2019 academic year the percentage of doctoral degrees awarded to Black students had increased to 22.68%. Overall, the percentage of doctoral degrees awarded to White students decreased by 20.45%, whereas the percentage of doctoral degrees awarded to Hispanic students increased by 11.07%, and the percentage of doctoral degrees awarded to Black students increased by 9.39%.



**Figure 1.** Percentages of doctoral degrees awarded to White, Hispanic, and Black students between the 1999-2000 and 2018-2019 academic years.

## DISCUSSION

In this multiyear, statewide investigation, doctoral degree attainment as a function of race/ethnicity in Texas postsecondary institutions was examined within the context of two education and diversity initiatives that were implemented by the Texas Higher Education Coordinating Board—*Closing the Gaps by 2015* and *60x30TX*. During the 20-year period of interest in the current study (i.e., 1999-2000 through 2018-2019), White students were consistently awarded higher numbers of doctoral degrees than were awarded to Hispanic and Black students. Moreover, Hispanic students were consistently awarded higher number of doctoral degrees than were awarded to Black students from the 1999-2000 academic year through the 2018-2019 academic year. All three racial/ethnic groups were awarded higher numbers of doctoral degrees in the 2018-2019 academic year than in the 1999-2000 academic year. The number of doctoral degrees awarded to White students increased by 221, the number of doctoral degrees awarded to Hispanic students increased by 199, and the number of doctoral degrees awarded to Black students increased by 193.

In reference to inferential analyses over time, a statistically significant difference was not revealed in the percentage of doctoral degrees awarded to White students between the 1999-2000 and 2018-2019 academic years. However, statistically significant differences were present in the percentage of doctoral degrees awarded to Hispanic students and to Black students between the 1999-2000 and 2018-2019 academic years. The percentage of doctoral degrees awarded to Hispanic students increased by 11.07%, and the percentage of doctoral degrees awarded to Black students increased by 9.39%. Correspondingly, the percentage of underrepresented students who were awarded doctoral degrees by Texas colleges and universities increased over time.

### **Connections with Existing Literature**

The overall results of the current study were congruent with Franklin's (2013) findings regarding the extent to which advancement had occurred in the number of doctoral degrees awarded to White, Hispanic, and Black students from the 1999-2000 academic year through the 2010-2011 academic year—a time period encompassed by the State of Texas' education initiative, *Closing the Gaps by 2015*. Franklin (2013) documented that the number of doctoral degrees awarded to White students was consistently higher than the number of doctoral degrees awarded to Hispanic students and to Black students between the 1999-2000 and 2010-2011 academic years. Regarding the percentage of change over time for each racial/ethnic group, Franklin (2013) determined that the percentage of doctoral degrees conferred decreased for White students, whereas the percentage of doctoral degrees awarded increased for Hispanic students and for Black students. The results of this study were consistent with the findings of Franklin's (2013) study.

### **Implications for Policy and Practice**

Based upon the findings of this multiyear, statewide investigation, several implications for policy and practice can be made. Because White students have disproportionately been awarded higher numbers and percentages of doctoral degrees than the number and percentages of doctoral degrees awarded to Hispanic and Black students, an urgency exists for policymakers in the State of Texas to scrutinize judicially the effectiveness of the state's past initiative, *Closing the Gaps by 2015*, as well as any progress that might have been made thus far in the state's current initiative, *60x30TX*. When compared to the *Closing the Gaps by 2015* initiative, policymakers involved in the creation of the *60x30TX* plan included more benchmarks regarding the level of degrees earned to include certificates, associate's, master's, doctoral, and professional degrees as well as targets for degrees earned by racial/ethnic groups. Nevertheless, considerable disparities continue to exist at the doctoral degree level. Fortunately, given the broad language of the *60x30TX* initiative, policymakers have a degree of freedom to be inventive in developing and implementing policies designed to increase doctoral degree completion rates for underrepresented racial/ethnic groups. Policymakers are encouraged to assess carefully the degree to which progress has or has not been made toward achieving the targets included in the *60x30TX* plan and to take advantage of the freedom they have to be innovative when creating and implementing policies that include directives specifically aimed at increasing the numbers and percentages of doctoral degrees awarded to underrepresented racial/ethnic students.

Some areas where policymakers might find opportunities to develop policies designed to ensure the success of the *60x30TX* initiative include establishing partnerships between leaders in postsecondary institutions, leaders in the K-12 system, and leaders in the community; assessing funding resources; allocating or reallocating funds; and collaborating with administrators, faculty, and staff in a way that establishes a clear pathway that leads students through a primary education, to a secondary education, to a postsecondary education, and, ultimately to a graduate education. However, simply developing policies is insufficient. Perhaps the greatest challenge will come when attempts are made to implement these policies in a way that is meaningful and that will make a substantial difference in the quality of education that Texans receive. Achieving this objective will demand that policymakers, state agencies, stakeholders, leaders in education, leaders in the community, and practitioners in all education-related areas collaborate with one another. These parties must also commit to developing, implementing, and practicing policies that not only facilitate the provision of a quality education but to ensure the presence of equity in the Texas educational system. It is only with a workforce comprised of diverse individuals who are highly educated that the State of Texas will succeed in sustaining economic health and global competitiveness.

### **Recommendations for Future Research**

Based on the results of this multiyear, statewide investigation, several recommendations for future research can be made regarding the numbers and percentages of doctoral degrees awarded to White, Hispanic, and Black students in the State of Texas. First, the focus of the present study was only on the numbers and percentages of doctoral degrees awarded. Future researchers are encouraged to investigate the numbers and percentages of professional degrees awarded to underrepresented racial/ethnic students to include degrees in medicine, osteopathic medicine, dentistry, veterinary medicine, and pharmaceutical medicine. Second, research on the numbers and percentages of professional degrees awarded to underrepresented racial/ethnic students could be extended by examining the numbers and percentages of professional degrees awarded over time. Third, researchers in the future might consider investigating the numbers and percentages of professional degrees awarded to underrepresented racial/ethnic students in a state other than Texas or to conduct a nationwide study. Fourth, future researchers are encouraged to expand on the current study by including demographic data such as first-generation and socioeconomic status as well as gender.

### **CONCLUSIONS**

The purpose of this study was to ascertain the extent to which changes had occurred in the numbers and percentages of doctoral degrees that were awarded to White, Hispanic, and Black students by Texas postsecondary institutions from the 1999-2000 academic year to the 2018-2019 academic year. Also examined was the degree to which trends were present in the numbers and percentages of doctoral degrees awarded to the aforementioned racial/ethnic groups. Statistical analysis revealed that statistically significant differences were present in the percentages of doctoral degrees awarded to Hispanic students and to Black students from Texas postsecondary institutions between the 1999-2000 academic year and the 2018-2019 academic year. For both Hispanic and Black students, the percentage of doctoral degrees awarded increased from 1999-2000 to 2018-2019. Yet, although it appears that progress has been made during the initial years of the *60x30TX* initiative, considerable disparity remains in the numbers and percentages of doctoral degrees awarded to Hispanic and Black students when compared to their White counterparts. Leaders in higher education must intensify their efforts to further decrease this disparity through policy and practice and through establishing partnerships and

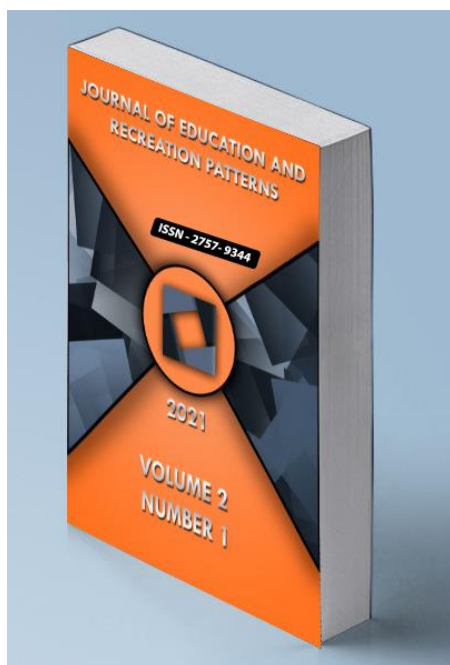
collaborating with individuals in the K-12 system, stakeholders, community leaders, business leaders, and practitioners.

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### Commentary on the Impact of Teacher Appearance and Age on Student Attitudes

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## Commentary on the Impact of Teacher Appearance and Age on Student Attitudes

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### ABSTRACT

Early research in the psychological and social development of students has explored the effect of a teacher's appearance on physical education students' learning and perceptions of the teacher. Initial studies of this nature suggested that teachers' appearance, clothing, and fitness influenced students' perceptions of teachers' instructional ability. A series of studies suggests that physical education students bias 'against' older appearing teachers weakens from the elementary ages to high school. The purpose of this commentary is to review and summarize the literature relative to physical educators' age and appearance to provide considerations for sport pedagogists, K-12 educators, and health professionals while teaching students about the concept of age-related stereotypes and healthy aging. Research on perceptions of age and aging in general has indicated that a bias against older individuals is evident in very young students and becomes stronger as they age and enter adolescence. Furthermore, research has also indicated that students, adults, and youth often regard older individuals negatively. It is important to further assess how the reduction of age stereotypes among students influences the attitudes and behaviors of youth. Schools can play a significant role in influencing the perceptions children have of the elderly and the aging process. They have the resources and capabilities to integrate material on healthy aging into their curricula as well as to introduce students to older individuals, thus reinforcing the view of aging as a more positive experience.

**Keywords:** Aging, Appearance, Ageism, Teacher Effectiveness, Physical Education

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## INTRODUCTION

A limited few scholars of sport pedagogy have explored the impact of a teacher's physical look on physical education students' acquisition of knowledge and perceptions of the teacher. Foundations research along this line of study suggested that teachers' physical look and choice of clothing impacted students' perceptions of educators' teaching quality. Nevertheless, only a fairly limited amount of research has investigated the influence appearance on physical education teachers' effectiveness. Therefore, the purpose of this commentary is to review and summarize the literature relative to teachers' age and appearance – with a particular focus on physical educators – to provide considerations for sport pedagogists, K-12 educators, and health professionals while teaching students about the concept of age-related stereotypes and healthy aging.

A thorough literature review was conducted using search terms related to age, student age-related stereotypes, and students' perceptions of healthy aging. Themes related to physical preferences age and biases were further categorized and used as logical headings to frame the outline of this commentary. Articles and references were included in the commentary if they fit the criteria of being conducted in reference to specifically “student” perceptions and attitudes. For the sake of comparison, some studies have been included in this review outside of physical education and sport pedagogy, but within the realm of ‘K-12 education’.

### **A History of Research on Teachers' Physical Appearance**

Informed by a number of studies conducted in the 1970's that teachers' physical look and choice of clothing impacted students' perceptions of educators' teaching quality (Feshbach & Feshbach, 1972; Landers & Landers, 1973; Molloy, 1975; Chaikin, Gillen, & Derlega, 1978), a small few studies in sport pedagogy have sought to determine if a physical education (PE) teacher's apparent fitness level has any effect on student learning or an effect on students' perceptions of the teacher (Melville & Maddalozzo, 1988; Thomson, 1996; Dean, Adams, & Comeau, 2005). An exemplar study was carried out by Melville and Maddalozzo in 1988. The scholars showed one of two virtually identical video recordings of a physical educator demonstrating and discussing fitness topics to two randomly assigned classes of students in high school. The single difference between the two recordings was that in one videotape the teacher appeared “physically healthy slim and fit” while in the other videotape he appeared physically unhealthy and “out of shape” because he wore a prosthetic “fat suit.” After the student's viewing of either the “fit” or “fat” recording, the scholars determined the students' perceptions of the teacher's competence and the extent to which students learned the exercise and fitness-based topics demonstrated and discussed in the recordings. Resulting from this study and other studies of similar design, it has been suggested that a PE instructor's apparent fitness level does have an effect on student perception of teacher's competence and the extent to which students learned the exercise and fitness-based topics. It has been revealed that students view a physical educator as less effective and learned less from the teacher when the teacher is “out of shape” relative to a slimmer teacher (Melville & Maddalozzo, 1988; Dean et al, 2005; Thomson, 1996).

Guided by the rationale of former studies, Bryant and Curtner-Smith (2008) sought to examine the impact of a physical educator's physical disability on students' learning and perceptions of the instructor's competence. The researchers found that elementary students were positively influenced by a physical educator using a wheelchair, both learning more and not expressing disparaging perceptions of the wheelchair-using teacher regarding competence compared to students who were taught by an able-bodied teacher (Bryant & Curtner-Smith,

2008). However, when the study was conducted in a high school, students learned less from, and had lower perceptions of teacher competence, from the wheelchair-using teacher than the able-bodied teacher.

In a quasi-replication of the Melville and Maddalozzo studies (1988) and Bryant and Curtner-Smith (2008), Pennington and colleagues (2020abc) established that students as early as nine years old possess age-related stereotypes of physical educators whereby they learned more from, and held higher perceptions of a younger teacher compared to an older appearing teacher teaching the same lesson (Pennington, Curtner-Smith, & Wind, 2020a). Interestingly, when replicated using middle school participants, Pennington and colleagues (2020b) found that the bias persisted, although appeared to weaken moderately. Perhaps this is an indication that most of the negative socialization encountered by students in which they are persuaded that sport, physical activity, and physical education teaching are for young people happens at an early age (Pennington, Curtner-Smith, & Wind, 2020b). A final extension of this study using high school participants (Pennington, Curtner-Smith, & Wind, 2020c). The singular finding with the highest level of significance within this entire series of studies was that students subjectively regarded the instructor more positively [regarding the concept of “role modeling”] when the instructor was made to appear be middle-aged than when the instructor was made to appear more youthful. Furthermore, there were no differences in learning and perceptions of likeability or competence by students who learned from either a younger or older appearing teacher.

### **Aesthetic Preference: Attractiveness and Age Bias**

“Aesthetic preferences are known to be important in person perception and can play a significant role in everyday social decisions” (Kiiski, Cullen, Clavin & Newell, 2016, p. 1). Our subjective partiality for others compels many aspects of our life; they influence our choices from dating and relationship suitors to elected officials (Langlois, Kalakanis, Rubenstein, Larson, Hallam & Smoot, 2000; Cornwell, Smith, Boothroyd, Moore, Davis, Stirrat & Perrett, 2006; Olivola, Funk & Todorov, 2014), often when more logical and objective data is available (Todorov, Olivola, Dotsch & Mende-Siedlecki, 2015). In the case of educational and pedagogical theory, these potentially harmful biases have an effect on student learning and student perceptions of the teachers’ competence and role-modeling qualities (Pennington, et al., 2020abc). Therefore, for the sake of educational effectiveness knowledge, these preferences and biases are worthy of being explored.

Aesthetic preferences are most commonly determined by facial physical features and physical appearance (Valentine, Darling & Donnelly, 2004), and can be shaped and formed from even a brief fleeting look of a person whom we may have never met (Albright, Kenny & Malloy, 1988). Such suggests the importance of understanding how these swift impressions impact decision-making in everyday social contexts. A number of studies from social psychology, specifically linked to face perception, advocate for a greater understanding of factors relating to ageing that affect attitudes and bias. Through so doing, we may gain a deeper understanding into the perceptual foundation of social occurrences in everyday life situations (Langlois et al., 2000; Cornwell et al., 2006; Olivola et al., 2014).

‘Attractiveness’ [often strongly correlated with ‘youthfulness’] refers to the subjective quality of facial features, whereas ‘trustworthiness’ refers to the perceived [again, subjective] helpfulness (e.g. to teach or educate) and honesty (Kiiski et al., 2016). Age-related features of the face (e.g. visible coloration and texture of the skin) are deemed essential for evaluations of physical attractiveness and perceived physical health (Burt & Perrett, 1995). Previous research

has expressed an obvious preference for youthful-appearing faces by participants of many age categories (Langlois et al., 2000; Kiiski et al., 2016). Specifically, participants' ratings of attractiveness declined with the increasing age of faces (Ebner, Riediger, & Lindenberger, 2010) and, in the case of one study, participants' ratings of perceived competence and trustworthiness also declined with the increase in the age of the faces showed the study (Kiiski et al., 2016).

### **The “Youth Bias” and Age-related Stereotypes**

One reason why a bias may exist to favor younger-appearing people may be that young people tend to have fewer age-specific facial features like wrinkles and blemishes which could impact the clarity of cues signaling socially relevant information. Therefore, data and messaging from youthful-looking faces may be quicker and easier to process (Kiiski et al., 2016). Faces of younger adults are often thought to be more symmetrical compared to older faces; symmetry being a feature indicating the subjective aesthetic quality of a face, as is suggests good health, fitness, and a strong immune system (Thornhill & Gangestad, 1999; Lie, Rhodes & Simmons, 2008; Pisanski & Feinberg, 2013).

The expanding research along this line of inquiry indicates that forming an opinion of a face is established not only on its subjective physical quality, but also other social attributes (Fiske, Cuddy & Glick, 2007). As there is documented research suggesting an attractiveness ‘halo effect’ (i.e. faces perceived to be attractive are also rated more positively in other social attributes, such as competency; Langlois et al., 2000), an opposite effect has concurrently been demonstrated to happen with ratings of older adults which is largely contrary to the body of evidence suggesting “younger appearing faces are considered more competent” (Zebrowitz, Franklin, Hillman, & Boc, 2013). For example, it stands to reason that having a face of apparently advanced age could, in fact, yield positive competence evaluations, potentially focusing on more advantageous aspects of aging, such as life experience and wisdom (Kiiski et al., 2016).

### **Children’s Perceptions of Aging**

Interest has grown in studying the perceptions youth have of the elderly since the mid-sixties (Aday, Sims, McDuffie & Evans, 1996). Many students have negative attitudes about older persons (Rich, Myrick & Campbell, 1983). Couper, Donorfio, and Goyer (1995) reveal that pessimistic perception regarding growing old occur even among toddlers, and these perceptions become persist to more pessimistic as students enter preadolescence (Laney, Wimsatt, Moseley & Laney, 1999). As early as age three, young students exhibit ageist language (Burke, 1981), describing them as “tired, ugly, helpless, and ready to die” (Rich et al., 1983, p. 488). By age five, children begin to espouse negative perceptions against aging and being elderly (Fullmer, 1984). By the age of eight, most students hold relatively strongly regarded pessimistic perceptions of people of advanced age and the aging process (Corbin, Kagan & Metil-Corbin, 1987).

American youth have been described as “horrificed at the idea of growing old” and often demonstrate great determination to avoid old age (Seefeldt, Jantz, Galper, & Serock, 1977). During the years of adolescence, American youth appear to stereotype and devalue individuals of advanced age a way that is comparable to adults (Carstensen, Mason & Caldwell, 1982; Kastenbaum & Durkee, 1964). Because the concepts of developing biases and stereotypes against growing old and the elderly appear to be deeply engrained, it stands to reason that implicit ageism will persist throughout an individual’s lifetime. Furthermore, it has been

indicated that deeply ingrained perceptions and values regarding age will leave meaningful impression on one's life in general. A large number of these perceptions and values are persistent into adulthood and typically impact health behavior and healthy strategies to aging along adulthood and advanced age (Bennett, 1976; McTavish, 1971). If uncontested or undisputed, the perceptions established in formative and K-12 educational settings have a tendency to leave persistent characteristics that affect people's thoughts and behaviors along the lifespan (Seefeldt et al., 1977). To that end, there is evidence to suggest that children's deeply ingrained perceptions and values regarding age [i.e. age-related stereotypes] lend themselves towards their own anticipated forecast regarding their own aging journey (Levy, 2003).

### **Growing Old: A Self-fulfilling Prophecy**

"When individuals reach old age, the aging stereotypes internalized in childhood, then reinforced for decades, become self-stereotypes. The old is the only outgroup that inevitably becomes an ingroup for individuals who live long enough" (Snyder & Miene, 1994, p. 38). When advanced age becomes self-defining, stereotypes related to age and ageing may lend themselves towards an undesired consequence: "imposing unnecessary limitations on future generations of elderly" derived from self-fulfilling prophecies (Korthase & Trenholme, 1983). Class and Knott (1982) have proposed three primary ways in which attitudes regarding aging can be changed: (a) thorough discussions with school-mates, (b) thorough direct experience with attitude objects facilitated by trusted teachers and school officials, and (c) thorough increased information or knowledge from direct teaching/learning experiences in school health and physical education settings.

It is important for health and physical educators to further assess how the reduction of age stereotypes among youth influences the attitudes and behaviors of youth. Schools – specifically trained professionals such as health and fitness specialists and physical educators – can play an important function in impressing the views students have of individuals of advanced age and the lifecycle. Schools have the resources and capabilities to integrate material on healthy aging into their curricula as well as to introduce students to older individuals, thus reinforcing the view of advancing through the lifecycle in a healthy way as a more positive experience (Burke, 1981; Edwards & Gallagher, 1982). The National Retired Teachers Association and the National Academy for Teaching and Learning About Aging suggests that students need to learn about aging (Levy, 2003). One of the main reasons is teaching and learning about aging in the school curricula can promote healthy behaviors and lifestyle decisions. The decisions young students make affect the length and quality of their lives; thus, a life span approach to health promotion can encourage the development and maintenance of lifelong, healthy habits (Levy, 2003).

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